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FATAL SCRUB TYPHUS FROM LITCHFIELD PARK, NORTHERN TERRITORY

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Abstract

A 38 year old man died with multiorgan failure from scrub typhus (infection with *Rickettsia tsutsugamushi).* His infection was acquired in the rainforest fringes of Litchfield National Park, Northern Territory. This is the eighth documented case of scrub typhus acquired in Litchfield National Park since it was first recognised as a focus of infection in 1990. To date the Park is the only known focus of scrub typhus in the Northern Territory. A possible focus in rainforest in the Kimberley region of northern Western Australia also exists. As tourism increases, other remote foci of vectors, endemic rodent hosts and rickettsiae may be recognised in northern Australia. ***Comm Dis Intell* 1996;20:420-421.**

Introduction

Scrub (mite) typhus (infection with *Rickettsia tsutsugamushi*) has long been recognised as endemic in north-eastern Australia, as well as in a wide area of eastern Asia and the western Pacific region[1]. Between August 1990 and November 1991, there were five confirmed cases of scrub typhus acquired in Litchfield National Park, an area of rainforest 140 kilometres south of Darwin, Northern Territory, which was opened to the public as a park in 1986[2]. A further case from Litchfield Park, acquired in October 1993, was diagnosed in a Western Australian tourist (Dr Liam O'Connor, personal communication). A seventh case occurred in June 1996 in a Darwin resident who camped in the park[3]. We describe here a fatal case of scrub typhus also from Litchfield Park.

Case report

In mid-August 1996, a 38 year old man was working on the construction of a tourist path in the rainforest fringes of Litchfield Park. During his second week of work he became unwell, with fevers, sweats, headache, sore throat cough, lethargy and some confusion. Despite requests by friends he was reluctant to seek medical attention as he became progressively more sick over at least a week. He eventually received amoxycillin / clavulanate from a local medical practitioner, but developed diarrhoea and was admitted to Royal Darwin Hospital.

On admission he was febrile, with rigors and no evident focus of infection. A diagnosis of septicaemia was made and he was commenced on ceftriaxone and gentamicin.

Over the next day he became increasingly confused and his fever persisted. He became hypotensive, hypoxaemic and oliguric and was transferred to the intensive care unit. At that stage his work history was ascertained from relatives and a six millimetre sore with a necrotic dark centre was noted on his upper right buttock. He was commenced on intravenous doxycycline to cover scrub typhus. His condition continued to deteriorate with hypotension, renal failure and adult respiratory distress syndrome. He developed mucosal and gastrointestinal bleeding and died six and a half days after admission. Paired serology results confirmed the diagnosis of scrub typhus (Table) and no other pathogens were identified.

Discussion

Before the cases from Litchfield Park, it was generally considered that scrub typhus in Australia did not extend west of north-east Queensland. A mammal trapping survey in December 1990 in areas of Litchfield Park visited by

Table. Rickettsia serology by immunofluorescence[1]

	Test	Test 1	Test 2 (1 week later)
R. australis	Total titre	< 64	< 64
(spotted fever group)	IgM	Not detected	Not detected
R. tsutsugamushi	Total titre	512	> 2048
(scrub typhus group)	IgM	Equivocal	Detected

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the last two cases showed a high prevalence of the Australian vector mite *Leptotrombidium deliense* infesting three native rat species[4]. Previously this mite had not been found in the Northern Territory. In July 1993 a case of scrub typhus occurred in a man who travelled through remote rainforest pockets of the West Kimberley region of Western Australia[5].

Scrub typhus virulence varies between strains of *R. tsutsugamushi*. Two of the earlier cases from Litchfield Park were critically ill, suggesting a virulent organism[2]. All eight cases have had a primary eschar, corresponding to the site of mite attachment. The mites are under 0.4 millimetres in length, so are not usually seen. The eschars, as in this case, were not always initially distinctive. Sizes were 4-8 millimetres and locations were the genitals, buttocks or lower abdomen. The Kimberley case had an axillary eschar[5]. Incubation period has been 7-14 days.

Scrub typhus is an acute febrile illness with headache, profuse sweating, lethargy and sometimes myalgia, encephalopathy, conjunctival injection, lymphadenopathy, splenomegaly and a delayed maculopapular rash (usually truncal)[1,2,5,6]. Cough and chest X-ray infiltrates are common. White cell count may be normal, but thrombocytopaenia and abnormal liver function tests are common. Diagnosis is made by paired serology showing a rise in specific antibodies to *R. tsutsugamushi*. The traditional Weil-Felix agglutination test (looking for antibodies to *Proteus* OX-K for scrub typhus) may not be as sensitive or specific. The treatment of choice is doxycycline. Mortality is higher in older patients, those with underlying chronic illness and with delays in treatment. Death can be due to heart failure, circulatory collapse, pneumonia, bleeding or (as in the case reported here) multiorgan failure. Without treatment, virulent strains may have a mortality rate as high as 60%[6], although generally it is much lower.

The geographic distribution of scrub typhus is usually patchy; in north Queensland most of the circumscribed foci ('mite islands') have been humid rainforest areas with annual rainfall exceeding 1,500 millimetres[7]. The Litchfield Park and Kimberley cases conform with this pattern. This is in contrast to the scrub typhus foci in Asia of mixed vegetation in a previously cleared area, and to the association of scrub typhus in Papua New Guinea with kunai grass and with overgrown abandoned gardens. Of interest, in Queensland, virgin rainforest used to be called 'scrub'[7]. All the Litchfield Park cases have occurred in the dry season, when tourist numbers are greatest. In contrast, in Asia there is often a monsoonal relationship with scrub typhus[7].

It is possible that *R. tsutsugamushi* and its vector mite, *L. deliense*, have been infesting native mammals in the Litchfield rainforest for millennia. There may well be other circumscribed foci of vectors, rodents and rickettsiae in discrete rainforest habitats of northern Australia where humans have so far rarely visited.

Our investigations suggest multiple locations within Litchfield Park are infecting sites for scrub typhus. With around 250,000 visitors to Litchfield Park annually, the risk of scrub typhus is evidently low. Sitting or lying on the ground without a groundsheet or mat in grassy areas near creeks, especially away from the established day use areas at public amenities locations, is a likely scenario for inoculation. DEET-containing insect repellents will help reduce contact with the mite vectors and permethrin impregnated clothing is recommended for those working in areas of scrub typhus transmission.

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MENINGOCOCCAL ISOLATE SURVEILLANCE, AUSTRALIA, 1995

The National Neisseria Network[1]

Abstract

In 1995 the National Neisseria Network examined 250 strains of *Neisseria meningitidis* isolated from invasive cases of meningococcal disease throughout Australia. The majority of isolates were either serogroup B (166, 66%) or serogroup C (69, 28%). There were only two serogroup A isolates. The proportion of isolates of serogroup B meningococci increased in 1995 from 54% in 1994. Most cases of invasive disease occurred in those less than four years of age (43%), with another peak in the 15 - 24 years age group (26%). Outcome data were available in 190 instances and there were 13 deaths recorded (7%). Penicillin susceptibility of isolates was little changed and minimal inhibitory concentrations (MICs) ranged between 0.002 and 0.5 mg/L. One hundred and fifty-five isolates were in the 'less susceptible' range (MIC 0.06 - 0.5 mg/L). ***Comm Dis Intell* 1996;20:422-424.**

Introduction

A national program for the examination of strains of *Neisseria meningitidis* from cases of invasive meningococcal disease was commenced in 1994 with the cooperation and participation of reference laboratories in each State and Territory.

This laboratory-based surveillance was designed to supplement data from existing clinical notification schemes by adding information on the serogroup of strains and antibiotic sensitivity data.

A report providing information gathered in the first year of the program was published in *Communicable Diseases Intelligence*[1].

The following report deals with the calendar year 1995.

Geographic distribution of serogroups

Two hundred and fifty invasive isolates of meningococci were examined in 1995 (Table 1). The serogroup was not

Figure. *Neisseria meningtidis* isolates, 1995, by age group and sex

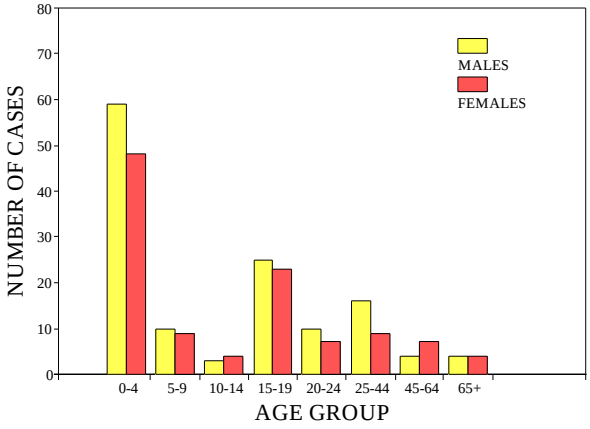

Table 1. *Neisseria meningitidis* isolates, 1995, by State or Territory and serogroup

State or Territory	Serogroup							Total
	B	C	A	Y	W135	NG[1]	Other[2]	
ACT	5	1	1	1		1		9
NSW	40	16		1		1		58
NT		1						1
Qld	37	23	1				1	62
SA	11	5		1	1			18
Tas	3	2				1	2	8
Vic	38	18				2		58
WA	32	3			1			36
TOTAL	166	69	2	3	2	5	3	250

1. NG = Non-groupable
2. Strains not available

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determined for five isolates. Serogroup B strains predominated in all States. There was a considerable reduction in the number of serogroup C isolates in New South Wales from 34 in 1994 to 16 in 1995. The marked predominance of serogroup B in Western Australia was again evident. Two isolates only of serogroup A were found, three of serogroup Y and two of serogroup W135.

Age group and sex

The age and sex distribution of patients infected with invasive isolates is shown in the Figure. The peak incidence of meningococcal disease occurred in those four years of age and under. There were 56 cases (22%) in those less than one year of age and 50 (20%) in the 1 - 4 years age group. Another peak was in the 15 - 24 years age group with 65 cases (26%). These findings showed a typical distribution of meningococcal disease.

Site of isolation

It is recognised that site of isolation of the organism is an inadequate classification as it probably underestimates the number of cases of meningitis where there was no lumbar puncture or where lumbar puncture was delayed and culture was sterile.

While other indicators may suggest meningitis in the absence of a positive cerebrospinal fluid (CSF) culture, and have been provided by respondents, in the interests of uniformity the above approach was used.

Within the limitations noted above, CSF isolates (either alone or with a blood culture isolate) totalled 116 (from 67 males and 49 females). This was fewer than the 133 blood culture isolates (from 69 males and 64 females) without culture of the organism from CSF.

Outcome

Outcome data (survived or died) were available for 190 of the 250 cases.

In cases of meningococcal meningitis, outcome data were available for 89 patients (Table 2). There were five deaths (6%).

In septicaemic patients where information on outcome was available, 8 of 101 (8%) patients died (Table 3).

Antibiotic susceptibility

Considerable interest has been shown in the decrease in sensitivity of meningococci to penicillin in recent years. Strains with these characteristics have now been found in many parts of the world. Also, sporadic reports of beta-lactamase producing meningococci continue to appear[2].

Other isolates have also been shown to be resistant to other antibiotics currently used either therapeutically or prophylactically in meningococcal disease. This program therefore undertakes routine surveillance of the antibiotic susceptibility of invasive isolates.

Penicillin

In the absence of accurate correlations between clinical response and in vitro sensitivity data in meningococcal disease, it is not possible to provide precise definitions of what constitutes a penicillin 'resistant' meningococcus.

Minimal inhibitory concentration (MIC) data are method dependent and not necessarily directly comparable when different techniques are used. This program uses the following parameters to define the various levels of penicillin susceptibility or resistance when determined by a standardised agar plate dilution technique:

sensitive: MIC ≤ 0.03 mg / L;

less sensitive: MIC 0.06 - 0.5 mg / L;

relatively resistant: MI C ≥ 1 mg / L.

Strains with MICs which place them in the category of 'sensitive' or 'less sensitive' would be considered to be amenable to penicillin therapy when used in currently recommended doses.

Using these criteria, 92 of the 247 (37%) invasive isolates tested were sensitive and 155 (63%) less sensitive to penicillin. The MICs ranged from 0.002 to 0.5 mg / L. This compares with 1994, where 102 of 214 (48%) isolates were fully sensitive and 112 (52%) less sensitive to penicillin with the MIC range 0.008 to 0.25 mg / L.

Other antibiotics

All 245 isolates tested were sensitive to ceftriaxone (and by extrapolation to other third-generation cephalosporins), rifampicin and ciprofloxacin. The latter two antibiotics are prophylactic, not therapeutic agents. A single isolate from New South Wales had a raised MIC to chloramphenicol.

Sulphonamide testing was not performed. Preliminary data indicated a significant amount of resistance to this agent in local isolates. This agent is no longer used in the treatment of this disease.

Table 2. Outcome of cases with meningitis, by serogroup

Serogroup	B	C	Y	U[1]	Total
Survived	58	22	3	1	84
Died	4	1			5
TOTAL	62	23	3	1	89

1. Not serogrouped.

Table 3. Outcome of cases with septicaemia, by serogroup

Serogroup	B	C	W135	NG[1]	Total
Survived	64	23	2	4	93
Died	5	3			8
TOTAL	69	26	2	4	101

1. Non groupable

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Isolates were received in the reference centres from many laboratories throughout Australia. The considerable time and effort involved in forwarding these strains is recognised and their efforts are greatly appreciated. These data could not have been provided without this assistance and the help of colleagues and public health personnel.

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ANTIMICROBIAL RESISTANCE IN GONOCOCCI , WHO WESTERN PACIFIC REGION, 1995

The World Health Organization Western Pacific Gonococcal Antimicrobial Surveillance Programme[1]

Abstract

The World Health Organization (WHO) Western Pacific Region Gonococcal Antimicrobial Surveillance Programme tested the susceptibility of about 7,000 isolates to a core group of antibiotics in 16 focal settings in 1995. Resistance to the quinolone antibiotics, which had increased significantly since 1992, was again widespread. Twelve of the 14 centres noted some quinolone-resistant gonococci with particularly high rates being observed in China, Hong Kong, the Philippines and Japan. High rates of resistance to the penicillin group were also common throughout the region. In contrast, resistance to spectinomycin and later generation cephalosporins was infrequent or absent. There was significant geographic variation in the rates of high level tetracycline resistance, but this changed little in 1995 from the distribution seen in earlier years. These results indicate that gonococcal infections in the WHO Western Pacific Region are becoming more difficult and more expensive to treat. ***Comm Dis Intell* 1996;20:425-428.**

Background

The World Health Organization (WHO) Western Pacific Region (WPR) Gonococcal Antimicrobial Surveillance Programme (GASP) commenced in 1992. Recent WHO estimates put the number of new cases of gonorrhoea worldwide at 62 million annually[1]. A significant portion of these cases occur in the Western Pacific Region. The same sources indicate that the serious morbidity that often accompanies gonococcal disease can be greatly reduced by appropriate treatment. It is now also acknowledged that gonorrhoea is a potent cofactor in the transmission of the human immunodeficiency virus (HIV)[2,3,4]. The converse of this situation is that better sexually transmitted disease (STD) treatment and, through it, a reduction in the prevalence of STDs, reduces HIV transmission[5]. There are thus clearer and more cogent reasons than ever before to ensure that gonococcal disease is properly treated when it cannot be otherwise prevented[6].

One strategy adopted by the WHO to obtain information on gonococcal susceptibility patterns and thereby implement appropriate and proper treatment has been to establish a global surveillance network to monitor antibiotic resistance in gonococci - the Gonococcal Antimicrobial Surveillance Programme. The WHO WPR GASP network was established to provide reliable data on antibiotic resistance which would benefit not only the Region itself, but also have a wider application.

Methods

Data on gonococcal isolates were provided by participants in focal points in various countries throughout the WHO WPR. A list of members of the programme is contained in the acknowledgements.

Participants were encouraged to examine a recommended core list of antibiotics using one of the standard methods nominated by the programme. However not all isolates were examined for sensitivity to all agents by all participants. A series of reference strains are made available and a quality assurance programme is conducted each year.

Most strains examined were from non-selected STD clinic patients, but some were obtained as a result of case finding. In some countries with a small geographic area (for example Singapore and Hong Kong), isolates were examined in a single centre. Data from other centres represent an analysis of strains referred throughout the country to a central laboratory, as in Malaysia. Other countries (for example Australia and China) have a network of contributors supplying data from a national surveillance scheme.

Results

Approximately 7,000 isolates were examined in 16 focal groupings between 1 January and 31 December 1995.

Trends in susceptibility have become more easily discernible as the period of continuous surveillance has increased. About 27,000 strains have been examined in this programme since 1992.

Penicillins

Interest remains in the extent and type of resistance to the penicillins, although the clinical usefulness of this group of antibiotics has decreased significantly in the WPR over a number of years. The proportion of isolates resistant to the penicillin group by one or more mechanisms ranged between 3% and 98% of isolates in the 16 contributing centres (Table 1). Particularly high levels of penicillin resistance were recorded in Vietnam (98%), Korea (90%), China (84%) and Malaysia (80%).

The programme seeks separate data on the extent of penicillin resistance manifested either through plasmid-

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mediated penicillinase production (PPNG) or through chromosomally controlled intrinsic resistance (CMRNG). Both forms of resistance may exist simultaneously in the one isolate, but the latter type may be masked in PPNG.

PPNG were widespread throughout the WPR in 1995. New Caledonia was the only centre not recording the presence of PPNG, although the proportion of PPNG in Papua New Guinea, Fiji and Japan was also low. A steady increase in the proportion of PPNG has been noted in some countries since the inception of this programme. In Vietnam the proportion of PPNG increased from 55% in 1992 to 93% in 1995. An increasing proportion of CMRNG has also been detected over the life of the programme. In Hong Kong, isolates of this type now represent 73% of all isolates, while the proportion of PPNG has declined to 5%.

Spectinomycin

About 3,500 isolates were examined in 11 countries in 1995. Only three spectinomycin-resistant strains were detected - one in China, one in Papua New Guinea and the other in New Caledonia.

Spectinomycin-resistant strains have been consistently seen only in China (in low numbers) since 1992, and only as sporadic isolates in a few other centres. Notably there was no spectinomycin resistance seen in the sample of isolates from Korea. Spectinomycin resistance was a particular problem in Korea in the 1980s. The current lack of in vitro resistance to spectinomycin in most of the region may reflect the declining use of this injectable agent in recent years.

Ceftriaxone

About 4,400 strains were examined for resistance to ceftriaxone in 12 centres. One isolate from New Caledonia was reported as resistant.

There is no documented case of treatment failure with third generation cephalosporins and consequently no correlation between in vitro findings and clinical outcome is available. However it is recognised that levels of susceptibility to the cephalosporins have decreased in the periods surveyed. If a relationship between these increasing levels of resistance and treatment failure were to be established, it would be a worrying development because of the important place of this antibiotic group in the therapy of gonorrhoea.

Quinolone antibiotics

Particular interest is centred on emerging gonococcal resistance to this group of until-now useful oral antibiotics. In this 12 month period about 6,600 isolates of gonococci were examined in 14 centres for their susceptibility to quinolone agents.

The pattern of increased quinolone resistance was first described in the WPR in 1993 and was maintained in 1994 and 1995. Quinolone resistance was detected in all centres except Fiji and the Solomon Islands (Table 2).

Table 1. Penicillin resistance in gonococci, WHO Western Pacific Region, 1995

Country	Strains tested	Lactamase mediated resistance (PPNG)		Chromosomal resistance (CMRNG)		All penicillin resistance (PP+CMRNG)	
		Number	%	Number	%	Number	%
Australia	2147	161	7.5	179	8.3	340	15.8
China	452	-	-	-	-	380	84
Fiji	977	42	4.3	7	0.7	49	8
Hong Kong	1895	92	4.9	1377	72.7	1469	77.6
Japan	35	1	2.9	8	22.9	9	25.8
Korea	96	74	77	13	13.5	87	90.5
Malaysia	76[1]	36	47.4	141	26.4	-	73.8
New Caledonia	19	0	0	3	15.8	3	15.8
New Zealand	289	27	9.3	17	5.9	44	15.2
Papua New Guinea	87	3	3.4	0	0	3	3.4
Philippines	16	8	50	3	18.8	11	68.8
Singapore	642[2]	315	49	35	5.5	-	54.5
Solomon Islands	4	1	25	0	0	1	25
Tonga	51	24	47	0	0	24	47
Vanuatu	175	-	-	-	-	16	9.1
Vietnam	97	90	92.8	5	5.1	95	97.9

1. 53 of 76 tested for chromosomal resistance.
2. 327 of 642 tested for chromosomal resistance.

Table 2. Quinolone resistance in gonococci, WHO Western Pacific Region, 1995

Country	Strains tested	Resistant		Less sensitive	
		Number	(%)	Number	%
Australia	2108	40	1.9	33	1.6
China	394	61	15.5	318	80.7
Fiji	977	0	0	0	0
Hong Kong	1895	146	7.7	1090	57.5
Japan	34	10	29.4	6	17.6
Korea	96	0	0	15	15.6
Malaysia	53	0	0	1	1.9
New Caledonia	19	0	0	6	31.6
New Zealand	300	1	0.3	7	2.3
Papua New Guinea	86	1	1.2	0	0
Philippines	16	11	68.8	0	0
Singapore	594	17	2.9	48	8.1
Solomon Islands	4	0	0	0	0
Vietnam	73	4	5.5	6	8.2

Quinolone resistance is chromosomally mediated and levels of resistance increase incrementally. The first clinically manifested resistance observed was at a low minimal inhibitory concentration (MIC) level and was accommodated by increasing the recommended dose of antibiotic administered. Subsequently strains with higher MICs were detected and these were not amenable to therapy even with higher dose regimens. These different levels of resistance are shown in Table 2 as less sensitive and resistant groups respectively (these categories have been correlated with clinical outcome data).

The proportion of less sensitive strains increased significantly in many centres since 1992 and the proportion of less sensitive isolates was maintained near or above 1994 figures. The highest rate of less sensitive strains was observed in China (80%) and Hong Kong (58%).

Additionally there was an increase in the proportion of strains classified as resistant in a number of centres. The highest proportion of quinolone-resistant gonococci was seen in the Philippines (69%) and Japan (29%), although sample numbers from both centres were low.

This resistance was noted in only a single centre in 1992 and then in only a few gonococcal isolates. By 1995 the quinolone-resistant strains were present in nine centres and in much higher numbers.

High level tetracycline resistance

Tetracyclines are administered as a multiple dose treatment for gonorrhoea and are not a recommended therapy for gonorrhoea. However, a particular form of plasmid-mediated tetracycline resistance (TRNG) has been recognised for a number of years. The programme has monitored the spread of this form of resistance in the region.

About 4,800 isolates were examined in 1995 in 14 countries. TRNG were present in nine of these centres (Table 3). Particularly high proportions of TRNG were again seen in Singapore, Malaysia and Vietnam, but there was little overall change in the existing distribution of TRNG in 1995.

Other antimicrobials

Six countries tested the sensitivity of their isolates to other antimicrobials (Table 4).

Table 3. High level tetracycline resistance (TRNG) in gonococci, WHO Western Pacific Region, 1995

Country	Strains tested	TRNG	
		Number	%
Australia	2108	113	5.4
China	437	35	8
Fiji	977	0	0
Japan	35	0	0
Korea	96	0	0
Malaysia	53	31	58.5
New Caledonia	19	3	15.8
New Zealand	300	6	2
Papua New Guinea	86	1	1.2
Philippines	16	3	18.8
Singapore	594	379	63.8
Solomon Islands	4	0	0
Tonga	54	0	0
Vietnam	97	41	42.3

Table 4. Resistance to other antimicrobials in gonococci, WHO Western Pacific Region, 1995

Antimicrobial	Country	Strains tested	Resistant	
			Number	%
Kanamycin	Malaysia	53	2	3.8
Cefuroxime	Malaysia	53	0	0
Cephaclor	Vietnam	87	3	3.5
Chloramphenicol	New Caledonia	19	0	0
	Vietnam	97	14	14.4
Augmentin	Fiji	977	7	0.7
Azithromycin	Singapore	253	0	0

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OVERSEAS BRIEFS

Source: World Health Organization (WHO)

Viral meningitis, Romania, update

By 23 September a total of 450 cases of viral meniningitis had been reported in the outbreak which started in Bucharest at the end of July. The number of new cases has decreased. More than half the cases occurred in adults and more than 200 were in people over 60 years of age. Thirty-nine patients died. The WHO Collaborating Centre for Reference and Research on Arboviruses and Haemorrhagic Fevers at the Pasteur Institute, France has confirmed infection with West Nile virus in 89% of the patients investigated. Infection with West Nile virus can be asymptomatic or cause an influenza-like illness. Severe manifestations include meningitis and meningoencephalitis, particularly in the elderly. Migratory birds are the natural reservoir; the virus is transmitted to humans by *Culex* mosquitoes. The virus has been detected in Europe but is more common further south, in the Mediterranean region, Africa and western Asia. Precautions against infection include avoiding mosquito bites either through protective clothing or mosquito repellants

Polio, Albania

An outbreak of paralytic illness has been reported by Albania. The first cases were reported in April 1996, but there was a sharp increase in cases occurring in late July and August. Additional cases continue to be reported. The clinical picture was acute onset, asymmetric flaccid paralysis typical of poliomyelitis. A WHO team is assisting the Albanian Ministry of Health in investigating the outbreak. The team has investigated 66 cases of paralytic illness. There were seven deaths. WHO reference laboratories in Italy and the Netherlands have now isolated wild poliovirus type 1 from seven cases. The Ministry of Health, with the support of WHO, UNICEF and others is planning to immunise both adults and children with oral polio vaccine.

Influenza, Argentina

Cases and outbreaks of influenza-like illness were reported in Cordoba, Mendoza and Santa Fe, Argentina, during June and July. Activity in Cordoba affected mainly adults and reached a peak at the end of July. Specimens obtained in all 3 cities are under investigation at the National Influenza Centre in Cordoba. So far, influenza A(H_3N_2) virus was isolated from 2 of 35 specimens collected among factory workers in Cordoba in July and influenza A was diagnosed by immunofluorescence in 6 of 18 cases among children and adults in Santa Fe.

COMMUNICABLE DISEASES SURVEILLANCE

National Notifiable Diseases Surveillance System

The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia-New Zealand. The system coordinates the national surveillance of 41 communicable diseases or disease groups endorsed by the National Health and Medical Research Council (NHMRC). Notifications of these diseases are made to State and Territory health authorities under the provisions of their respective public health legislation. De-identified core unit data are supplied fortnightly for collation, analysis and dissemination. For further information, see CDI 1996;20:9-10.

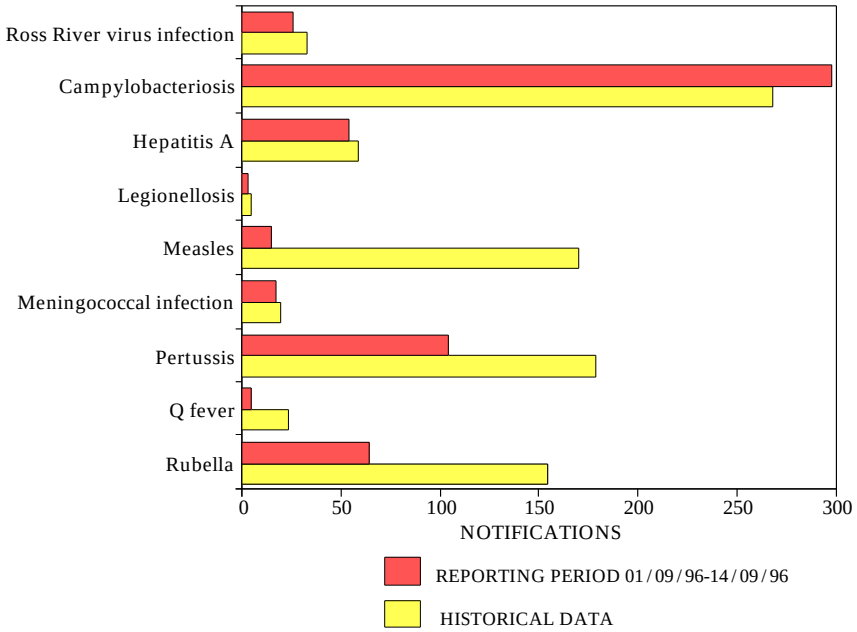
Reporting period 1 to 14 September 1996

There were 1,289 notifications received for this two-week period (Tables 1, 2 and 3). For Victoria new data was only available for the sexually transmissible diseases this fortnight. The numbers of reports for selected diseases have been compared with average data for this period in the previous three years (Figure 1).

One hundred and four notifications of **pertussis** were received this fortnight. The number of cases reported in recent months has been low compared with the same period last year (Figure 2). A total of 1,961 cases with onset dates in 1996 has been received so far. Two hundred and sixty-seven (14%) of these were for children under the age of 5 years, with 624 (32%) being for the under 10 years age group (Figure 3).

Rubella was reported for 64 persons this fortnight. The number of notifications has remained low in recent months (Figure 4). Of the notifications received for 1996, 44% were for the 15 to 24 years age group and the male:female ratio was 1.9:1 (Figure 5).

Figure 1. Selected National Notifiable Diseases Surveillance System reports, and historical data[1,2]



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.
2. No data were included from Victoria.

Figure 2. Pertussis notifications, 1994 to 1996, by month of onset

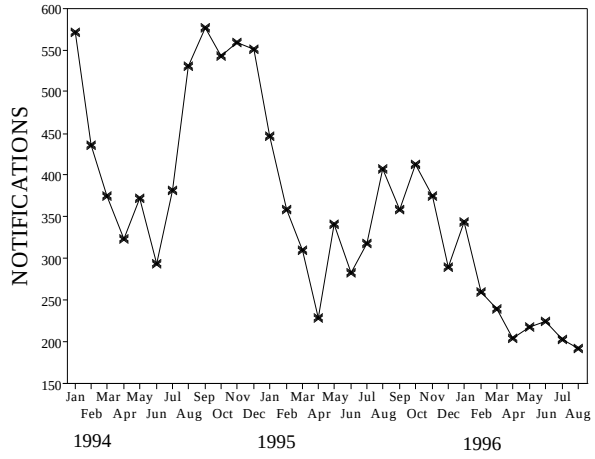


Figure 3. Pertussis notifications, 1996, by age group and sex

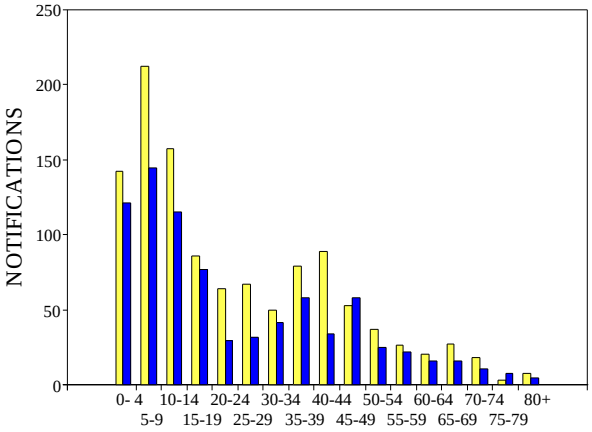


Figure 4. Rubella notifications, 1994 to 1996, by month of onset

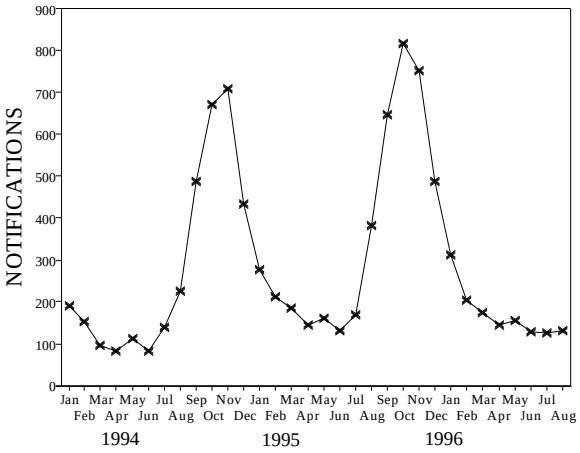


Figure 5. Rubella notifications, 1996, by age group and sex

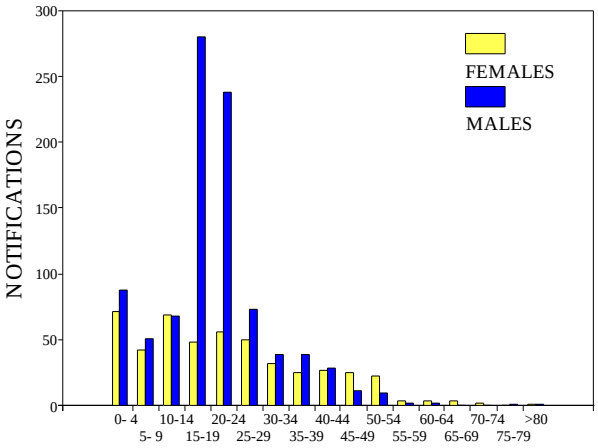


Table 1. Notifications of diseases[1] preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 1 to 14 September 1996

DISEASE	ACT	NSW	NT	Qld	SA	Tas	WA	TOTALS FOR AUSTRALIA[2]			
								This period 1996	This period 1995	Year to date 1996	Year to date 1995
Diphtheria	0	0	0	0	0	0	0	0	0	0	0
Haemophilus influenzae B infection	0	0	0	0	1	0	0	1	3	45	51
Measles	0	8	0	4	0	2	1	15	31	345	1037
Mumps	2	0	0	NN	0	0	2	4	7	86	104
Pertussis	2	25	0	31	40	1	5	104	199	2146	2955
Rubella	0	10	0	35	10	3	6	64	213	1732	1883
Tetanus	0	0	0	0	0	0	0	0	0	1	3

NN Not Notifiable.

1. No notifications of poliomyelitis have been reported since 1986.

2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision, so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.

Table 2. Notifications of other diseases[1] received by State and Territory health authorities in the period 1 to 14 September 1996

DISEASE	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1996	This period 1995	Year to date 1996	Year to date 1995
Arbovirus Infection (NEC)[3,4]	0	0	0	0	0	0		0	0	2	128	54
Barmah Forest virus infection	0	4	-	8	0	0	-	-	12	14	642	628
Ross River virus infection	0	2	1	20	1	-		2	26	32	7459	2362
Dengue	0	0	0	0	0	-		2	2	0	29	22
Campylobacteriosis[5]	6	-	5	73	146	15	1	52	298	440	8169	7238
Chlamydial infection (NEC)[6]	3	NN	21	141	0	13	71	41	290	211	5296	4341
Donovanosis	0	NN	0	0	NN	0	0	2	2	4	35	57
Gonococcal infection[7]	0	14	28	32	0	0	11	34	119	106	2720	2231
Hepatitis A	2	26	3	15	5	0		3	54	55	1691	1081
Hepatitis B incident	0	0	0	2	0	0		1	3	16	148	237
Hepatitis C incident	2	0	1	-	0	-	-	-	3	2	22	61
Hepatitis C unspecified	8	NN	7	75	NN	1		26	117	397	6804	6688
Hepatitis (NEC)	0	1	0	0	0	0		NN	1	2	16	10
Legionellosis	0	1	0	1	0	0		1	3	3	131	129
Leptospirosis	0	0	0	5	0	0		0	5	6	169	90
Listeriosis	0	0	0	1	0	0		0	1	4	42	47
Malaria	2	7	0	25	0	0		2	37	35	643	487
Meningococcal infection	1	4	0	6	2	0		3	17	24	287	252
Ornithosis	0	NN	0	0	0	0		0	0	4	60	84
Q fever	0	1	0	3	0	0		0	4	15	387	330
Salmonellosis (NEC)	0	24	9	45	15	3		8	104	145	4246	4483
Shigellosis[5]	0	-	6	1	1	0		3	11	16	485	575
Syphilis	0	13	10	15	0	0	0	0	38	66	1072	1357
Tuberculosis	2	6	0	3	0	0		0	11	50	755	720
Typhoid[8]	0	0	0	1	0	0		0	1	0	61	56
Yersiniosis (NEC)[5]	0	-	1	8	0	0		0	9	5	181	238

1. For HIV and AIDS, see Tables 4 and 5. For rarely notified diseases, see Table 3 .
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. NT, Vic and WA: includes Barmah Forest virus.
5. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
6. WA: genital only.
7. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
8. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 3. Notifications of rare[1] diseases received by State and Territory health authorities in the period 1 to 14 September 1996

DISEASES	Total this period	Reporting States or Territories	Year to date 1996
Brucellosis	2	Qld	27
Chancroid	0		1
Cholera	0		3
Hydatid infection	1	Qld	31
Leprosy	0		8

1. Fewer than 60 cases of each of these diseases were notified each year during the period 1988 to 1995.
2. No notifications have been received during 1996 for the following rare diseases: botulism; lymphogranuloma venereum; plague; rabies; yellow fever; or other viral haemorrhagic fevers.

National Influenza Surveillance

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; World Health Organisation Collaborating Centre for Influenza Reference and Research.

National Influenza Surveillance is conducted from May to September each year. Data are combined from a number of sources to provide an indication of influenza activity. Included are sentinel general practitioner surveillance, absenteeism data from a national employer, and laboratory data from LabVISE and the World Health Organization Collaborating Centre for Influenza Reference and Research. For further information, see CDI 1996;20:9-12.

The absenteeism rate recorded by Australia Post appears to have remained steady, but reports for August and the first week of September have been excluded due to an error in the data (Figure 6). Consultation rates for influenza-like illness in New South Wales and Victoria, and those recorded by ASPREN continued to fall (Figure 7). No report was received from the Northern Territory this period.

The number of laboratory reports of influenza A continued to fall after peaking at the end of July (Figure 8). In the last fortnight, 123 reports were received. Diagnosis was by virus isolation (37), antigen detection (9), single high titre (70) and four-fold rise in titre (7). There have been 1,399 reports of influenza A for the year to date, 65 of which were H_3N_2. Four reports of influenza B were also received this fortnight. Influenza B activity has remained low this year (Figure 9).

Figure 6. Australia Post absenteeism, 1996, by week

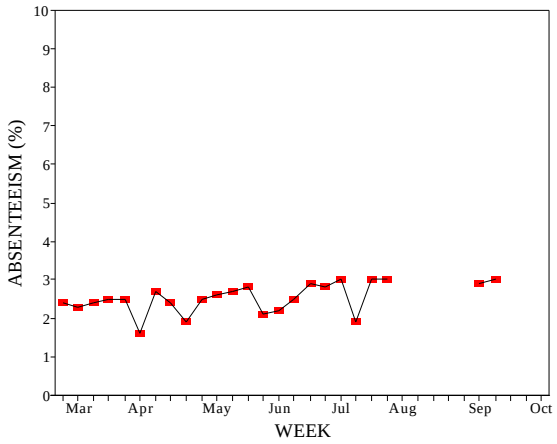


Figure 7. Sentinel general practitioner influenza-like illness consultation reports per 1,000 encounters, 1996, by week

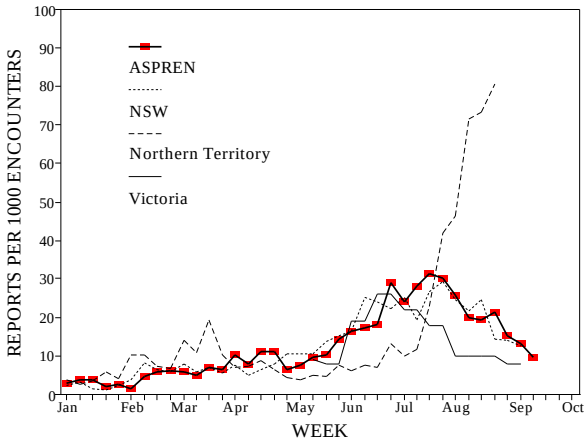


Figure 8. Influenza A laboratory reports, 1996, by method of diagnosis and week of specimen collection

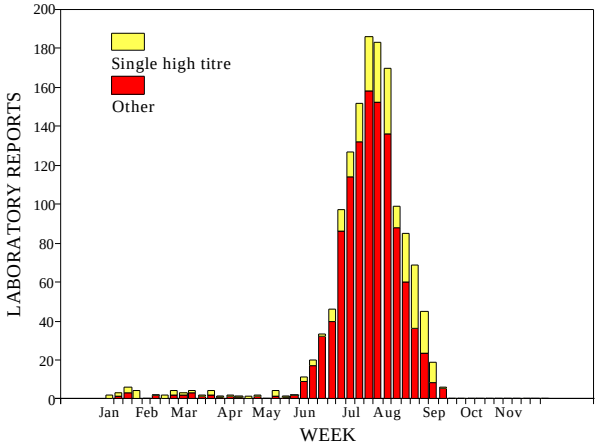


Figure 9. Influenza B laboratory reports, 1996, by method of diagnosis and week of specimen collection

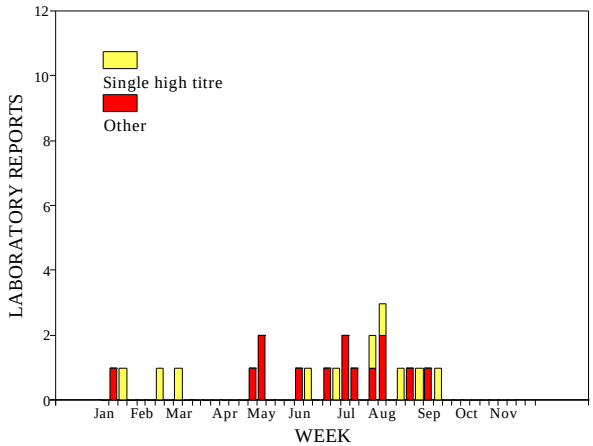


Table 4. Australian Sentinel Practice Research Network reports, weeks 36 and 37, 1996

Condition	Week 36, to 8 September 1996		Week 37, to 15 September 1996	
	Reports	Rate per 1,000 encounters	Reports	Rate per 1,000 encounters
Influenza	104	13.1	66	9.4
Rubella	1	0.1	1	0.1
Measles	0	0	0	0
Chickenpox	8	1.0	21	3.0
Pertussis	1	0.1	2	0.3
Gastroenteritis	124	15.6	93	13.3

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network (ASPREN) comprises 99 sentinel general practitioners from throughout the country. A total of approximately 9,000 consultations are recorded each week for 12 conditions. Of these, CDI reports the consultation rate for influenza, rubella, measles, pertussis and gastroenteritis. For further information including case definitions see CDI 1996;20:98-99.

Data for weeks 36 and 37 ending 8 and 15 September respectively are included in this issue of *CDI* (Table 4). The consultation rate for gastroenteritis has remained steady since mid-July. Consultation rates for chickenpox have fluctuated in recent weeks, after remaining level over the previous three months. Cases of rubella, measles and pertussis continue to be reported in low numbers.

Gonococcal surveillance

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

Australian Gonococcal Surveillance Programme (AGSP) reference laboratories in the various States and Territories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics which are currently routinely surveyed are the penicillins, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens. Additional data are also provided on other antibiotics from time to time. At present all laboratories also test isolates for the presence of high level resistance to the tetracyclines. Tetracyclines are however not a recommended therapy for gonorrhoea. Comparability of data is achieved through the use of a standardised system of testing and a programme-specific quality assurance programme. Because of the geographic differences in susceptibility patterns, regional as well as aggregated data are presented.

Reporting period 1 October to 31 December 1995

The AGSP reference laboratories examined 595 isolates of *Neisseria gonorrhoeae* for sensitivity to the penicillins, ceftriaxone, ciprofloxacin and spectinomycin and for high level resistance to tetracylines in the December quarter of 1995.

Penicillins

This group of antibiotics still remains useful in some parts of Australia where resistant strains are infrequently encountered, but is least effective in Sydney and Melbourne where about 30% of isolates were penicillin resistant.

Figure 10 shows the proportion of strains fully sensitive to penicillin, less sensitive, relatively resistant or penicillinase-producing (PPNG) in different regions, and aggregated data for Australia. Infections with strains which are PPNG or in the relatively resistant category usually fail to respond to the penicillins.

There were 45 PPNG detected throughout Australia in this quarter (8% of all isolates). Sixteen of these were in Sydney (11% of isolates there), 11 in Melbourne (13%) and Perth (8%), 4 in Brisbane (4%), 2 in Hobart and 1 in Darwin. Most of the 'imported' isolates were from infections acquired in south-east Asian countries.

There were 41 isolates resistant to penicillin by chromsomal mechanisms (CMRNG). These were detected in Sydney (24 isolates, 17% of strains there), Melbourne (14 strains, 17%) and Perth (3, 2%).

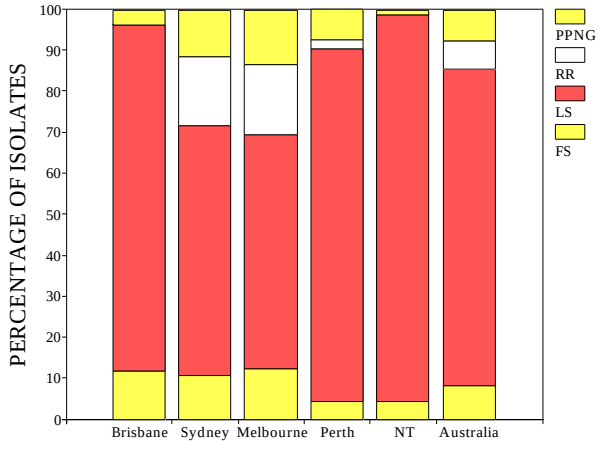
Ceftriaxone and spectinomycin

All 595 strains from all parts of Australia were sensitive to these injectable agents.

Quinolone antibiotics

In this quarter, 15 isolates throughout Australia displayed altered quinolone sensitivity (3% of all strains). These were

Figure 10. Penicillin resistance of gonococcal isolates for Australia and by region, 1 October - 31 December 1995



PPNG Penicillinase-producing *Neisseria gonorrhoeae*
RR Relatively resistant to penicillin, MIC ≥ 1 mg / L
LS Less sensitive to penicilin, MIC 0.06 - 0.5 mg / L
FS Fully sensitive to penicillin, MIC ≤ 0.03mg / L

detected in Melbourne (5 isolates - 6%), Sydney (6 isolates - 4%), Perth (3 strains - 2%) and in a single isolate in Adelaide. Strains with high level quinolone resistance were detected in Sydney, Melbourne and Perth.

Patients were infected with QRNG in China, Indonesia, Hong Kong, Japan, the Philippines, the Middle East and within Australia.

High level tetracycline resistance (TRNG)

Twenty-eight TRNG were detected throughout Australia (5% of the total) in this quarter. Eleven were in Sydney (8% of strains there), 5 in Melbourne (6%), 7 (5%) in Perth, four in Brisbane and a single strain in the Northern Territory. This is similar to the numbers of TRNG detected in the September quarter of 1995 and approximates the proportion of TRNG seen in the December quarter of 1994.

Infections with TRNG were acquired in Indonesia, Thailand and Singapore and, increasingly, through local contact.

Serious Adverse Events Following Vaccination Surveillance Scheme

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

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

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

Results for the reporting period 7 July to 14 September 1996

There were 29 reports of serious adverse events following vaccination for this reporting period. Reports were received from the Australian Capital Territory (6), the Northern Territory (3), Queensland (7), Victoria (5) and Western Australia (8).

The reports included cases of persistent screaming, hypotonic / hyporesponsive episodes, temperature of 40.5^{o}C or more, convulsions, one episode of anaphylaxis and 6 'other' events (Table 5). The 'other' events included 4 large local reactions, two episodes of rash and one of unwillingness to use the legs following vaccination.

Four children were hospitalised. All cases recovered.

LabVISE

The Virology and Serology Reporting Scheme, LabVISE, is a sentinel reporting scheme. Twenty-one laboratories contribute data on the laboratory identification of viruses and other organisms. Data are collated and published in Communicable Diseases Intelligence each fortnight. These data should be interpreted with caution as the number and type of reports received is subject to a number of biases. For further information, see CDI 1996;20:9-12.

There were 1,384 reports received in the *CDI* Virology and Serology Reporting Scheme this period (Tables 6 and 7).

Thirty-eight reports of **rubella virus** were received this period. The number of reports is similar to that for the same time last year but below that for 1994 (Figure 11).

Ross River virus was reported for 21 patients this fortnight. The number of reports received in recent months is low, which is usual for the time of year (Figure 12).

The number of reports of **parainfluenza virus type 3** has been low so far this year compared with last year (Figure 13).

One hundred and seven reports of **rotavirus** were received this fortnight for 53 males and 54 females. Ninety-three per cent of reports were for children under the age of 5 years. The number of reports received was average through the month of July (Figure 14).

Table 5. Adverse events following vaccination for the period 7 July to 14 September 1996

Event	Vaccines					Reporting States or Territories	Total reports for this period
	DTP	DTP / OPV / Hib	DTP / Hib	DTP / OPV	MMR		
Persistent screaming	3	6	2			ACT, NT, Qld, Vic, WA	11
Hypotonic / hyporesponsive episode	1	1	1		1	ACT, Vic, WA	4
Temperature ≥ 40.5° C	1	1	2			Qld, WA	4
Anaphylaxis					1	WA	1
Convulsions			1		2	Qld, Vic, WA	3
Other	2	2	1	1		ACT, NT, Qld, Vic	6
Total	7	10	7	1	4		29

Figure 11. Rubella virus laboratory reports, 1994, 1995 and 1996, by month of specimen collection

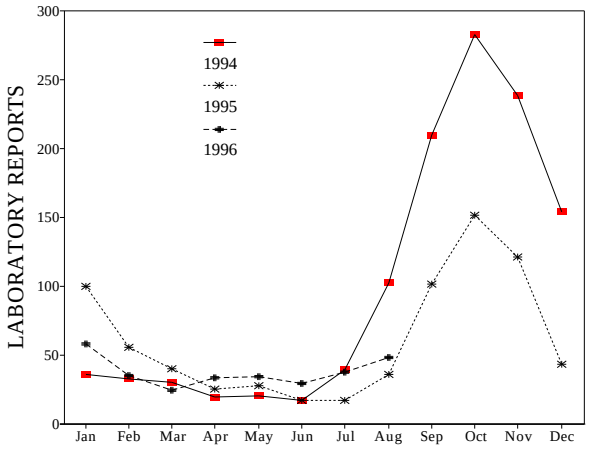


Figure 12. Ross River virus laboratory reports, 1993 to 1995 average and 1996, by month of specimen collection

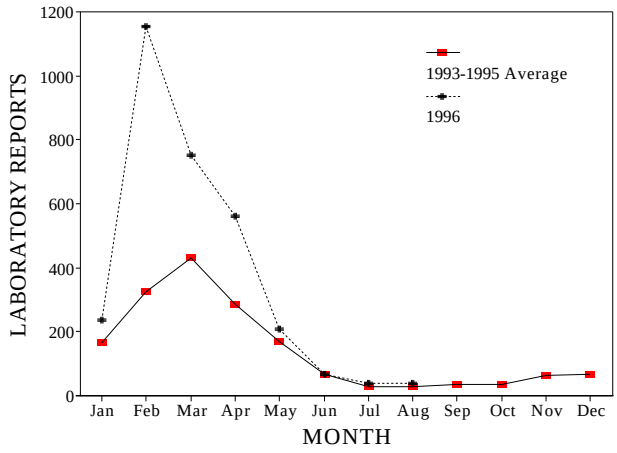


Figure 13. Parainfluenza virus type 3 laboratory reports, 1994, 1995 and 1996, by month of specimen collection

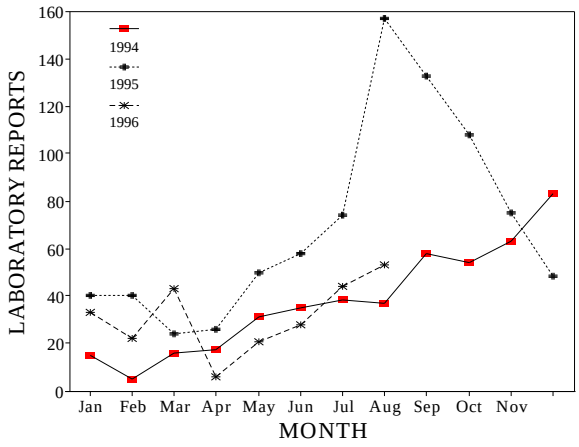


Figure 14. Rotavirus laboratory reports, 1991 to 1995 average and 1996, by month of specimen collection

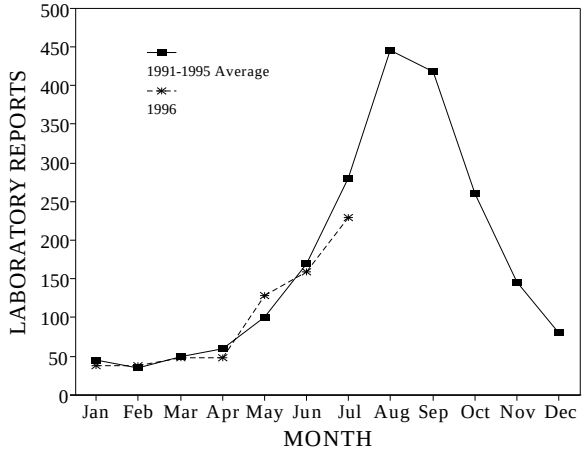


Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 5 to 18 September 1996, historical data[2], and total reports for the year

	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	1			2	5	23.7	41
Mumps virus								2	2	2.0	32
Rubella virus		1		30			3	4	38	34.3	428
HEPATITIS VIRUSES											
Hepatitis A virus			3	4	4			3	14	13.3	339
ARBOVIRUSES											
Ross River virus			7	4				10	21	6.5	3,083
Barmah Forest virus		1		2				1	4	3.0	180
Dengue not typed								1	1	1.0	13
ADENOVIRUSES											
Adenovirus type 1							1		1	3.0	15
Adenovirus type 2							1		1	1.5	22
Adenovirus type 3							1		1	1.8	63
Adenovirus type 40								2	2	.0	28
Adenovirus not typed / pending	1	10		25	5		4	27	72	43.5	1,082
HERPES VIRUSES											
Cytomegalovirus		4		28			7	18	57	55.8	1,253
Varicella-zoster virus		3		14	3	1	9	15	45	29.7	941
Epstein-Barr virus		9	1	35			13	49	107	42.3	1,534
OTHER DNA VIRUSES											
Parvovirus				10			4		14	4.0	147
PICORNA VIRUS FAMILY											
Coxsackievirus B3								1	1	.3	1
Coxsackievirus B4								1	1	.3	2
Coxsackievirus B5							2		2	.2	5
Echovirus type 4		1							1	.0	2
Echovirus type 7							1		1	.0	11
Poliovirus type 1 (uncharacterised)		1							1	.5	13
Poliovirus not typed / pending								1	1	.2	1
Rhinovirus (all types)		1		9	3		2	12	27	40.3	558
Enterovirus not typed / pending				27				23	50	37.7	693
ORTHO / PARAMYXOVIRUSES											
Influenza A virus		11	6	18	15		5	67	122	57.8	1,373
Influenza A virus H3N2				1					1	4.2	65
Influenza B virus								4	4	17.3	44
Parainfluenza virus type 1		2		2	4			3	11	2.5	292
Parainfluenza virus type 2				3	1				4	.7	63
Parainfluenza virus type 3		5		6			2	24	37	41.5	442
Parainfluenza virus typing pending		1						1	2	2.2	15
Respiratory syncytial virus		69		37	51		19	54	230	211.3	3,698
OTHER RNA VIRUSES											
HTLV-1								1	1	.2	7
Rotavirus		62			17		9	19	107	175.3	1,157

Table 6. Virology and serology laboratory reports by State or Territory[1] for the reporting period 5 to 18 September 1996, 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			
OTHER											
Chlamydia trachomatis - A-K							1		1	.0	1
Chlamydia trachomatis not typed	1	9	39	47	21		1	89	207	76.8	2,950
Chlamydia psittaci			1		1				2	3.3	73
Mycoplasma pneumoniae		11		9			11	18	49	20.3	557
Coxiella burnetii (Q fever)				1				2	3	3.7	141
Rickettsia tsutsugamushi				1					1	.2	10
Bordetella pertussis							93	6	99	24.5	434
Bordetella species				13					13	4.8	228
Legionella longbeachae								1	1	.7	13
Legionella species								2	2	.5	10
Leptospira species								1	1	.0	52
Schistosoma species							8	8	16	4.2	224
TOTAL	2	201	57	328	126	1	197	472	1,384	997.0	22,479

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 7. Virology and serology laboratory reports by contributing laboratories for the reporting period 5 to 18 September 1996

STATE OR TERRITORY	LABORATORY	REPORTS
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	29
	Royal Alexandra Hospital for Children, Camperdown	79
	Royal Prince Alfred Hospital, Camperdown	16
	South West Area Pathology Service, Liverpool	68
Queensland	Queensland Medical Laboratory, West End	231
	State Health Laboratory, Brisbane	117
South Australia	Institute of Medical and Veterinary Science, Adelaide	124
Victoria	Monash Medical Centre, Melbourne	27
	Royal Children's Hospital, Melbourne	105
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	67
Western Australia	PathCentre Virology, Perth	312
	Princess Margaret Hospital, Perth	93
	Western Diagnostic Pathology	116
TOTAL		1384