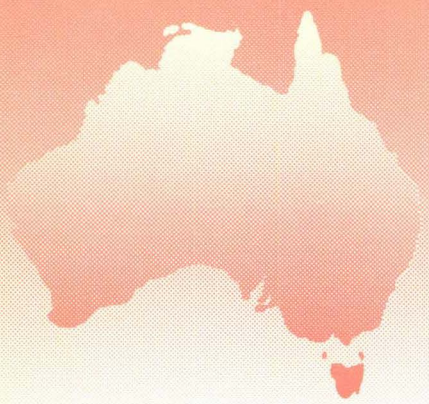

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COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

RESPONDING TO MENINGOCOCCAL DISEASE OCCURRING IN CHILDREN WHO ATTEND DAY-CARE CENTRES

J Hanna[1], *B McCall*[2], *N Parker*[3], *R Taylor*[4]

Public health physicians in four locations throughout Queensland have recently coordinated responses to cases of meningococcal disease occurring in children who attend day-care centres. This is not necessarily unusual considering that the peak incidence of meningococcal disease is in young children, and the peak season in Australia is during the winter-spring months[1]. However each episode raised concerns that reflect the complex issues involved in responding to such situations, and the collective experience provides an opportunity to review the rationale underlying the public health responses to prevent further cases.

Episode 1

In late July, a public health physician was notified that a three year old boy had died the previous day from probable meningococcal meningitis. He had been well until early in the day two days previously when he had developed fever and vomiting. He was seen by a general practitioner that morning, diagnosed as having a respiratory tract infection with otitis media, and commenced on oral antibiotics. He deteriorated throughout the day with further vomiting and then drowsiness, and a convulsion occurred at about 5.30pm en route to the regional hospital. A fleeting faint rash was noted on admission; a CT scan demonstrated gross cerebral oedema. He continued to deteriorate despite antibiotic therapy, and he died on the day after admission. Although blood cultures and post mortem CSF cultures were negative, gram negative diplococci were seen on microscopy of the CSF.

Eleven household and close playmate contacts were identified and dispensed rifampicin chemoprophylaxis. On the day prior to the onset of his illness the deceased child had attended a large local day-care centre, where he had been cohorted with 20 other children. The parents of the 20 children were contacted and invited to attend the centre the following (Saturday) morning to be given advice and to obtain rifampicin for their children. There were only a few doses of rifampicin syrup available at the hospital pharmacy, but extra supplies were able to be obtained from elsewhere by overnight air transport.

The public health physician, a public health nurse and an environmental health officer attended the Saturday morning session, with 22 children and one staff member eventually receiving rifampicin. The extra two children had spent half a day with the case's cohort; another (possibly pregnant) staff member was referred to the hospital to be given intramuscular ceftriaxone chemoprophylaxis.

A number of parents of children who attended the centre but who were not in the case child's cohort requested rifampicin prophylaxis for their children. Most, but not all, accepted the advice that their child had not had significant contact with the case; some asked their general practitioner for a further opinion. One general practitioner contacted the public health physician for advice, but decided to prescribe rifampicin against the physican's advice, 'to help allay the parent's anxiety'. As it turned out local pharmacies were unable to provide rifampicin syrup.

Episode 2

In the first week of August, a 10 month old girl was admitted to a regional hospital with an illness later confirmed as serogroup B meningococcal meningitis. Her family contacts were provided with rifampicin prophylaxis by the hospital; she eventually made a good recovery.

She had attended a local child day-care centre for three days, five hours per day, during the incubation period. She was cohorted at the centre with eleven other children aged from 12 months to 3.5 years. All members of this cohort and all nine staff caring for the cohort, and one older child (5.5 years) who had significant contact with the case during the incubation period, were given prophylaxis. Other children in older cohorts at the centre had no significant contact with the case and did not receive prophylaxis.

A public health physician and a registered nurse visited the day-care centre to provide information to the parents as a group and to explain the rationale for providing prophylaxis to the children. Rifampicin was obtained from a local hospital pharmacy and provided free of charge to the children and staff. There was an insufficient supply of rifampicin capsules and therefore a private supply was obtained for two staff members. Although the provision of prophylaxis proceeded satisfactorily, a number of other parents raised concerns about older children who attended the centre. Parents and staff were satisfied with the physician's advice regarding the risk to the older children and no parent of a child from outside the affected cohort demanded prophylaxis.

The child had also briefly attended a public child-minding facility (1–2 hours over two days) and a party (1–2

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hours) with a number of young children six to seven days prior to the onset of illness. Because the contact between the case and children at the facility and the party was very brief, prophylaxis was not recommended for them. However, a few parents remained concerned and they independently sought prophylaxis from general practitioners.

Episode 3

In the second week of August, a two year old boy was admitted to a regional hospital with an illness subsequently proven to be serogroup B meningococcal meningitis. His family contacts were prescribed the usual rifampicin chemoprophylaxis; he too made a good recovery.

He had attended a local day-care centre for three days, nine hours per day, during the incubation period. He was cohorted with ten other children 18 months to 2.5 years of age at the centre, and his cohort mixed with the nine children in the infant cohort (aged up to 15 months) for four hours each day. There was no significant contact with the 38 children in two older cohorts at the centre. Therefore a decision was made to offer rifampicin to the 19 children in the index child's and infant cohorts (and to the staff caring for the two cohorts), and to give advice to the parents of the older children (but no prophylaxis to their children).

An experienced public health nurse was delegated to talk to staff and parents at the centre, to explain the signs and symptoms of the disease, to explain the rationale for prescribing prophylaxis only to the younger children, and to dispense the rifampicin. However there was inadequate rifampicin syrup at the hospital's pharmacy and although it could have been readily obtained from elsewhere, that would have delayed the response by 24 hours. Fortunately an adequate supply was available at an adjacent regional hospital pharmacy and it was obtained overnight prior to the planned response.

Activities at the centre proceeded satisfactorily. However a parent of an older child demanded rifampicin for her child and although this was refused by the public health physician, she was able to obtain it from a local general practitioner. Unfortunately the centre (against the advice of the physician) then paid for that child's medication. The remaining parents of the older children remained satisfied with the given advice and none subsequently demanded centre-funded rifampicin.

Episode 4

Also in the second week in August, a five year old girl was admitted to a regional hospital with an illness later proven to be serogroup C meningococcal meningitis. Extended family contacts were prescribed the usual rifampicin prophylaxis; she made a good recovery.

She attended a day-care centre most week days; the centre had places for 47 attendees but there were about 80 children enrolled. Most children attended only part of the week as determined by parental responsibilities, and therefore the mix of children varied from day to day.

The children were in four cohorts: nursery, toddlers, kindy and the case's pre-school. The three older cohorts mixed frequently in a common outside play area, and the case was known as an affectionate child who often cuddled other children and staff. The nursery was separate from other areas, but although older children not infrequently entered the babies' room to nurse the babies, staff could not recall the case child having done so during her incubation period. Therefore the decision was made to offer rifampicin to all children in the three older cohorts and to the respective staff (a total of 72 individuals), but not to the baby cohort children and staff.

A public health physician and a registered nurse visited the centre on 9 August, to get an understanding of the layout and cohorting arrangements within the centre, to talk to staff and to commence rifampicin prophylaxis. However, there was only enough rifampicin syrup in the hospital pharmacy for eight children and further supplies had to be obtained from elsewhere. Because the extra rifampicin was due in that evening at 7pm, parents of the remaining children were advised to attend the Accident and Emergency (A&E) Department of the hospital at 7.30 pm.

The outcome was considerable disruption to A&E activities: some parents began arriving at the A&E Department at 6.45pm, the layout of the Department was such that it was not possible to give advice to the adults collectively and a total of 64 children and staff presented for rifampicin. Consequently, the last rifampicin was dispensed at 11pm. Despite advice against prophylaxis, eight children from the nursery were given rifampicin. One had a definite history of contact with the case within the preschool centre but outside the nursery, four presented with siblings who were in older cohorts, and another three were brought by parents despite advice.

It was with some difficulty that some parents were persuaded that siblings who did not attend the centre did not need prophylaxis.

Comment

Child day-care attendance was a recognised risk factor for invasive *Haemophilus influenzae* type b disease in the pre-vaccine era[2], and a recent study has demonstrated an increased risk of invasive pneumococcal disease in day-care attendees[3]. However, no study has yet determined whether attendance at a day-care centre increases the risk of acquiring meningococcal disease in young children.

A number of reports of clusters of meningococcal disease occurring in day-care centres have been published (cited in reference 2). However, only two studies, one from Belgium (published in 1981) and the other from Russia (published in 1975), have prospectively examined the risk of secondary cases occurring in day-care contact children. In the former study the subsequent disease risk for children under three years of age was similar to that for household contacts (of a similar age) of an index case, and in the latter study a substantial

subsequent disease risk was also documented (see reference 2). Such studies are no longer likely to be undertaken as it is generally recommended that day-care children be given chemoprophylaxis following the diagnosis of meningococcal disease in an attendee child.

Authorities in the United Kingdom indicate that the rationale for rifampicin chemoprophylaxis is neither to treat those contacts already incubating the infection nor to prevent contacts from acquiring the disease by directly inhibiting colonisation (although it may do so for the two days of prophylaxis)[4,5]. Rather, they state that the rationale for prophylaxis is to eliminate nasopharyngeal carriage of the organism from asymptomatic contacts, and therefore to prevent subsequent transmission and secondary cases among further contacts[4,5]. If this rationale is correct, the use of prophylaxis should, if possible, be selective, being administered to only those contacts who could either have been the source of infection in the case child or have subsequently become carriers. They would have to have had 'at risk' contact (that is, prolonged or 'kissing' contact) with the case or, more precisely, the case would have to have had substantial 'exposure' to the contacts who are recommended for prophylaxis.

There are no absolute guidelines to determine those day-care contacts to whom the case has had substantial 'exposure'. This remains a matter for professional judgement, but should reflect the group of children with whom the case has spent most of his or her time at the centre. Brief and unsustained 'passing in the corridor' contacts cannot be considered to be an important enough risk to warrant prophylaxis.

Meningococcal disease generates much fear and concern among the public. Therefore any public response to meningococcal disease needs to be properly managed by appropriate public health personnel, with on-site visits to explain the disease to staff and parents, to communicate the concepts of risk and to dispense chemoprophylaxis. The use of other venues to meet with concerned parents, for example A&E departments, needs to be carefully considered, and perhaps used only as a last resort.

The messages that should be communicated to the parents of children who have 'brief and inconsequential' contact with a case are:

- rifampicin is not guaranteed to either prevent colonisation or abort incubating disease in your child,
- your child is unlikely to have been the carrier who was the source of infection in the case child or to have subsequently become a carrier,
- rifampicin is given to prevent those children who may be carriers from passing the infection on to other children, and therefore
- rifampicin is not recommended for your child.

Nevertheless, parents of all the children in the day-care centre, regardless of whether they are given rifampicin, need to be informed of the signs and symptoms of the disease, and told that they should take their child for urgent assessment should there be any suggestion of meningococcal disease. It is important to emphasise that a vasculitic rash is a predominant feature of meningococcaemia[6,7], and that there may be a persisting risk of disease regardless of prophylaxis[8,9].

Access to adequate supplies of rifampicin can, as seen in several of the above responses, be a problem. The incidence of meningococcal disease in Australia has been increasing in recent years[1,10], and such responses should be expected every winter-spring season. Therefore we believe that all regional hospital pharmacies should hold adequate stocks of rifampicin for public health control activities, and we suggest that, at a minimum, adequate stocks to dispense to half of an 'average' day-care centre of 50 children and 10 staff be held. Ceftriaxone can be used as an alternative to rifampicin for chemoprophylaxis[5,11] and although effective in eradicating meningococcal carriage, it requires the extra resources to implement a 'mass-injection' response.

Ideally, local general practitioners should be informed of the response, and the recommendations concerning prophylaxis. However, because of the urgency and very short timeframe of the response this is often impracticable. There should, of course, be open communication between general practitioners and public health physicians to discuss any issues, particularly concerning the prescribing of chemoprophylaxis to children not considered to be 'at risk'.

Secondary cases however constitute only a very small portion of all cases of meningococcal disease. Meningococcal vaccines that are protective in early childhood against serogroup B and serogroup C strains will be required if meningococcal disease is to be adequately controlled. Indeed such vaccines are considered to be a high priority for the United Kingdom[12] where phase 2 clinical trials of candidate vaccines are already in progress[13].

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GONOCOCCAL SURVEILLANCE, AUSTRALIA, 1 JANUARY TO 31 MARCH 1995

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

The Australian Gonococcal Surveillance Programme reference laboratories examined a total of 592 isolates of *Neisseria gonorrhoeae* for sensitivity to the penicillins and 553 for susceptibility to ceftriaxone, ciprofloxacin and spectinomycin and for high level resistance to tetracycline (TRNG) in the March quarter of 1995.

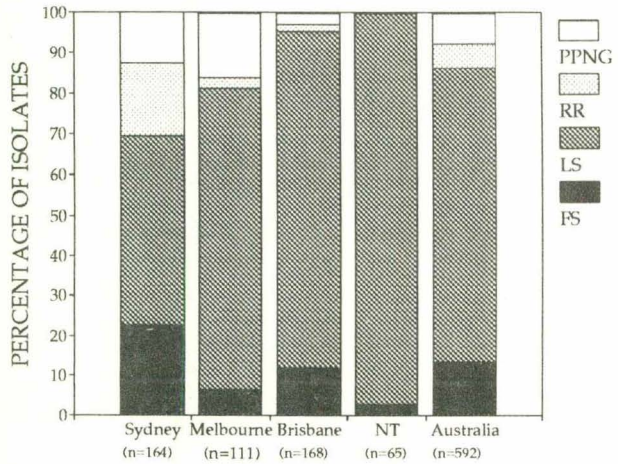
Antibiotic susceptibility patterns

Penicillins

Gonococcal susceptibility to the penicillins varies enormously in different parts of Australia. For example this group of antibiotics is least effective in Sydney where more than 30% of isolates are resistant by one or more mechanisms. In contrast, only two isolates from the Northern Territory were penicillin resistant in this quarter.

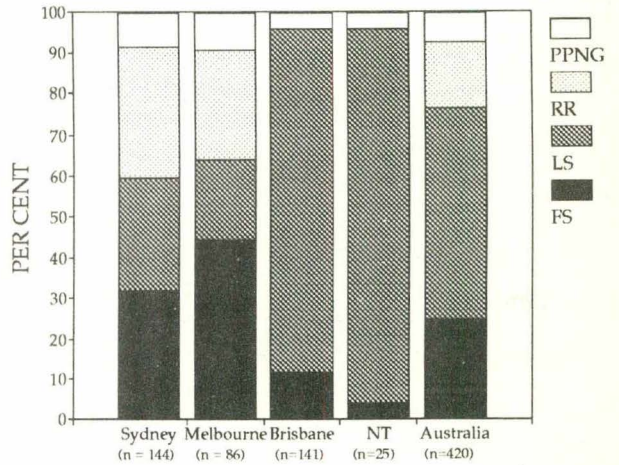
Figure 1 shows the proportion of strains fully sensitive to penicillin (FS, MIC, ≤ 0.03mg/L), less sensitive (LS, MIC 0.06 - 0.5mg/L), relatively resistant (RR, MIC, ≥1 mg/L) or penicillinase-producing (PPNG) in Brisbane, Sydney, Melbourne and the Northern Territory and for all isolates throughout Australia. Strains which are PPNG or in the relatively resistant category usually fail to respond to the penicillins. (Data from the corresponding period in 1994 are shown in Figure 2.)

Figure 1. The proportion of gonococcal isolates in Australia and in Brisbane, Sydney, Melbourne and the Northern Territory, by penicillin susceptibility[1], January to March 1995



1. FS Fully sensitive; LS less sensitive; RR relatively resistant; PPNG penicillinase-producing. For definitions of these catagories see text.

Figure 2. The proportion of gonococcal isolates in Australia and in Brisbane, Sydney, Melbourne and the Northern Territory, by penicillin susceptibility[1], January to March 1995



1. FS Fully sensitive; LS less sensitive; RR relatively resistant; PPNG penicillinase-producing. For definitions of these catagories see text.

There were 46 PPNG isolated throughout Australia in this quarter (7.7% of the total), 21 (12.8%) in Sydney, 18 (16.2%) in Melbourne, and small numbers in Adelaide, Perth, Darwin and Brisbane. Locally acquired infections with PPNG were seen only in Sydney and Melbourne.

Isolates resistant to penicillin by chromosomal mechanisms (CMRNG) - 36 (6%) in all - were less numerous than PPNG for the first time for a considerable period. This alteration is almost entirely due to changes in Melbourne where the number of PPNG increased and CMRNG decreased. Again most CMRNG were found in Sydney (29; 17.7% of strains there) and a few only were seen in Melbourne, Darwin and Brisbane.

In the corresponding quarter of 1994 there were 31 (7.4%) PPNG and 69 (16.4%) CMRNG and in the December quarter of 1994 there were 25 PPNG and 53 CMRNG isolated throughout Australia.

Ceftriaxone and spectinomycin

All 553 strains tested from all parts of Australia were sensitive to these injectable agents.

Quinolone antibiotics

Emerging quinolone (ciprofloxacin, norfloxacin, enoxacin) resistance has been a particular concern in recent surveys.

Some level of quinolone resistance has been present in Australia since 1984 at least1, but this has been at a level accommodated by the increased doses currently recommended. For example, the initial dose of ciprofloxacin used (250mg) was insufficient to treat these gonococci which were mostly imported and with MICs of ciprofloxacin in the range 0.06-0.5mg/L. However the current recommendation for treatment of uncomplicated gonorrhoea is a single 500mg dose of ciprofloxacin2. Infections with isolates with MICs in the above range respond to this regimen. Some years ago some strains in Sydney were identified with ciprofloxacin MICs of 1mg/L and 500mg doses failed to clear the infection3.

More recently a number of isolates with even higher MICs of ciprofloxacin (4-16mg/L) have been identified4,5 and continue to be isolated, in some centres in increasing numbers.

Data from World Health Organization sources indicate that these isolates are becoming increasingly common in nearby countries visited by Australian travellers6.

These factors should be borne in mind when treating gonorrhoea in patients entering or returning to Australia from South-East Asian destinations.

In this quarter 22 of 553 isolates tested (4%) had some degree of quinolone resistance. These isolates were seen in Sydney (12; 7.3%), Melbourne (8; 7.2%) with single isolates with these characteristics in Perth and Darwin. Seven of the eight Melbourne, four of the 12 Sydney and the sole Darwin strain had high levels of quinolone resistance.

In the previous quarter 11 isolates (2.7%) had some measure of quinolone resistance, three of these having high level resistance demonstrated4.

High level tetracycline resistance (TRNG)

Tetracyclines are not recommended for treatment of gonorrhoea. Some of the chromosomal mechanisms that increase resistance to the penicillins at the same time increase resistance to the tetracycline group so that where high levels of chromosomal resistance to penicillin exist, it is also likely that tetracycline resistance will be common. Additionally tetracyclines are not suitable for single dose therapy. For these reasons isolates are not routinely tested for chromosomal resistance to the tetracyclines.

An interesting form of plasmid mediated high level tetracycline resistance (TRNG) has also emerged in the past decade and its spread throughout the world has been of particular interest. Again some countries close

Table. Gonococcal isolates in Australia, 1 January to 31 March 1995, by sex, site and region[1]

	Site	Sydney	Melbourne	Brisbane	Adelaide	Northern Territory	Australia
Male	Urethra	117	84	89	19	61	370
	Rectal	14	14	1	6	1	36
	Pharynx	18	5	2	1	0	26
	Other	0	0	0	0	0	0
	Total	149	103	93	26	62	442
Female	Cervix	14	4	75	5	43	142
	Rectal	0	0	0	1	0	1
	Pharynx	0	3	0	0	0	3
	Other	1	1	0	0	2	4
	Total	15	8	75	6	45	150
Male:female ratio		10.0:1.0	12.9:1.0	1.2:1.0	4.5:1.0	1.4:1.0	3.0:1.0

1. Ten isolates from Western Australia are included in the totals for Australia.

to Australia have high numbers of TRNG. Strains are therefore examined routinely by the AGSP for the presence of this high level tetracyline resistance.

Twenty-one TRNG were identified amongst 553 isolates in Australia in this quarter (3.8% of all isolates tested). Again most TRNG were seen in Sydney (13 strains representing 8% of isolates) and Melbourne (6 strains; 5.4%) with single isolates in Brisbane and Perth. Nineteen TRNG were identified in the previous quarter.

Source of isolates

There were 442 isolates from men and 150 from women giving a male:female ratio of 3:1 when data are aggregated. However there were significant regional differences when data from individual centres are examined. Melbourne, Sydney and Adelaide have a high preponderance of isolates from males and Brisbane and the Northern Territory a low male:female ratio. Similarly 34 of 36 male rectal and 24 of 26 male pharyngeal isolates were from the three centres with high male:female ratios (Table).

Number of isolates

The 592 isolates examined was a considerable increase on the 493 strains examined in the previous quarter and markedly more than the 420 seen in the corresponding quarter of 1994. Part of the increase of 172 strains in this quarter over the corresponding period in 1994 can be accounted for by the inclusion of strains isolated by Western Diagnostic Laboratories in Perth (10 strains) and in the Northern Territory (42 strains) and referred for further testing. However, sources of isolates in all other centres were essentially unchanged and the number examined represents an increase of about 30% over the previous year.

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

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WORLD HEALTH ORGANIZATION WESTERN PACIFIC REGION GONOCOCCAL SURVEILLANCE, 1994 ANNUAL REPORT

Adapted from Resistance in gonococci isolated in the WHO Western Pacific region to various antimicrobials used in the treatment of gonorrhoea, 1 January to 31 December 1994, prepared by the WHO Western Pacific Gonococcal Antimicrobial Surveillance Programme

Background

The World Health Organization Western Pacific (WHO WPR) Gonococcal Antimicrobial Surveillance Programme - GASP - has been operating since 1992. Data are generously provided by participants in focal points in various countries throughout the WHO WPR; a list of members of the Programme is contained in the acknowledgments.

Participants are encouraged to use one of the standard methods nominated by the Programme and a series of reference and quality assurance cultures are circulated each year. However, not all isolates are examined for sensitivity to all agents by all participants, although a recommended 'core' list of antibiotics has been drawn up. For some countries, for example Singapore, Hong Kong and the Pacific states, isolates from a small geographical area were examined in a single centre. Data from other centres represent an analysis of strains referred throughout a country to a central setting as in Malaysia, whereas other countries (for example Australia, China and New Zealand) have a network of contributors supplying data to a national surveillance scheme. Isolates from the Philippines were selected for examination because of their potential for resistance. Further details on methodology are available from the co-ordinator.

1994 results

In excess of 7100 isolates were examined in 15 focal groupings in 1994. The sensitivity of isolates to the

nominated 'core' group of antimicrobials is shown in Tables 1 to 5. Some data on other agents are also supplied and are shown in Table 6.

Over 20,000 strains have been examined in this programme since 1992. The benefits of longer term continuous surveillance are now becoming apparent.

Penicillin

There is still interest in the extent and type of resistance to the penicillins although the clinical usefulness of this group of antibiotics is severely diminished. The Programme seeks data on the extent of penicillin resistance manifested either through plasmid-mediated penicillinase production (PPNG) or else through chromosomally controlled intrinsic resistance (CMRNG). Both forms of resistance may exist simultaneously in the one isolate.

PPNG were commonly encountered in 1994 with New Caledonia the only centre not recording the presence of strains of this type (Table 1). A steady increase in the proportion of PPNG has been noted in some countries since the inception of this Programme. Low numbers of PPNG were seen in China in 1992 and 1993 but in 1994, 5% of isolates were PPNG. In Vietnam the proportion of PPNG has increased from 55% to 88% since 1992. Somewhat paradoxically there has been a decrease in PPNG rates in Hong Kong from 22% in 1992 to 15% in 1993 to 7% this year.

There has however been an increase in the proportion of CMRNG in Hong Kong (possibly due to 'unmasking' of CMRNG as PPNG numbers decline) so that overall levels of penicillin resistance have not declined. The detection of chromosomal resistance in the presence of penicillinase production is sometimes of clinical relevance if therapy with a combination of a penicillin with a lactamase inhibitor is contemplated. An increasing proportion of CMRNG have been detected over the three years of surveillance.

Spectinomycin

About 3,600 isolates were examined in 11 countries in 1994 (Table 2).

Spectinomycin resistant strains have been seen in China in relatively low numbers since 1992, but very rarely in other centres and this situation remains unaltered in 1994. In 1994 the only real focus of resistance was again in China where about 5% of strains were resistant. Occasional isolates showing *in vitro* resistance to spectinomycin were seen in Papua New Guinea, Vietnam and Australia.

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.

Table 1. Penicillin resistance in gonococci, WHO Western Pacific Region, 1994

Country	Strains tested	Lactamase mediated resistance (PPNG)		Chromosomal resistance (CMRNG)		All penicillin resistance (PP+CMRNG)	
		Number	%	Number	%	Number	%
Australia	1835	121	6.6	217	11.8	238	18.4
China	344[1]	19	5.5	103	48.3	109	53.8
Fiji	804	74	9.2	11	1.4	85	10.6
Hong Kong	1977	145	7.3	1396	70.6	1541	77.9
Japan	36	2	5.5	2	5.5	3	11
Korea	192	134	69.8	34	17.7	168	87.5
Malaysia	270[2]	119	44	14	25	38	69
New Caledonia	16	0	0	0	0	0	0
New Zealand	142	16	11.3	6	4.2	22	15.5
Papua New Guinea	218	19	8.7	0	0	19	8.7
Philippines	20	20	100	-	-	20	100
Singapore	1019[3]	515	50.5	80	15.9	335	66.4
Solomon Islands	20	4	20	0	0	4	20
Tonga	32	13	40	5	15.6	18	55.6
Vanuatu	97	1	1	0	0	1	1
Vietnam	186[4]	165	88.7	0	0	165	88.7

1. 334 tested for lactamase mediated resistance and 203 for chromosomal resistance.
2. 270 tested for lactamase mediated resistance and 56 for chromosomal resistance.
3. 1019 tested for lactamase mediated resistance and 504 for chromosomal resistance.
4. 186 tested for lactamase mediated resistance and 223 for chromosomal resistance.

Table 2. Spectinomycin resistance in gonococci, WHO Western Pacific Region, 1994

Country	Strains tested	Resistant	
		Number	(%)
Australia	1622	1	<0.1
China	343	18	5.3
Fiji	399	0	0
Japan	26	0	0
Korea	53	0	0
Malaysia	296	0	0
New Caledonia	16	0	0
Papua New Guinea	57	1	1.8
Singapore	667	0	0
Solomon Islands	20	0	0
Vietnam	188	1	0.5

Table 3. Ceftriaxone resistance in gonococci, WHO Western Pacific Region, 1994

Country	Strains tested	Resistant	
		Number	%
Australia	1622	0	0
China	151	5	3.3[1]
Fiji	804	0	0
Korea	192	0	0
Japan	46	0	0
Malaysia	148	0	0
Papua New Guinea	218	0	0
Singapore	667	0	0
Solomon Islands	20	0	0
Vietnam	215	0	0
Philippines	20	20	100[1]

1. Not verified as clinical resistance.

Ceftriaxone

Over 4000 strains were examined for resistance to ceftriaxone in 11 centres (Table 3).

China reported 3.3% of isolates 'resistant' to ceftriaxone thereby extending observations on this phenomenon in China published elsewhere. Similarly the strains from the Philippines were regarded as resistant when tested by the NCCLS disc method. No correlation of these *in vitro* findings with clinical outcome is available but if such a relationship were established it would be a worrying situation as ceftriaxone serves as a surrogate for testing the sensitivity of all third generation cephalosporins. These agents are assuming an important place in anti-gonococcal therapy.

These instances apart, there have been no reports of ceftriaxone 'resistance' in the past three years. However, it is recognised that levels of susceptibility to the cephalosporins have decreased in the periods surveyed.

Quinolone antibiotics

Particular interest is centred on quinolone antibiotics because they have been most useful agents in the therapy of gonorrhoea and are orally administered. In this 12 month period over 5,700 gonococci were examined in 13 centres for their susceptibility to quinolone agents (Table 4).

A disturbing increase in resistance to these agents was noted in the WHO WPR in 1994, a continuation of trends observed and reported in 1993. Some form of quinolone resistance was observed in all but one of the 13 focal points in 1994, the only exception being the Solomon Islands. In 1992, three of eight centres recorded some level of quinolone resistance and in 1993, nine of the 12 centres observed such resistance.

Quinolone resistance is chromosomally rather than plasmid mediated and levels of resistance increase incrementally. Thus initial forms of resistance observed were generally of low level and these were accommo-

Table 4. Quinolone resistance in gonococci, WHO Western Pacific Region, 1994

Country	Strains tested	Resistant		Less sensitive	
		Number	(%)	Number	%
Australia	1622	7	0.4	23	1.4
Fiji	804	0	0	1	0.1
Hong Kong	1664	55	3.3	931	55.9
Japan	42	0	0	16	38
Korea	192	0	0	48	25
Malaysia	148	0	0	2	1.4
New Caledonia	16	0	0	1	6.2
New Zealand	127	2	1.6	3	2.4
Papua New Guinea	218	11	5	0	0
Philippines	20	19	95	0	0
Singapore	667	12	1.8	75	11.2
Solomon Islands	20	0	0	0	0
Vietnam	218	15	6.9	10	4.6

dated by increasing the recommended dose of antibiotic administered. Subsequently higher levels of resistance emerged and these were not amenable to therapy even with the newer higher dose regimens. These different levels of resistance are shown in Table 4 as 'less sensitive' and 'resistant' respectively and have been correlated with clinical outcome data.

The proportion of 'less sensitive' strains has increased significantly in many centres from 1992 to 1994. In Korea for example, the proportion of strains less sensitive to the quinolones has increased from 9% to 12% to 25% of isolates in the three year period and in Singapore the increase was from 2.8% to 11.2% from 1993 to 1994. The highest rate of less sensitive strains was observed in Hong Kong (56%). Data from the Philippines indicate a profound problem with quinolone resistance.

Additionally strains classified as 'resistant' have become far more widespread. Only a single centre noted these resistant strains in 1992 and then in only a few patients. In 1994 the quinolone 'resistant' strains were present in six centres in far higher numbers. It is also worth noting that the levels of *in vitro* resistance observed within this 'resistant' category have continued to increase further in 1994.

In summary, quinolone resistance has been steadily increasing in the WHO WPR in the past three years and this has been manifested as

- an increasing number of countries reporting the presence of these strains;
- an increasing number of strains showing quinolone resistance in those countries;
- still higher levels of resistance appearing.

Table 5. High level tetracycline resistance (TRNG) in gonococci, WHO Western Pacific Region, 1994

Country	Strains tested	TRNG	
		Number	%
Australia	1622	67	4.1
China	287	23	8
Fiji	804	1	0.1
Japan	26	0	0
Korea	192	3	1.5
Malaysia	148	73	49.3
New Caledonia	16	1	6.2
New Zealand	127	4	3.1
Papua New Guinea	218	9	4.1
Philippines	20	20	100
Singapore	667	314	47.1
Solomon Islands	20	0	0
Vietnam	220	184	83.6

High level tetracycline resistance (TRNG)

Gonococci may be resistant to the tetracycline group by either chromosomal or plasmid-mediated mechanisms. Only data on the plasmid mediated TRNG are reported in this Programme.

Over 4300 isolates were examined in 1994 in 13 countries and TRNG were present in 11 of these 13 (Table 5). Particularly high proportions of TRNG were seen again in Singapore and Malaysia and a very high rate was observed in Vietnam. The small sample from the Philippines were all TRNG. In the past three years there has been a slow but steady increase in the proportion of TRNG reported.

Other antimicrobials

Five countries also tested the sensitivity of their isolates to other agents (Table 6). Of note was the proportion of chloramphenicol resistant strains in Vietnam.

Acknowledgments

The following have generously provided support for the Programme:

Dr Sima Huilan, Regional Adviser in Health Laboratory Technology, WHO Regional Office for the Western Pacific, Manila, Philippines;

Table 6. Resistance to other antimicrobials in gonococci, WHO Western Pacific Region, 1994

Antimicrobial	Country	Strains tested	Resistant	
			Number	%
Kanamycin	Malaysia	148	1	0.6
Cefuroxime	Malaysia	148	0	0
Cefaclor	Papua New Guinea	60	0	0
Cephalothin	Vietnam	168	7	4.2
Cefotaxime	Papua New Guinea	84	0	0
Chloramphenicol	Fiji	804	0	0
	Vietnam	220	27	12.2
	Philippines	20	3	15
Augmentin	Fiji	804	11	1.4

JW Tapsall, Area co-ordinator, Sydney and members of the Australian Gonococcal Surveillance Programme throughout Australia, Australia;
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Ane Tone Ika, Nuku'alofa, Tonga;
D Kalorib, Vanuatu;
Le Thi Phuong, Hanoi, Vientnam.

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OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO) and the Program for Monitoring Emerging Diseases.

Meningococcal meningitis in Mozambique

An outbreak of suspected meningococcal meningitis has occurred in Mozambique. It began in mid-July in the northern Province of Nampula (850 cases and 56 deaths, mostly in Nampula province) and then spread to Niassa Province (97 cases and eight deaths). The WHO is assisting the local authorities in the organisation of the vaccination of the population at risk with bivalent A-C meningococcal vaccine.

Plague in Madagascar

An outbreak of bubonic plague has been reported from the north-eastern coastal town of Mahajanga in Mahajanga Province in Madagascar, with a total of 104 cases (five deaths), 23 of which have been confirmed by the Institut Pasteur. The first cases occurred in March but the majority of cases were recorded in July-August-September; the situation is now under control.

Plague has been endemic in the country for a number of years and cases occur regularly in the Provinces of Antananarivo and Fianarantsoa, particularly in the rainy season. The last time cases were reported in Mahajanga Province was in 1991.

Cholera update

Sierra Leone has reported a large increase in the number of cholera cases recently, with 4610 cases and 286 deaths in the period 19 July to 3 September. The **Republic of Moldova** reported 235 cases (two deaths) from the end of June to mid-September, with the areas of Chisinev, Slobozajskiy, Stefan-Voda and Tiraspol being declared infected. Seventy-eight cases were reported from **Romania** up to 19 September; areas infected are the districts of Braila, Galati and Tulcea. In **Cape Verde**, the islands of Boa Vista and Soa Vicente have been declared infected.

In **Afghanistan**, where there have been over 19,900 suspected cholera cases and 624 deaths since late June, some cases from Badakhstan and Kandahar Provinces and from Kabul have been confirmed as due to *Vibrio cholerae* serotype O1 El Tor Ogawa. The situation in Badakhstan Province is the most serious, with over 2000 cases and 257 deaths registered between 21 June and 14 August.

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

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1696 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 7, 8 and 9).

- No reports of **measles** were received this period.
- **Rubella** was reported for 7 patients this period including one female in the 15 to 44 year age group. The number of reports received increased in August consistent with seasonal rises in previous years.
- **Hepatitis A** was reported for 12 patients this period including 6 males and 5 females, with the sex of one patient unknown.
- Positive **hepatitis B** serology was reported for 80 patients this fortnight, including 36 males and 42

females with the sex of two patients unknown. A total of 56 were in the 15 to 44 year age range. Included were a dental nurse, the source patient in a needlestick injury incident and 12 pregnant women.

- One hundred and eighty-one reports of positive **hepatitis C** serology were received this period. Included were 26 injecting drug users and the source patient a needlestick injury incident.
- Untyped **dengue** was reported for 27 and 38 year old females, both from Western Australia and diagnosed by IgM detection.
- Fifty-eight reports of **adenovirus** were received this period, diagnosed by virus isolation (48) and antigen detection (10). Nineteen patients with adenovirus in nasopharyngeal or throat swab samples were under the age of one year and a total of 30 were in the under 5 years age group. Included was virus isolated from a post-mortem specimen from a male (age not specified) who had died of SIDS.
- **Herpes simplex virus type 1** was reported for 155 patients this fortnight. Diagnosis was by virus isolation (153) and antigen detection (2).
- One hundred and eighty-nine reports of **herpes simplex virus type 2** were received, diagnosed by virus isolation (187) and antigen detection (2).
- **Herpes simplex virus (not typed)** was detected by immunofluorescence in the CSF of a 2 year old male.
- Fifty-four reports of **cytomegalovirus** were received this period. Diagnosis was by virus isolation (42), antigen detection (one) and serology (11). Included was an 8 year old heart transplant recipient. Also included were one HIV positive patient and 4 other transplant recipients.
- **Varicella-zoster virus** was reported for 18 patients this period. Diagnosis was by virus isolation (13), antigen detection (4) and IgM detection (one).
- **Papovavirus** (probable BK virus) was detected by electron microscopy in the urine of a 3 year old bone marrow transplant recipient.
- **Coxsackievirus type A9** was isolated at post-mortem from a male infant (age not specified) who had died of SIDS.
- **Enterovirus type 71** was isolated from the skin of a 2 year old Victorian female with hand, foot and mouth disease.
- Forty-seven reports of **untyped enterovirus** were received this period. Included was a 28 year old Queensland female with hand; foot and mouth disease.
- **Rhinovirus** was reported for 30 patients this period, 28 of whom were under the age of 5 years.
- **Influenza A** was reported for 41 patients this fortnight. Reports were recieved for all age groups. Diagnosis was by virus isolation (32), fourfold rise in titre (one), single high titre (6) and total antibody (2). Reports were received from New South Wales (3), Queensland (28), South Australia (one), Victoria (4) and Western Australia (5). Twelve isolates were identified as being H_1N_1 subtypes and one as an H_3N_2 subtype. The number of reports continues to decline. A total of 708 reports has been received for the year to date.
- Forty-two reports of **influenza B** were received this fortnight. Diagnosis was by virus isolation (28), antigen detection (one), IgM detection (one) and single high titre (11) (one unknown). Reports were received from the Australian Capital Territory (one) New South Wales (9), Queensland (13), South Australia (3), Victoria (13) and Western Australia (3). A total of 277 reports has been received so far this year for 143 males and 131 females (3 sex unknown).
- **Parainfluenza virus type 3** was reported for 106 patients this fortnight, 62 of whom were under the age of one year and a total of 97 under 5 years of age. Diagnosis was by virus isolation (83), antigen detection (22) and single high titre (one). Included was a 26 year old female who had died (virus isolation from post-mortem lung tissue) and a 47 year old male with pericarditis who had been in a coma for 3 days. Also included was virus isolation from the CSF of a 3 year old female with febrile convulsions and from the urine of a 27 year old female.
- Two hundred and fifty-seven reports of **respiratory syncytial virus (RSV)** were received this fortnight, 238 (93%) for patients under 5 years of age. Method of diagnosis included virus isolation (171), antigen detection (83), single high titre (one) and fourfold rise in titre (2).
- **Rotavirus** was reported for 205 patients this period including 123 males and 79 females (3 sex unknown). One hundred and sixty-six cases (81%) were 4 years of age or under. The number of reports is similar to previous years.
- Seventeen reports of **pertussis** were received this period, 16 ***Bordetella pertussis*** and one ***Bordetella*** species.
- ***Chlamydia trachomatis*** was reported for 80 patients this period diagnosed by isolation (29), antigen detection (13) and nucleic acid detection (38). Included were 32 males and 48 females, 76 of whom were in the 15 to 44 year age range.
- Four reports of ***Mycoplasma pneumoniae*** were received this period, for 3 females in the one to 24 years age range and one male in the 15 to 24 year age range.
- A 41 year old female was reported to have positive **syphilis** serology following a miscarriage at 19 weeks gestation.

Table 1. Australian Sentinel Practice Research Network, weeks 36 and 37, 1995

Condition	Week 36, to 10 September 1995		Week 37, to 17 September 1995	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	141	16.3	95	12.4
Rubella	1	0.1	3	0.4
Measles	0	0	0	0
Chickenpox	11	1.3	3	0.4
Pertussis	2	0.2	5	0.7
Gastroenteritis	142	16.5	128	16.7

- **Q fever** was reported for 3 patients this period, a 44 year old female with a diagnosis of hepatitis and 2 male meat workers.
- Positive ***Schistosoma*** species serology was reported for a 48 year old male who had visited Zimbabwe.

Correction: in the 4 September issue of *CDI*, PathCentre Perth contributed 697 virology and serology reports. This was omitted from Table 9, page 466.

Australian Sentinel Practice Research Network

Data for week 36 (ending 10 September) and week 37 (ending 17 September) are included in this issue of *CDI* (Table 1). There were 8632 consultations reported for week 36 and 7654 for week 37. The influenza reporting rate was about the same this fortnight as last fortnight but rose in Victoria. Gastroenteritis reporting rates continued to be slightly higher than usual.

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 March 1995, and cumulative to 31 March 1995, as reported to 30 June 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 31 March 1995, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
										This period 1995	This period 1994	Year to date 1995	Year to date 1994
HIV diagnoses	Female	0	6	0	1	0	0	0	0	7	11	25	24
	Male	1	40	0	11	9	0	9	3	73	77	227	236
	Sex not reported	0	2	0	0	0	0	0	0	2	0	6	3
	Total[1]	1	49	0	12	9	0	9	3	83	88	259	263
AIDS diagnoses	Female	0	0	0	0	0	0	1	0	1	2	5	5
	Male	1	17	0	3	2	0	6	1	30	70	105	202
	Total[1]	1	17	0	3	2	0	7	1	31	74	110	209
AIDS deaths	Female	0	3	0	0	1	0	0	0	4	1	9	7
	Male	0	20	0	3	3	0	14	1	41	57	134	163
	Total[1]	0	23	0	3	4	0	14	1	45	58	143	171

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 31 March 1995, by sex and State or Territory of diagnosis

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	13	538	4	89	44	4	154	60	906
	Male	154	9717	78	1487	540	69	3216	704	15965
	Sex not reported	0	2050	0	0	0	0	43	0	2093
	Total[1]	167	12313	82	1580	584	73	3420	765	18984
AIDS diagnoses	Female	3	119	0	24	15	2	38	13	214
	Male	67	3319	24	536	246	32	1188	239	5651
	Total[1]	70	3448	24	562	261	34	1232	252	5883
AIDS deaths	Female	2	82	0	18	11	2	21	8	144
	Male	46	2335	17	374	155	21	918	172	4038
	Total[1]	48	2423	17	394	166	23	945	180	4196

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

Australian Encephalitis: Sentinel Chicken Surveillance Programme serological results, July and August 1995

AK Broom[1], *JS Mackenzie*[2], *L Melville*[3], *DW Smith*[4], *PI Whelan*[5]

Sentinel chicken serology was carried out for 15 of the 22 flocks in Western Australia in March and April 1995. There were only 2 seroconversions during this period, one from the Kimberley and one from the Pilbara regions of Western Australia. One chicken at Kalumburu seroconverted to Kunjin virus in July and one at Onslow seroconverted to Kunjin virus in August.

Six flocks of sentinel chickens from the Northern Territory were tested in July and August. There was one seroconversion to Kunjin virus from Murganella, and 2 seroconversions to Kunjin from Coastal Plains Research Station near Darwin in early August.

1. Department of Microbiology, The University of Western Australia.
2. Department of Microbiology, The University of Queensland.
3. Berrimah Agricultural Research Centre, Darwin, Northern Territory.
4. PathCentre, Perth, Western Australia.
5. Medical Entomology Branch, Department of Health and Community Services, Darwin, Northern Territory.

National Influenza Surveillance 1995

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

Overall the rate of influenza reporting has remained constant this fortnight compared with last fortnight. More laboratory reports were received for influenza B than influenza A.

Sentinel general practitioner surveillance (Figure 1)

- The **Australian Sentinel Practice Research Network** reported similar rates of influenza-like illness this fortnight compared with last fortnight. For the weeks ending 10 and 17 September, rates of 16.3 and 12.4 per 1000 encounters were reported respectively.
- **New South Wales** sentinel general practitioners reported rates of 17.5 and 21.4 cases of influenza-like illness per 1000 consultations for the weeks ending 27 August and 3 September respectively, slightly higher than in the previous two weeks.
- The **Australian Capital Territory Sentinel General Practitioner Scheme** has ceasesd influenza surveillance for this season and the **Victorian Sentinel General Practitioner Reporting Scheme** did not report this fortnight.

Absenteeism surveillance (Figure 2)

- **Australia Post** reported national sick leave rates of 2.6% and 2.5% for 13 and 20 September respectively, similar to rates reported in previous weeks.

Figure 1. Sentinel general practitioner influenza reports per 1000 encounters, 1995, by week

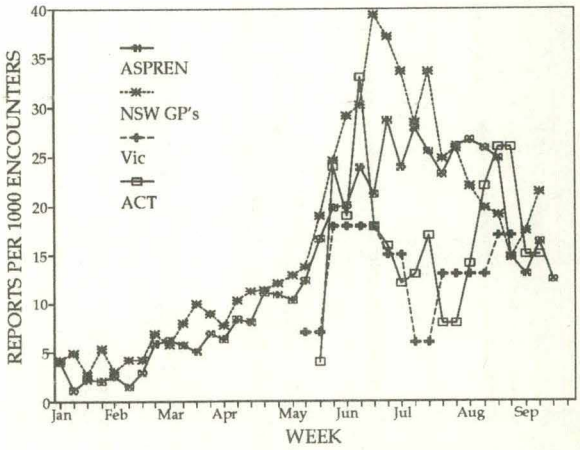


Figure 2. Absenteeism reports, 1995, by week and scheme

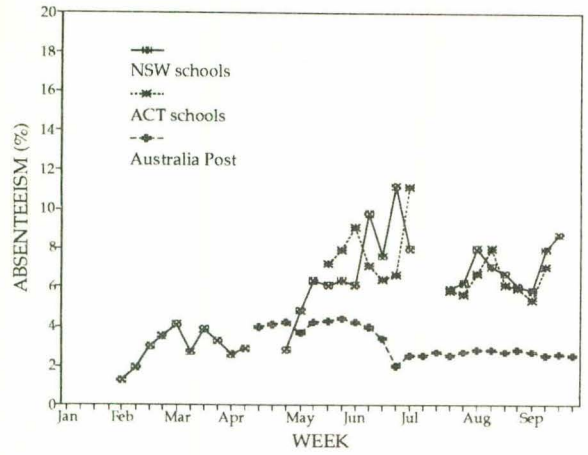


Figure 3. Influenza A laboratory reports, 1995, by method of diagnosis and week of specimen collection

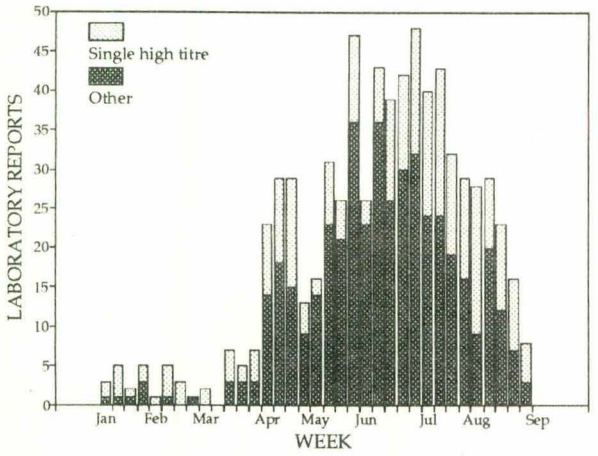
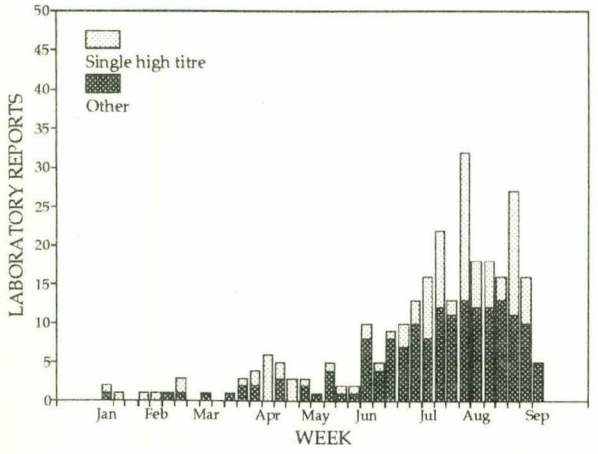


Figure 4. Influenza B laboratory reports, 1995, by method of diagnosis and week of specimen collection



- **New South Wales Schools Absenteeism Surveillance** reported rates of 7.9% and 8.7% for the weeks ending 3 and 10 September respectively, slightly higher than in the previous fortnight.
- The **Australian Capital Territory Schools Absenteeism Surveillance** has completed reporting for the season.

Laboratory surveillance (Figures 3 and 4)

- **Influenza A** was reported for 41 patients this fortnight, many fewer than last fortnight. Included were 12 reports of subtype H_1N_1 and one H_3N_2 strain, only the eighth for the season. Diagnosis was by virus isolation (32), fourfold rise in titre (one), single high titre (6) and total antibody (2). Reports were received from New South Wales (3), Queensland (28), South Australia (one), Victoria (4) and Western Australia (5). A total of 708 reports has been received for the year to date, with a peak in June-July (Figure 3). This has been fewer than usual for years in which influenza A has predominated.
- Forty-two reports of **influenza B** were received this fortnight. Diagnosis was by virus isolation (28), antigen detection (one), IgM detection (one) and single high titre (11). Reports were received from the Australian Capital Territory (one), New South Wales (9), Queensland (13), South Australia (3), Victoria (13) and Western Australia (3). A total of 277 reports has been received so far this year, with a peak so far in July-August (Figure 4).

Other surveillance

- **South Australia deaths surveillance** rates remained stable at 1.5, 1.6 and 1.6 per 100,000 for the weeks ending 1, 8 and 15 September respectively. A winter seasonal increase in total deaths has not been apparent.
- **Victorian hospital admissions surveillance** and **Victorian total deaths surveillance** did not report this fortnight.

Sterile Sites Surveillance (LabDOSS)

Data for this four weekly period have been provided by 11 laboratories. There were 482 reports of significant sepsis:

New South Wales: Hunter Area Pathology Service 61; South Western Area Pathology Service 79; Prince of Wales Hospital, Sydney 57; Royal North Shore Hospital, Sydney 54.

Tasmania: Royal Hobart Hospital 21; Northern Tasmania Pathology Service 1.

Western Australia: Sir Charles Gairdner Hospital 30.

Queensland: Nambour General Hospital 18; Royal Brisbane Hospital 111; Sullivan, Nicholaides and Partners 19.

Table 4. LabDOSS reports of blood isolates, by organism and clinical information

Organism	Clinical information						Risk factors				Total[1]
	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Neonatal	
Enterococcus faecalis				1	4		1	2	1		11
Staphylococcus aureus	5	8	2		1		11	16	15	1	66
Staphylococcus epidermidis	1	1		1		4	2	3	4	3	17
Staphylococcus coagulase negative		1	2	1		1		5	3		30
Streptococcus Group A		1				2		1			8
Streptococcus Group B	1					1				1	5
Streptococcus pneumoniae		31		1	1		1	6	1		49
Streptococcus viridans			1				1	4	1		8
Streptococcus species	1		2				1	2			7
Escherichia coli		7		15	30	2	11	16	1	1	96
Haemophilus influenzae						1		1	1		5
Klebsiella pneumoniae				2	3		2	2	2	1	13
Klebsiella species				1				1	1		6
Proteus mirabilis					3		1	1			5
Pseudomonas aeruginosa		2	1		4	2	1	7	2		24

Australian Capital Territory: Woden Valley Hospital 31.

Organisms reported 5 or more times from blood are detailed in Table 4.

Other blood isolates not included in Table * were:

Gram positive: 1 *Corynebacterium jeikeium*, 1 *Clostridium perfringens*, 2 *Enterococcus faecium*, 4 *Enterococcus* species, 2 *Listeria monocytogenes* (56 year old male and 72 year old female, both immunosuppressed), *Staphylococcus hominis*, 1 *Staphylococcus lugdunensis*, 1 *Streptococcus* bovis, 2 *Streptococcus* Group G, and 2 *Streptococcus sanguis*.

Gram negative: 3 *Acinetobacter* species, 1 *Aeromonas hydrophila* (78 year old female with malignancy), 1 *Campylobacter jejuni*, 2 *Citrobacter freundii*, 1 *Comomonas acidivorans*, 3 *Enterobacter aerogenes*, 3 *Enterobacter cloacae*, 4 *Enterobacter* species, 2 *Gemella* species, 4 *Klebsiella oxytoca*, 1 *Neisseria meningitidis* (2 year old male, serogroup C), 1 *Pasteurella multocida*, 1 *Proteus* species, 1 *Proteus vulgaris*, 1 *Pseudomonas fluorescens*, 1 *Pseudomonas* species, 3 *Salmonella* species, 1 *Salmonella* Typhi (66 year old female), 3 *Serratia marcescens* and 1 *Xanthomonas maltophilia*.

Anaerobes: 2 Bacteroides fragilis, 1 Bacteroides melaninogenicus, 1 Bacteroides species, 4 *Clostridium perfringens*, 2 *Clostridium* species, 1 *Fusobacterium* species, and 1 *Peptostreptococcus* species.

Fungi: 3 *Candida albicans*, 4 *Candida* species and 1 *Cryptococcus neoformans*.

There were 273 blood isolates reported for patients over the age of 54 years (Figure 5).

Hospital acquired blood isolates

A total of 130 isolates was reported as being hospital acquired. The most commonly reported organisms were *Escherichia coli* (21), *Pseudomonas aeruginosa* (11), *Staphylococcus aureus* (39, including 9 MRSA), *Staphylococcus* coagulase negative (12), and *Staphylococcus epidermidis* (8).

Meningitis and/or CSF isolate reports

There were 15 reports of meningitis and/or CSF isolates (Table 5). Included were 7 *Neisseria meningitidis* (4 females and 3 males with age range 1 to 48 years; 2 serogroup B and 2 serogroup C), 2 *Staphylococcus aureus*, 1 *Staphylococcus* coagulase negative 1 *Staphylococcus epidermidis* (1 year old male with vascular prosthesis), 1 *Streptococcus* Group D and 3 *Streptococcus pneumoniae* (age range 39 to 65 years).

Isolates from sites other than blood or CSF

Joint fluid: Seven reports were received this period including 1 *Neisseria meningitidis* and 6 *Staphylococcus aureus* (5 males and 1 female, age range 18 to 74 years).

Peritoneal dialysate: A total of 6 reports was received. Four were males in the age range 12 to 78 years. Included were 1 *Enterococcus* species, 1 *Serratia marcescens*, 2 *Staphylococcus aureus* (including 1 MRSA) and 2 *Staphylococcus* coagulase negative.

Pleural fluid: Four reports of organisms isolated from pleural fluid were received this period. Three were

Table 5. LabDOSS reports of meningitis and/or CSF isolates, by organism and age group

	1-11 months	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	45-54 years	55-64 years	65-74 years	Total
Staphylococcus aureus								1	1	2
Staphylococcus coagulase negative					1					1
Streptococcus epidermidis	1									1
Streptococcus Group D									1	1
Streptococcus pneumoniae						1			2	3
Neisseria meningitidis	3	2	1				1			7

Figure 5. LabDOSS reports of blood isolates, by age group

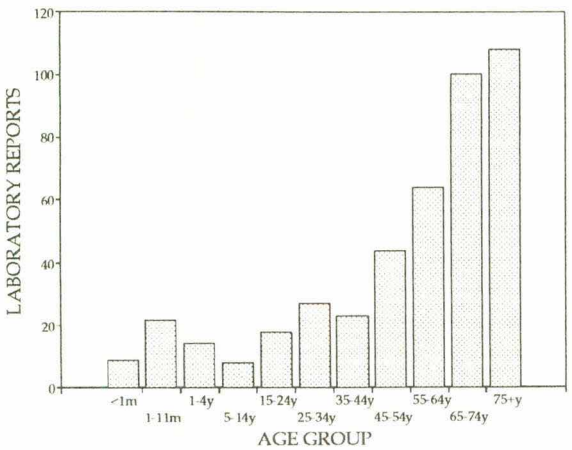
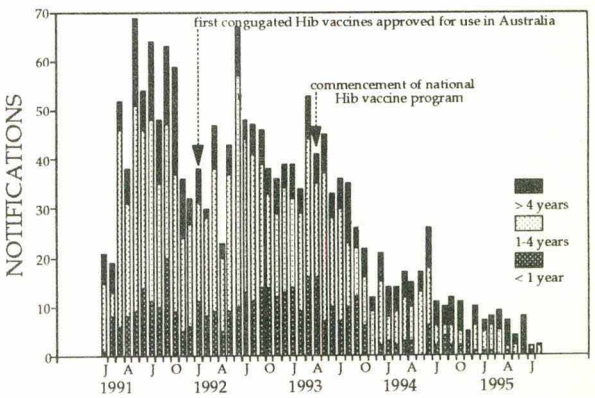


Figure 6. *Haemophilus influenzae* type b infection notifications, 1991 to 1995, by month of onset and age group



males in the age range 36 to 71 years. Included were 2 *Staphylococcus aureus* and 2 *Staphylococcus* coagulase negative.

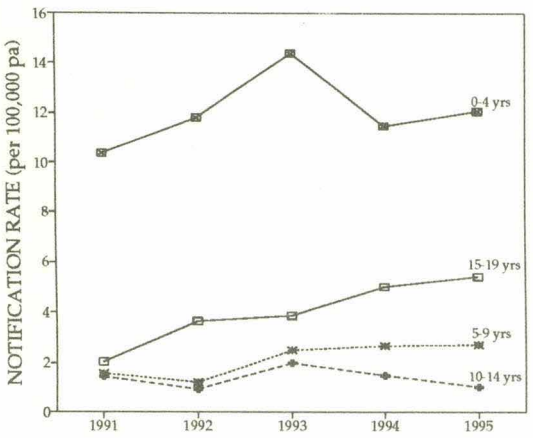
Other: 1 *Acinetobacter* species, 1 *Escherichia coli*, 1 *Klebsiella* species, 1 *Pseudomonas* aeruginosa, 5 *Staphylococcus aureus*, 2 *Staphylococcus* coagulase negative, and 1 *Staphylococcus epidermidis*.

National Notifiable Diseases Surveillance System, 3 to 16 September 1995

There were 1082 notifications received for the period (Figure 8 and Tables 6, 7 and 8). No notifications were received from Queensland.

- There were 3 notifications of **Ross River virus infection**; one case was male and 2 were female. The cases were aged between the 15–19 and the 30–34 years age groups. One case was reported from each of New South Wales, Western Australia and the Northern Territory. Dates of onset were reported as August (2 cases) and September (one case).
- There were 283 notifications of **campylobacteriosis**; 163 cases were male, 119 cases were female and the sex of one case was not recorded. Cases were reported from all age groups with 25% of cases being aged less than 5 years.
- There were 41 notifications of **gonococcal infection** received; 32 cases were male and 9 cases were female. Of the total, 16 cases were reported from Victoria, 12 cases from Western Australia, 10 from the Northern Territory and 3 from New South Wales. Recorded ages were from all age groups in the range from 15 years to 49 years, with 51% of the cases being aged between 15 and 29 years.
- Two cases of ***Haemophilus influenzae* type b (Hib) infection** were reported during the period, one male aged 2 years and one female aged 4 years. One case was reported from each of South Australia and Victoria. There has been a reduction in numbers of cases since Hib vaccines became freely available (Figure 6).
- Seventeen cases of **hepatitis A** were reported; 11 cases were male and 6 cases were female. The cases were from most of the age groups from 0 years to 39 years.
- Two cases of **hepatitis B** were reported; both were males from the age group 20–24 years.

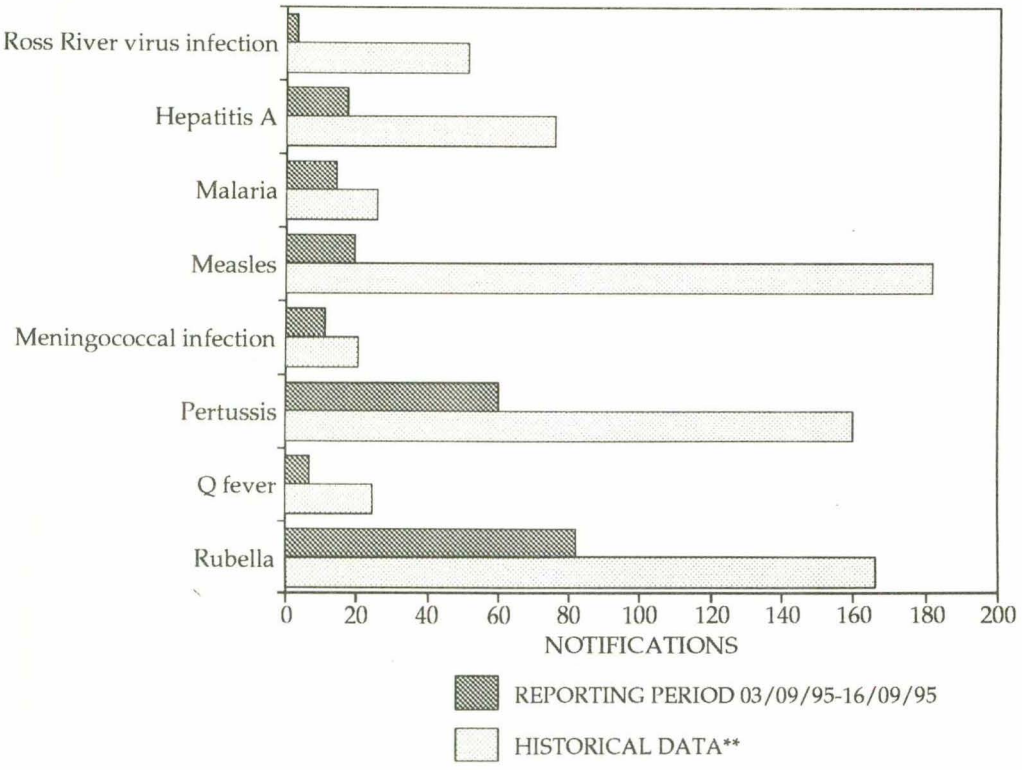
Figure 7. Meningococcal infections notifications per 100,000 population, 1991 to 1995[1], by selected age group



1. 1995 rates are projected, based on notifications to 31 August.

- Three cases of **hydatid infection** were reported; all were males aged between 50 and 69 years. One case was reported from Tasmania and 2 from Victoria.
- Two notifications of **legionellosis** were received. Both cases were male and both were reported from Victoria. Their ages were recorded as being from the 35–39 and 55-59 years age groups.
- One case of **leprosy** was reported from the northern area of Western Australia.
- Two cases of **leptospirosis** were reported. Both were males, one from each of the age groups 20–24 and 30–34 years.
- Two cases of **listeriosis** were reported, both in females over 65 years of age, and both from northern Victoria.
- There were 14 notifications of **malaria** received; 11 cases were male and 3 cases were female. Recorded ages were between 10 and 49 years. Reported onset dates were in April (one case), July (3), August (6) and September (4).
- Nineteen cases of **measles** were reported; 13 cases were male and 6 cases were female. All cases but one were aged less than 30 years, with 5 cases reported for children aged less than 2 years. There was one apparent cluster of 3 cases in the same postcode area in New South Wales, and one apparent cluster of 2 cases in Tasmania.
- There were 11 cases of **meningococcal infection** reported; 7 cases were male and 4 cases were female. The cases were aged between 0 and 74 years. There were two apparent clusters of 2 cases each in the same postcode areas, one in Victoria and one in Queensland. The age groups 0–4 years and 15–19 years continue to be the most affected with the rates in the latter group increasing over recent years (Figure 7).
- There were 60 notifications of **pertussis**; 32 cases were male and 28 cases were female. Recorded ages were between the 0–4 and the 80–84 years age groups; 2 cases were aged less than one year, 2 were aged one year, 15 were aged between 5 and 9 years, and 11 were aged between 10 and 14 years. There were 7 apparent clusters of between 2 and 6 cases each in the same postcode area. Apparent clusters were in New South Wales (4) and in Victoria, South Australia and the Northern Territory (one in each).
- Seven notifications of **Q fever** were received; all cases were male. Recorded ages were from 10 to 74 years.
- There were 82 cases of **rubella** reported; 73 cases were male, 8 cases were female, and the sex of one case was not recorded. Recorded cases were between the 0–4 and the 50–54 years age groups. Four cases were reported for females in the age range 15 to 44 years. Nearly two-thirds of the cases (50) were reported in males 10–24 years of age.
- There were 84 cases of **salmonellosis** reported; 40 cases were male, 41 cases were female, and the sex of 3 cases was not recorded. The cases were aged between the 0–4 and the 85–89 years age groups, with 30% of cases aged less than 5 years.
- Thirty-one cases of **syphilis** were reported; 21 cases were male and 10 cases were female. The cases were aged between the 15–19 and the 70–74 years age groups.
- There were 18 cases of **tuberculosis** reported; 7 cases were male and 11 cases were female. The cases were aged between the 5–9 and the 85–89 years age groups. The dates of onset were reported as being in July (4 cases), August (10) and September (4).
- Two cases of **yersiniosis** were reported; one case was male and the sex of the other case was not recorded. The age groups of the cases were reported as 40–44 and 75–79 years.

Figure 8. 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 3 to 16 September 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0		0	0	0	0	0	0	0	0
Haemophilus influenzae b infection	0	0	0		1	0	1	0	2	7	52	139
Measles	0	6	0		0	4	8	1	19	233	1020	2980
Mumps	0	0	0	NN	0	0	0	2	2	3	47	18
Pertussis	1	27	2		4	2	16	8	60	224	2865	3720
Poliomyelitis	0	0	0		0	0	0	0	0	0	0	0
Rubella	8	10	0		1	15	37	11	82	173	1722	1256
Tetanus	0	0	0		0	0	0	0	0	1	3	10

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 3 to 16 September 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	0	1	1		0	-	0	1	3	19	2283	3737
Dengue	0	0	0		0	-	0	0	0	0	21	15
NEC[3]	0	3	1		0	1	0	0	5	6	730	454
Campylobacteriosis[4]	5	-	13		90	15	92	68	283	379	7335	6696
Chlamydial infection (NEC)[5]	2	NN	29		0	15	48	22	116	216	4264	5362
Donovanosis	0	NN	1		NN	0	0	0	1	3	58	72
Gonococcal infection[6]	0	3	10		0	0	16	12	41	91	2180	2175
Hepatitis A	0	7	2		4	0	4	0	17	73	1041	1426
Hepatitis B	0	0	1		1	0	0	0	2	21	242	243
Hepatitis C incident	-	0	0	-	0	-	-	-	0	1	80	23
Hepatitis C unspecified	14		18			0	170	38	240	355	6536	6470
Hepatitis (NEC)	0	0	0		0	0	1	NN	1	2	29	32
Legionellosis	0	0	0		0	0	2	0	2	9	141	133
Leptospirosis	0	0	0		0	0	2	0	2	1	92	90
Listeriosis	0	0	0		0	0	2	0	2	1	47	20
Malaria	3	1	3		0	0	5	2	14	40	464	535
Meningococcal infection	4	2	0		0	1	4	0	11	26	262	272
Ornithosis	0	NN	0		0	1	3	0	4	0	94	60
Q fever	0	4	0		1	0	2	0	7	15	317	494
Salmonellosis (NEC)	0	11	11		5	4	26	27	84	102	4557	3934
Shigellosis[4]	0	-	10		3	0	1	3	17	16	586	533
Syphilis	0	7	12		0	0	9	3	31	104	1488	1849
Tuberculosis	1	3	6		0	1	7	0	18	46	757	722
Typhoid[7]	0	0	0		0	0	0	0	0	2	32	32
Yersiniosis (NEC)[4]	0	-	0		0	0	2	0	2	10	245	304

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 3 to 16 September 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	0		20
Chancroid	0		2
Cholera	0		5
Hydatid infection	3	Tas 1, Vic 2	28
Leprosy	1	WA	5
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 7 September to 20 September 1995, historical data[2], and total reports for the year

	State or Territory [1]								Total this fortnight	Historical data	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Mumps virus							2	1	3	2.5	56
Rubella virus	1	2				1		3	7	46.3	569
HEPATITIS VIRUSES											
Hepatitis A virus		3			1		4	4	12	14.0	341
Hepatitis B virus	3	22		9	5	1	14	26	80	90.5	1,801
Hepatitis C virus	12	25	2		22	5		115	181	223.0	4,376
ARBOVIRUSES											
Ross River virus								1	1	17.7	1,004
Barmah Forest virus							1		1	4.2	199
Dengue not typed								2	2	3.0	14
Kunjin virus								1	1	0.2	3
ADENOVIRUSES											
Adenovirus type 1							1		1	3.7	30
Adenovirus type 2							1		1	2.8	22
Adenovirus type 3							1		1	5.2	48
Adenovirus type 4							1		1	0.3	3
Adenovirus type 5							1		1	0.8	11
Adenovirus type 30							1		1	0.0	2
Adenovirus type 35								1	1	0.0	1
Adenovirus not typed/pending		8		30	1	1	5	6	51	56.5	671
HERPES VIRUSES											
Herpes simplex virus type 1		21		42	7	1	40	44	155	152.0	3,642
Herpes simplex virus type 2	1	36	1	47	21		43	40	189	190.0	3,820
Herpes simplex not typed/pending	9	2			1		1	1	14	26.0	362
Cytomegalovirus	1	14		9	2		23	5	54	66.5	1,120
Varicella-zoster virus				1			6	11	18	33.7	811
Epstein-Barr virus	1	7			6	1	4	13	32	51.5	1,443
OTHER DNA VIRUSES											
Papovavirus group		1					1		2	0.2	7
Parvovirus								1	1	4.8	94
PICORNA VIRUS FAMILY											
Coxsackievirus A9								1	1	2.2	5
Echovirus type 9							2		2	0.5	12
Echovirus type 11							1		1	3.7	3
Echovirus type 22		1							1	0.0	6
Echovirus type 30							1		1	3.5	44
Echovirus not typed/pending								1	1	0.0	3
Poliovirus type 1 (uncharacterised)					1				1	1.5	17
Poliovirus type 3 (uncharacterised)		1							1	1.0	8
Rhinovirus (all types)		5		2	1		22		30	45.5	504
Enterovirus type 71 (BCR)							2		2	0.0	31
Enterovirus not typed/pending		7	1	15			4	20	47	33.8	694
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		3		15	1		4	5	28	75.8	634
Influenza A virus H_1N_1				12					12	0.0	92
Influenza A virus H_3N_2				1					1	5.3	8

Table 9. Virology and serology laboratory reports by State or Territory[1] for the reporting period 7 September to 20 September 1995, historical data[2], and total reports for the year, continued

	State or Territory [1]								Total this fortnight	Historical data	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Influenza B virus	1	9		13	3		13	3	42	39.0	281
Parainfluenza virus type 1		1						1	2	2.7	28
Parainfluenza virus type 2				1			1		2	3.3	170
Parainfluenza virus type 3	6	10		58	4		22	6	106	28.3	586
Parainfluenza virus typing pending						2	2		4	1.7	32
Respiratory syncytial virus	8	43		101	51	9	14	31	257	213.5	3,537
OTHER RNA VIRUSES											
HIV-1						1		5	6	2.3	83
Rotavirus	50	66		4	36	5	37	7	205	180.5	1,301
Astrovirus		1							1	0.0	5
Norwalk agent							2		2	0.7	20
Small virus (like) particle							2		2	1.7	10
OTHER											
Chlamydia trachomatis not typed	4	26	1		3	2	6	38	80	83.0	1,896
Chlamydia psittaci						1	4		5	1.7	115
Mycoplasma pneumoniae							2	2	4	60.3	233
Coxiella burnetii (Q fever)					1		2		3	18.5	147
Rickettsia australis		1							1	0.0	11
GRAM NEGATIVE BACTERIA											
Brucella species							1		1	0.3	9
Bordetella pertussis							12	4	16	28.8	479
Legionella species								1	1	0.3	27
Treponema pallidum		3						2	5	18.5	426
Entamoeba histolytica							1		1	0.0	13
Schistosoma species						1	5	3	9	0.0	88
Strongyloides stercoralis			1						1	0.0	12
TOTAL	97	318	6	360	167	31	312	405	1,696	1,853.3	32,020

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 7 September to 20 September 1995

	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA										
Mumps virus									3	3
Rubella virus						2			5	7
HEPATITIS VIRUSES										
Hepatitis A virus					12					12
Hepatitis B virus					26				54	80
Hepatitis C virus					25				156	181

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 7 September to 20 September 1995, continued

	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Genital	Other/unknown	Total
ARBOVIRUSES										
Ross River virus						1				1
Barmah Forest virus									1	1
Dengue not typed									2	2
Kunjin virus									1	1
ADENOVIRUSES										
Adenovirus type 1			1							1
Adenovirus type 2									1	1
Adenovirus type 3							1			1
Adenovirus type 4							1			1
Adenovirus type 5						1				1
Adenovirus type 30						1				1
Adenovirus type 35									1	1
Adenovirus not typed/pending			29	9			6		7	51
HERPES VIRUSES										
Herpes simplex virus type 1			8			89	9	43	6	155
Herpes simplex virus type 2						61		125	3	189
Herpes simplex not typed/pending						6	1	3	4	14
Cytomegalovirus		2	22			1			29	54
Varicella-zoster virus			1			15			2	18
Epstein-Barr virus					1				31	32
OTHER DNA VIRUSES										
Papovavirus group									2	2
Parvovirus									1	1
PICORNA VIRUS FAMILY										
Coxsackievirus A9									1	1
Echovirus type 9	1								1	2
Echovirus type 11			1							1
Echovirus type 22									1	1
Echovirus type 30									1	1
Echovirus not typed/pending						1				1
Poliovirus type 1 (uncharacterised)			1							1
Poliovirus type 3 (uncharacterised)									1	1
Rhinovirus (all types)			26						4	30
Enterovirus type 71 (BCR)						2				2
Enterovirus not typed/pending	3		22	5		2	1	1	13	47
ORTHO/PARAMYXOVIRUSES										
Influenza A virus			18						10	28
Influenza A virus H_1N_1			12							12
Influenza A virus H_3N_2			1							1
Influenza B virus			33						9	42
Parainfluenza virus type 1			2							2
Parainfluenza virus type 2			1						1	2

Table 10. Virology and serology laboratory reports by clinical information for the reporting period 7 September to 20 September 1995, continued

	Meningitis	Other CNS	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Genital	Other/unknown	Total
Parainfluenza virus type 3			93						13	106
Parainfluenza virus typing pending			4							4
Respiratory syncytial virus			250							7
OTHER RNA VIRUSES										
HIV-1									6	6
Rotavirus				198					7	205
Astrovirus				1						1
Norwalk agent				2						2
Small virus (like) particle				2						2
OTHER										
Chlamydia trachomatis not typed						1	2	52	25	80
Chlamydia psittaci			2						3	5
Mycoplasma pneumoniae			2						2	4
Coxiella burnetii (Q fever)			1		1				1	3
Rickettsia australis									1	1
Brucella species									1	1
Bordetella pertussis			15						1	16
Legionella species									1	1
Treponema pallidum								2	3	5
Entamoeba histolytica									1	1
Schistosoma species									9	9
Strongyloides stercoralis									1	1
TOTAL	4	2	545	217	65	183	21	226	433	1696

Table 11. Virology and serology laboratory reports by contributing laboratories for the reporting period 7 September to 20 September 1995

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	100
New South Wales	Prince Henry/Prince of Wales Hospitals, Sydney	118
	Royal Alexandra Hospital for Children, Camperdown	31
	Royal North Shore Hospital, St Leonards	15
	Royal Prince Alfred Hospital, Camperdown	17
	South West Area Pathology Service, Liverpool	131
Queensland	Nambour Hospital	9
	State Health Laboratory, Brisbane	351
South Australia	Institute of Medical and Veterinary Science, Adelaide	166
Tasmania	Royal Hobart Hospital, Hobart	27
Victoria	Royal Children's Hospital, Melbourne	109
	Unipath Laboratories	24
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	185
Western Australia	PathCentre Virology, Perth	385
	Princess Margaret Hospital, Perth	28
TOTAL		1696