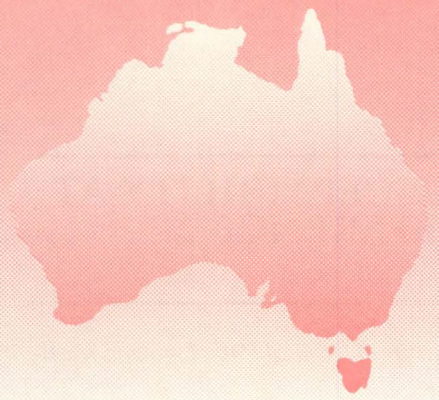

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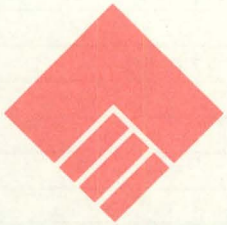

DEPARTMENT OF HEALTH, HOUSING AND COMMUNITY SERVICES

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

MYCOBACTERIUM TUBERCULOSIS DRUG SUSCEPTIBILITY AT WESTMEAD HOSPITAL MYCOBACTERIAL REFERENCE LABORATORY, 1991

(Tom Gottlieb, William Chew and Lyn Gilbert, Mycobacterial Reference Laboratory, Institute of Clinical Pathology and Medical Research, Westmead Hospital, New South Wales)

We have noted reports of outbreaks of infection with multiple drug-resistant *Mycobacterium tuberculosis* (MDR-TB) in the United States over the past year[1,2]. Although these have occurred predominantly in an HIV positive urban population, we thought it appropriate to review the susceptibility results reported from the Mycobacterial Reference Laboratory at Westmead Hospital for 1991.

During this period, 248 *M. tuberculosis* isolates were tested for drug susceptibilities, which were performed using the Resistance Ratio method. Isolates were reported as resistant if the ratio of the MIC for the patient's strain compared with the MIC of a susceptible reference strain equalled or exceeded 4.

A total of 200 isolates (80.6%) were fully susceptible. Forty-eight (19.4%) were resistant to one or more of the 'first-line' agents and 21 of these were resistant to one or more of the first-line drugs, excluding streptomycin (Tables 1 and 2). The majority of resistant isolates were resistant either to isoniazid, or to streptomycin, which is not currently used as first-line therapy.

MDR-TB isolates numbered 13 (5.2%) if streptomycin resistance was included, and consisted mostly of isoniazid/streptomycin resistant isolates. Resistance to both isoniazid and rifampicin, the two most bactericidal anti-mycobacterial agents, occurred in 4 (1.6%) isolates overall.

Table 1. Susceptibilities of *M. tuberculosis* isolates to individual antibiotics, 1991[1]

Drug	Sensitive RR < 4	Borderline Resistant RR = 4	Resistant RR > 4	Total Resistant
Rifampicin	242	2	6	8 (3.2%)
Isoniazid	230	1	17	18 (7.3%)
Ethambutol	246	2	0	2 (0.8%)
Streptomycin	210	16	22	38 (15.3%)

1. Total number of isolates: 248.

Table 2. Single and multiple drug resistances of *M. tuberculosis* isolates, 1991, totalled including and excluding streptomycin resistance[1]

Single Agent Resistance	Number if Streptomycin Resistance is Included	Number if Streptomycin Resistance is Excluded
Rifampicin	2	2
Isoniazid	6	14
Ethambutol	0	1
Streptomycin	27	-
Total	35 (14.1%)	17 (6.9%)
Dual Agent Resistance		
Isoniazid/Streptomycin	8	-
Ethambutol/Streptomycin	1	-
Isoniazid/Rifampicin	1	3
Total	10 (4%)	3 (1.2%)
Three Agent Resistance		
Isoniazid/Rifampicin/Streptomycin	2	-
Isoniazid/Rifampicin/Ethambutol	1	1 (0.4%)
Total	3 (1.2%)	1 (0.4%)
Total Resistance	48 (19.4%)	21 (8.5%)

1. Total number of isolates: 248.

A comparison with figures published by Dawson *et al*[3] for New South Wales isolates tested in 1988 does not support an increase in resistance having occurred since that time (Table 3).

The HIV status of the patients was not available for the majority of isolates referred to Westmead, however, a previous review of all 13 *M. tuberculosis* isolates from HIV positive patients at St Vincent's Hospital until 1989, did not reveal any drug resistant strains. Moreover, the incidence of *M. tuberculosis* in HIV positive patients in New South Wales remains low at this time.

The source of the *M. tuberculosis* isolates referred to the Mycobacterial Reference Laboratory was sputum, lymph node or bronchial lavage for most cases (Table 4). Lymphadenopathy was more frequent in patients with Indochinese surnames, and there was a higher incidence of resistance in this group, predominantly to streptomycin.

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1. Nosocomial transmission of multidrug-resistant tuberculosis among HIV-infected persons - Florida and New York 1988-1991. *MMWR* 1991;**40**:585-591.
2. Fischl MA, Uttamchandani RB, Daikos GL *et al.* An outbreak of tuberculosis caused by multiple drug-resistant tubercle bacilli among patients with HIV infection. *Ann Intern Med* 1992,**117**:177-183.
3. Dawson D, Anargyros P, Blacklock Z *et al.* Tuberculosis in Australia: an analysis of cases identified in reference laboratories in 1986-1988. *Pathology* 1991;**23**:130-134.

Table 3. Drug resistances of *M. tuberculosis* isolates, 1988[1] and 1991[2]

Drug(s)	1988[1]	1991[2]
Rifampicin	6 (2.4%)	8 (3.2%)
Isoniazid	27 (11.0%)	18 (7.3%)
Ethambutol	12 (4.9%)	2 (0.8%)
Streptomycin	35 (14.2%)	38 (15.3%)
Total with Single Drug Resistance	80 (32.5%)	66 (26.6%)
Streptomycin/Isoniazid	9	8
Ethambutol/Streptomycin	0	1
Isoniazid/Rifampicin	0	1
Streptomycin/Isoniazid/Rifampicin	2	2
Streptomycin/Isoniazid/Ethambutol	4	0
Isoniazid/Rifampicin/Ethambutol	0	1
Streptomycin/Isoniazid/Rifampicin/Ethambutol	3	0
Total with Multiple drug Resistance	18 (7.3%)	13 (5.2%)
Resistance to both Isoniazid/Rifampicin	5 (2.0%)	4 (1.6%)

1. Data from Reference 3; total number of isolates: 246.

Table 4. Source of *M. tuberculosis* isolates, 1991

Source of Isolates	Total	Sensitive	Resistant
Sputum	128	103	25 (20%)
Lymph node	31	22	9 (28%)
Bronchial lavage	39	31	8 (22%)
Lung biopsy	8	6	2
Pleural biopsy	5	5	0
Pleural fluid	4	4	0
Urine	8	7	1
Faeces	3	2	1
Blood	1	1	0
Pericardium	2	2	0
CSF	1	1	0
Joint	5	5	0
Other (skin, swabs)	4	4	0
Not known	16	14	2
Total	255	207	48 (18.8%)

ISOLATION OF A SPIROCHAETE FROM A LYME BORRELIOSIS PATIENT IN QUEENSLAND

(R M Silcock and M A Wiemers, Laboratory of Microbiology and Pathology, Queensland Health)

Lyme borreliosis is the most common tick-borne illness in the United States, with several thousand cases reported each year. A Lyme borreliosis-like illness was first seen in Australia in the Hunter Valley region in 1982 when a labourer developed an illness after an arthropod contact. Amongst his symptoms was the characteristic Lyme borreliosis rash (erythema chronicum migrans; ECM). Other similar cases were seen in the region at about the same time.

Since then, a number of other Lyme borreliosis-like infections have been identified in Australia, both clinically and serologically. Much work has been done examining ticks in New South Wales for the presence of spirochaetes, with some spirochaete-like organisms being isolated. More than 100 clinical specimens in Queensland have been inoculated into the special Lyme borreliosis medium, BSK. Until April this year, all cultures were negative for spirochaetes, then a few spirochaetes were observed in a tube originally inoculated with serum from a female with a longstanding history of Lyme borreliosis. Her illness commenced about 1975 and she first had serology for Lyme borreliosis performed in 1986 in the USA. Further specimens tested in Brisbane have shown the persistence of antibodies to *Borrelia burgdorferi*. This patient had numerous tick contacts prior to her illness and a rash which persisted for about 2 years before she travelled to Europe in 1977. At that time her rash disappeared. She now has a history of arthritis and arrhythmia.

Tests performed to date on this isolate have included:

i. monoclonal antibodies, with reactivity to antibodies against Osp A and Osp B proteins (antibodies courtesy of Westmead Hospital)

ii. monoclonal antibodies in the USA, indicating a *Borrelia burgdorferi* organism

iii. IFA tests in this laboratory in parallel with USA antigens, generally showing greater reactivity with the local isolate.

These tests have confirmed that the isolate is *Borrelia burgdorferi*, and is therefore the first such isolate from a human in Australia. There is still some uncertainty about the exact origin of the infection, but, presumably, with time and further testing, this question will be resolved.

Further local tests proposed with this isolate include REA studies, tick transmission studies, IFA and EIA testing. Other tests, such as DNA hybridisation, plasmid profiles, Western blot and PAGE analyses, are to be performed at a later date by specialist Lyme borreliosis laboratories in the USA.

AN OUTBREAK OF CRYPTOSPORIDIOSIS IN GOATS AND HUMANS

(M J Kabay and J Mitchell, Western Australian Department of Agriculture; J S Gill, Health Department of Western Australia; D Smith, State Health Laboratory Service, Perth)

In August 1992, an outbreak of diarrhoea in one- to two-week old juvenile goats occurred on a goat farm property located in Toodyay, 85 km north-east of metropolitan Perth in Western Australia. There were 100 goats on the farm, which has been in operation for 17 years, and this was the first occasion during which such an outbreak had been noted. It started on 10 August, two weeks after a new batch of five does had been added to the herd. All 36 juvenile goats were symptomatic and eight died (case fatality rate 22.2%).

Resident on the property were a couple, their three year old daughter and five year old son, and the children's 52 year old maternal grandmother. The 52 year old woman developed diarrhoea and abdominal pains on 8 August 1992. The diarrhoea continued for three days and she had abdominal discomfort for seven days. No stool specimens were taken. The three year old girl developed fever, diarrhoea, vomiting and abdominal pain on 10 August and was ill for two weeks. One stool specimen was taken one week after the onset of illness, and another five days after the symptoms ceased. The five year old boy developed diarrhoea, vomiting, headache and abdominal pain on 24 August, and was ill for three days. A stool specimen was taken five days after the onset (two days after symptoms ceased).

The first faecal sample collected from the three year old girl and a sample from one of the scouring kids were sent to the Animal Health Laboratories of the Western Australian Department of Agriculture. They were tested for cryptosporidia using monoclonal immunofluorescence staining of faecal smears, and large numbers of cryptosporidia were detected in both samples. A concentration flotation technique was used to test for parasite eggs; none were found. Routine bacteriology recovered heavy growth of non-haemolytic *Escherichia coli* from the faeces of the goat but no *Salmonella* from either sample.

The faecal sample from the five year old boy, the second specimen from the three year old girl, and specimens from two other kid goats were tested for cryptosporidia, rotavirus (using a slide agglutination test) and routine bacteriology culture for *Salmonella* and *Campylobacter*. Both samples from the children were negative in all the tests. The faecal specimens from the kid goats contained cryptosporidia; significant bacteria and rotavirus were not detected.

Two dead kid goats were submitted for necropsy, on 4 September and 16 September. Large numbers of cryptosporidia were found in the faeces of both animals. Histological slides prepared from paraffin embedded HE-stained sections of the small intestine showed a large number of cryptosporidia attached to the brush border of the ileum. No significant bacteria or rotavirus were detected in the intestinal contents.

A preserved sample of stool from the three year old girl tested at the State Health Laboratory Service using the Sheather's sucrose flotation method, followed by staining with a modified acid fast stain, confirmed the presence of cryptosporidia.

Conclusion

The features of this outbreak in the juvenile goats strongly suggest that the cause was cryptosporidia. The diagnosis was supported by characteristic histopathology, the presence of cryptosporidium oocysts in the faeces and the failure to isolate pathogenic bacteria, viruses or other parasites from the faeces.

There was obviously an association between the outbreak in the juvenile goats and the symptoms experienced by the three members of the family. The facts that the same pathogen was detected in both the girl and the goats, and that the goats and humans experienced symptoms at the same time, suggests that the infection was probably acquired by the family members from the juvenile goats.

PYEMOTES SPECIES MITES CAUSING AN OUTBREAK OF DERMATITIS IN A QUEENSLAND COUNTRY HOSPITAL

(Joanne Letchford and David Farrell, Microbiology Section, Department of Pathology, Toowoomba General Hospital)

An acute outbreak of itchy, papulovesicular dermatitis occurred among nursing home patients in a small Queensland country hospital west of Toowoomba. A mite, *Pyemotes* species, has been implicated as the causative agent.

Pyemotes mites are ectoparasites of many insect species, particularly those infesting grain. Man is only accidentally bitten, with the resulting dermatitis being referred to by names such as 'barley itch', 'grain itch' and 'straw itch'. Many occupational groups have been affected including farmers, grain handlers and dockers. *Pyemotes* was the cause of dermatitis amongst workers handling agricultural products near Adelaide in 1932[1], and abundant organisms were found in the straw used for animal bedding at the Indiana State Fairs of 1950 and 1951, when 1,700 people were treated for dermatitis[2].

Patient details

Since February 1992, 20 nursing home patients and staff, all from the east wing of the 83 bed hospital, have been affected.

The dermatitis, mainly affecting the trunk, was erythematous, papular and often with pinpoint vesicles.

Laboratory examination

Twenty patient skin scrapings and 30 environmental specimens were examined. Environmental specimens were collected from within the hospital (east and west wings) and from external sites, including a sorghum field directly behind the hospital, and grain storage facilities across the road from the front of the hospital.

Only one mite was found from the patient skin scrapings. It was small with a smooth, elongated body, but could not be positively identified.

Numerous live female *Pyemotes* were found in dry grass underneath the east wing, and one dead female was found in heating duct dust from the same wing. Several males and gravid females were found amongst old cotton seed outside one of the grain sheds. These mites were not moving and were presumably dead, however, the gravid females may have been lying dormant over winter.

The identification of the mites was confirmed by Robert Domrow from the Queensland Museum, and Russell Luke from the State Health Laboratory, Brisbane.

Discussion

Pyemotes are small mites with smooth, elongated bodies. Females are 0.2 - 0.3 mm, and males are 0.16 mm in length. The females have an easily distinguishable characteristic: the pseudostigmatic organs. These are small, bulbous organs which lie laterally on the ventral surface between the first and second pairs of legs. In 1975, Moser proposed that *Pyemotes* associated with grain insects and severe dermatitis should be named *Pyemotes tritici*[3].

Patients with *Pyemotes* dermatitis have often been mistakenly diagnosed as having contact dermatitis, chicken pox, scabies or insect bites. Misdiagnosis is of great concern as it delays the resolution of an outbreak.

Swan suggests that in Australia, agricultural workers endure the dermatitis as a normal occupational hazard and may not associate it with a living, treatable cause[1]. Treatment relies wholly on removing the source of the mite. An entomologist should be consulted to identify the host insect and it's life cycle and to indicate changes that need to be made in crop management. Storage facilities should be thoroughly cleared of all produce and dust, and then fumigated. Other suggestions on eradication are made by Swan[1].

Symptoms may be relieved by warm soapy baths and soothing ointments, such as benzyl benzoate. For occupational exposure, mite repellents such as sulphur or gammabenze hexachloride ointment, combined with the application of olive oil, may allay the mites.

The hospital was fumigated in July with a resultant resolution of the dermatitis. Four weeks later, however, there was a sudden re-emergence of the same dermatitis. After the second fumigation some symptoms are still present. It would seem likely that the source is external to the hospital and that fumigation of the hospital is only a temporary measure. It is possible that dust, containing mites, is being blown into the east wing from the storage facilities.

The facts that *Pyemotes* has been shown to cause outbreaks of dermatitis, the patients and staff showed signs of improvement after fumigation, and the confirmed identification of *Pyemotes* species strongly implicate this organism as the aetiological agent in this outbreak. As there are still symptoms present in the ward we feel that further investigation is warranted.

Pyemotes species seem to be a forgotten entity in modern times with very few cases being reported. It is possible that many cases of occupational dermatitis could be the result of this organism. Investigators should be aware of this possibility.

References

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2. Booth BH, Jones RW. Epidemiological and clinical study of grain itch. *JAMA* 1952; **150**: 1575-1579.

3. Moser JC. Biosystematics of the straw itch mite with special reference to nomenclature and dermatology. *Trans R Entomol Soc Lond* 1975; **127**: 185-191.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization and the Department of Foreign Affairs and Trade.

Cholera Update

Guyana has reported its first cases of cholera, and the Barima Region has been declared infected.

Cases have been reported for October and November from Bolivia, Brazil, Costa Rica, Cote d'Ivoire, El Salvador, Guatemala, Guyana, Honduras, Iraq, Iran, Mexico, Nicaragua, Panama and Zambia.

The current outbreak in Zambia is the worst in that country for some time. It is centred on Kitwe, the third largest city in Zambia, and is being blamed on impure water supplies. About 370 persons have died and thousands are being treated for the disease.

Influenza in the Northern Hemisphere

This northern winter's influenza surveillance has begun in many European and North American countries. So far, influenza B has been isolated from sporadic cases and school outbreaks in Japan, France, the USA and Czechoslovakia. An influenza A (H_1N_1) strain has been isolated from a single case in the Netherlands, and a single isolate of influenza A (H_3N_2) has been reported from Sweden.

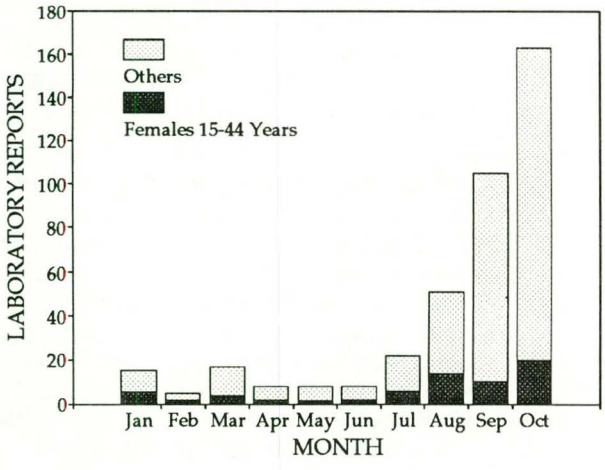
COMMUNICABLE DISEASES SURVEILLANCE

Laboratory Reporting Schemes

There were 2,111 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 5, 6 and 7).

- Nine reports of **measles** were received, including a 4 year old female for whom the reported syndrome was meningitis. Increased measles reports have recently been received from South Australia (60 reports this year), Queensland (34 reports) and New South Wales (18 reports).
- The number of **rubella** reports continues to increase (Figure 1). This fortnight, there were 92 reports, including 18 in females of reproductive age, and one in the 12 year old son of a pregnant woman. The 64 male patients were all too old to to have been routinely vaccinated with MMR in infancy, as were the 6 female patients aged between 7 and 11 years. There has been a total of 69 reports of rubella in females of reproductive age so far this year, including one who was pregnant.

Figure 1. Rubella laboratory reports, 1992, by month of specimen collection, and patient type



- **Ross River virus** infection was reported for 19 patients this fortnight (all IgM). Fifteen of these had specimen collection dates in September and October, 12 from Queensland, 2 from Western Australia and one from Victoria.
- There were 5 reports of **untyped flavivirus**. Two were from the Townsville area, and the others were associated with overseas travel.
- There were 119 reports of **hepatitis B**. Included were 5 pregnant females.
- There were 177 reports of **hepatitis C**. A history of injecting drug use was reported for 10 patients, there were 3 pregnant females, and the 2 month old son of a hepatitis C positive female.
- Reports of **adenovirus type 4** have increased over the last few fortnights, with 17 reports this period. Twenty-eight of the recent reports have been from South Australia, and 12 of these have had eye disease as the reported syndrome. There have been 3 reports of eye disease caused by this virus from New South Wales and 7 in Victoria this year. This virus has commonly caused respiratory epidemics in military recruits overseas. It is rarer in Australia, but has shown some epidemic activity, in particular, causing an outbreak of adult eye disease in 1989.
- There were 206 reports of **herpes simplex type 1** this fortnight, including 3 in immunocompromised persons (1 neutropaenic, 1 post transplant, 1 other).
- **Cytomegalovirus** infection was reported for 85 patients. Included were 2 HIV positive patients, 9 patients with a history of transplant (2 heart, 1 bone marrow, 2 renal, 1 heart-lung, 1 lung, 1 liver), 3 congenitally infected infants (one with intracerebral calcification and antibodies demonstrated in cord blood, 1 aged 8 days with a history of prenatal infection, 1 with the virus isolated form heart, lung and trachea), a pregnant female, and deceased males aged 3 months (lung isolate), 10 months (SIDS), 36 years (spleen isolate, HIV positive) and 19 years (lung isolate).
- **Coxsackievirus B5** infection was reported for 11 patients this fortnight, bringing the total for the year to 36. Ten were from Western Australia, and the other was from South Australia. A CSF isolate and/or meningitis was reported for 8 patients, cardiac symptoms were reported for a 4 month old male, and general malaise/fever were reported for 2 patients. The ages ranged from 11 days to 47 years.
- Two reports of **echovirus type 11** were received. One was for an 11 year old male who had had a polio-like illness - paralysis of one leg. The virus was isolated from a faeces specimen and an enterovirus was also isolated from a throat swab taken at the same time.
  (Dr de Silva, Royal Alexandra Hospital for Children)
- A single report of **echovirus type 6** was received this fortnight, from New South Wales. There have now been a total of 85 reports of this virus this year, more than ever previously received in the scheme. All but 7 of these reports had specimen collection dates between March and August and were from Western Australia.

Figure 2. Echovirus type 9 laboratory reports, 1992, by month of specimen collection and State or Territory of reporting laboratory

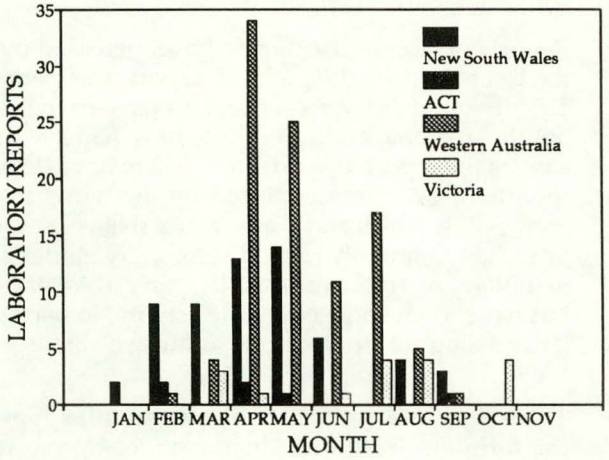
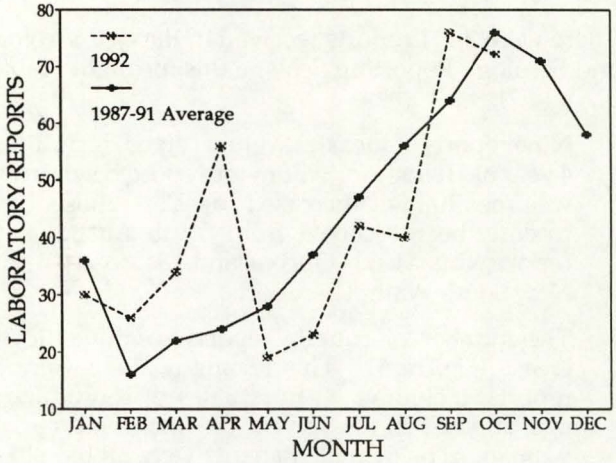


Figure 3. Parainfluenza type 3 laboratory reports, 1992 and 1987-91 average, by month of specimen collection



- Seven reports of **echovirus type 9** were received, bringing the total for this year to 181. This is more than has ever been previously recorded in this scheme, although there were 212 reports in the 12 month period July 1988 to June 1989, when, in contrast to this year's increased reports in autumn and winter, there was a period of increased reporting centred on the summer months. Specimen collection dates for this fortnight's reports were between July and October, and a CSF isolate and/or meningitis were reported for 5 of them. This virus was known to have caused an outbreak in Western Australia earlier this year, and it is now apparent that there has been increased activity of the virus in eastern Australia, as well, particularly in New South Wales (Figure 2).

  Correction: there was an error in the paragraph and figure which referred to echovirus type 6 in the last issue of *CDI*. Both should have referred to echovirus type 9.

- Forty-four reports of **influenza** were received this fortnight. Thirty-seven were untyped **influenza A** (2 isolations, 34 single high titres, 1 four-fold change), and seven were **influenza B** (1 isolation, 6 single high titres). Eleven influenza A and one influenza B were in patients over the age of 65 years, bringing the total for influenza reports in persons aged over 65 years this year to 304.

- **Parainfluenza type 3** infection was reported for 46 patients this fortnight, bringing the total for the year to 423. The number of reports of this virus received each year varies, but usually peaks in spring. This year, there was an unseasonal peak in autumn, and a rise in recent months which has been close to the average for recent years (Figure 3). Increased reports have been received recently from Queensland, Victoria and Western Australia. Upper respiratory tract disease has been the reported syndrome for 183 patients this year, and lower respiratory tract disease for 178 patients. A total of 205 reports have been in infants aged less than 1 year.

- **Untyped *Chlamydia trachomatis*** infection was reported for 140 patients. Included were a male aged less than 1 month with neonatal conjunctivitis, a 16 year old female with a history of sexual abuse, and an 18 year old female, diagnosed post-termination with suspected PID.

- ***Mycoplasma pneumoniae*** infection was reported for 148 patients this fortnight, bringing the total for the year to 1,223. Included were three members of one family, females aged 5, 28 and 65 years, and a 9 year old male with meningitis. There have been increased reports from New South Wales, Queensland, South Australia, Victoria and Western Australia over the last few months. Reports of this organism in Australia are both seasonal (peaking in spring) and cyclical (2-year periods of increased activity every 5 years, the last in 1987-88).

- There were 16 laboratory reports of **Q fever** this fortnight. Eleven patients were males and there were 5 females; ages ranged from 15 to 68 years. Three patients were described as meat workers.

  Treponema pallidum infection was reported for 19 patients. Included were 3 pregnant females.

- One report of ***Haemophilus influenzae* type b** infection was received. The patient was a female aged over 75 years. The organism was cultured from blood and CSF.

Table 1. Australian Sentinel Practice Research Network, Weeks 46 and 47, 1992

Condition	Week 46, to 15 November 1992		Week 47, to 22 November 1992	
	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	19	3.2	17	3.2
Measles	0	0	0	0
Mumps	0	0	0	0
Rubella	2	0.3	3	0.6
Pertussis	1	0.2	0	0
Genital herpes	2	0.3	0	0
Gastroenteritis	100	16.6	70	13.3

Australian Sentinel Practice Research Network

The Australian Sentinel Practice Research Network collected data from 6,029 patient encounters in Week 46 and 5,270 patient encounters in Week 47 (Table 1). Rubella continues to be the most commonly reported of the diseases preventable by routine childhood immunisation, in parallel with recent notifications and laboratory reports of this disease. Gastroenteritis was reported at a higher rate than that usually recorded in Week 46.

Australian Encephalitis: Sentinel Chicken Surveillance Programme - Serological Results for September and October 1992

Sentinel chicken serology was undertaken for 24 flocks in the Kimberley and Pilbara regions of Western Australia in September and October 1992. There was one seroconversion to Kunjin virus at Marble Bar in September, making a total of four Kunjin seroconversions since May 1992. The Western Australian flocks are now being replaced before the wet season starts in northern Australia.

Sentinel chicken sera from 5 flocks in the Northern Territory collected from July to September was also tested. A new flock was established in September at Leanyer on the outskirts of Darwin. There was evidence of flavivirus activity at Murganella, north-east of Darwin in June and July, with one seroconversion to Murray Valley encephalitis virus and four to Kunjin virus. There was no evidence of flavirus activity in Palumpa, Gove or Leanyer during this period.

Information on the location of sentinel chicken flocks in Western Australia and the Northern Territory was presented in *CDI* 1992;**16**:55-57 and *CDI* 1992;**16**:169, respectively.

(AK Broom and JS Mackenzie, Department of Microbiology, The University of Western Australia)

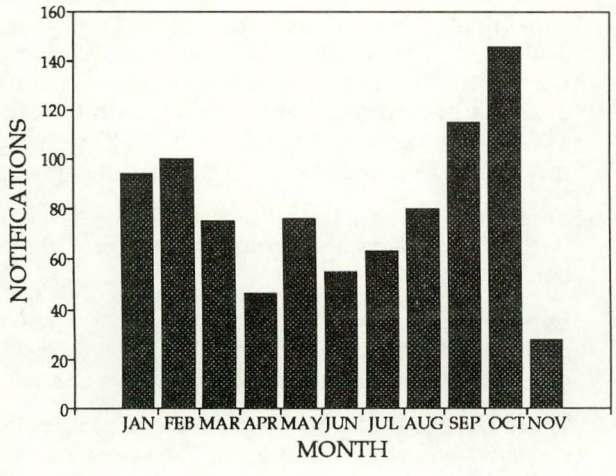
National Notifiable Diseases Surveillance System 18 October to 1 November 1992

There were 2,041 reports of notifiable diseases received this period (Figure 7, Tables 2, 3 and 4). In this report statistical divisions used by the Australian Bureau of Statistics are used for geographical analysis.

- There were 66 notifications of **Ross River virus infection**, bringing the total to date to 5,309 reports Onset dates for 11 of the cases were recorded as September, 39 as October and 20 as November. Cases were reported from coastal and inland Queensland, coastal New South Wales, inland Victorian and Western Australian statistical divisions. Cases were divided between 21 males and 45 females, with ages ranging from the 15-19 to the 85-89 years age groups.
- Reports of 3 notifications of **dengue** were received to bring the total notifications received this year to 344 cases. Two of the cases reported this period were from Townsville and surrounds. Two had onset dates recorded as September, with the other as October. There was 1 male in the 20-24 years age group and 2 females in the 35-39 years age group.
- There was a single report of **brucellosis** in a male in the 15-19 years age group, from rural Queensland.
- **Diphtheria** was reported for one person, a female in the 35-39 years age group. There have been 13 cases of diphtheria notified to date this year.
- There were 89 notifications of **gonococcal infection** reported, to bring the total for the year to date to 2,479. The notified cases reported this period were in 61 males and 28 females. One case was reported in a female less than 1 year of age and a total of 14 cases were aged less than 15 years.
- ***Haemophilus influenzae* type b infection** was notified in 14 cases, 11 males and 3 females. Twelve of these cases were aged less than 5 years and 2 were in the 5-9 years age group. There was an apparent cluster of 2 cases with reported onset dates within 6 days of each other from the same postcode area. There have been 423 notifications of *H. influenzae* type b infection to date this year.

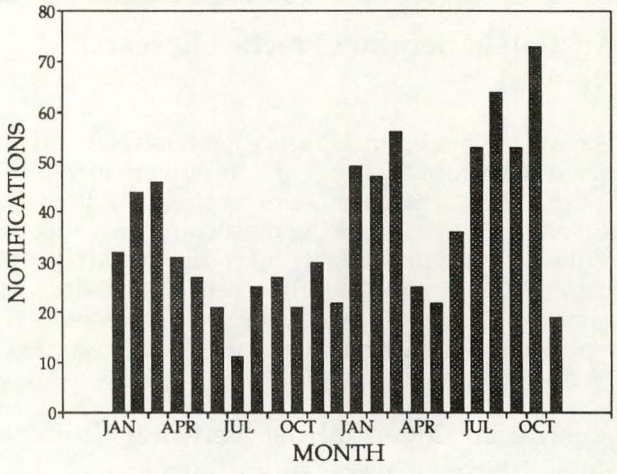
- There were 68 cases of **hepatitis A** notified this fortnight. They were predominantly from rural areas of Queensland, New South Wales, South Australia and Western Australia. The sex was recorded as male in 37, female in 30 and unknown in 1. The modal age group, with 13 cases (6 males, 6 females and 1 unknown sex), was the 20-24 years age group.
- There were 2 cases of **hydatid infection** reported this period, from Perth.
- There were 2 notifications of **leprosy** received in males with reported ages being in the 10-14 and 20-24 years age groups.
- Five notifications of **leptospirosis** were received. They were all in males in the 30-39 (4 cases) and 50-54 years age groups. One case was reported from the Adelaide statistical division, the others were from Central Gippsland and Southwestern statistical divisions in Victoria.
- **Measles** was notified for 48 persons, bringing the total for the year to 890 (Figure 4). The cases were evenly divided between males and females with 24 each. Three cases were aged less than 1 year, and the average reported age was 11.3 years. There were 5 apparent clusters of 2 to 7 cases each in 6 different postcode areas, with reported dates of onset separated by intervals of 3 to 11 days.

Figure 4. Measles notifications, 1992, by month of onset



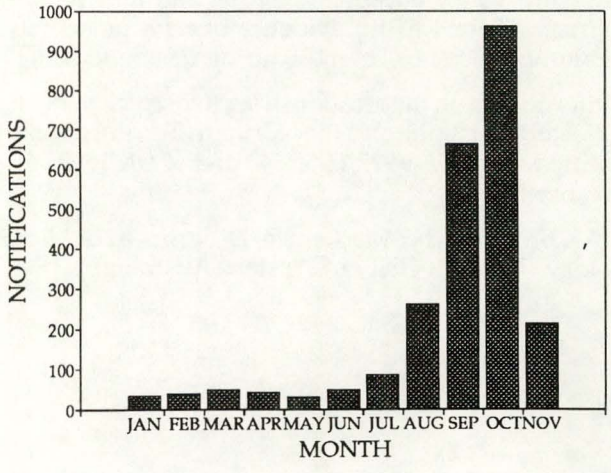
- There were 15 cases of **meningococcal infection** notified this period. They comprised 6 males and 9 females with 5 of the cases aged less than 5 years. There was an apparent cluster of 3 cases over a period of a month from 2 adjacent postcode areas.
- There were 37 notifications of **pertussis** this period. Eighteen cases were in males and 19 were in females; 13 were aged less than 5 years, 6 were aged less than 1 year and 8 were aged over 15 years. There were 3 apparent clusters of 2 cases each and one of 3 cases in 3 different postcode areas, with the same date of onset within each area. There have been 499 notifications of pertussis received to date in 1992 (Figure 5).

Figure 5. Pertussis notifications, 1991-1992, by month of onset



- **Q fever** was reported in 25 cases this period, 19 were males and 6 were females. Cases were reported predominantly from rural areas of New South Wales and Queensland and were in the 15-19 to 55-59 years age groups.
- The **rubella** epidemic has continued. There were 364 notifications received, an increase from the last period. Sex was recorded as male in 262 and female in 102. The total cases to date this year is now 2,378 with most cases having onset dates after July (Figure 6). Of the female cases, 42 were in the 15-44

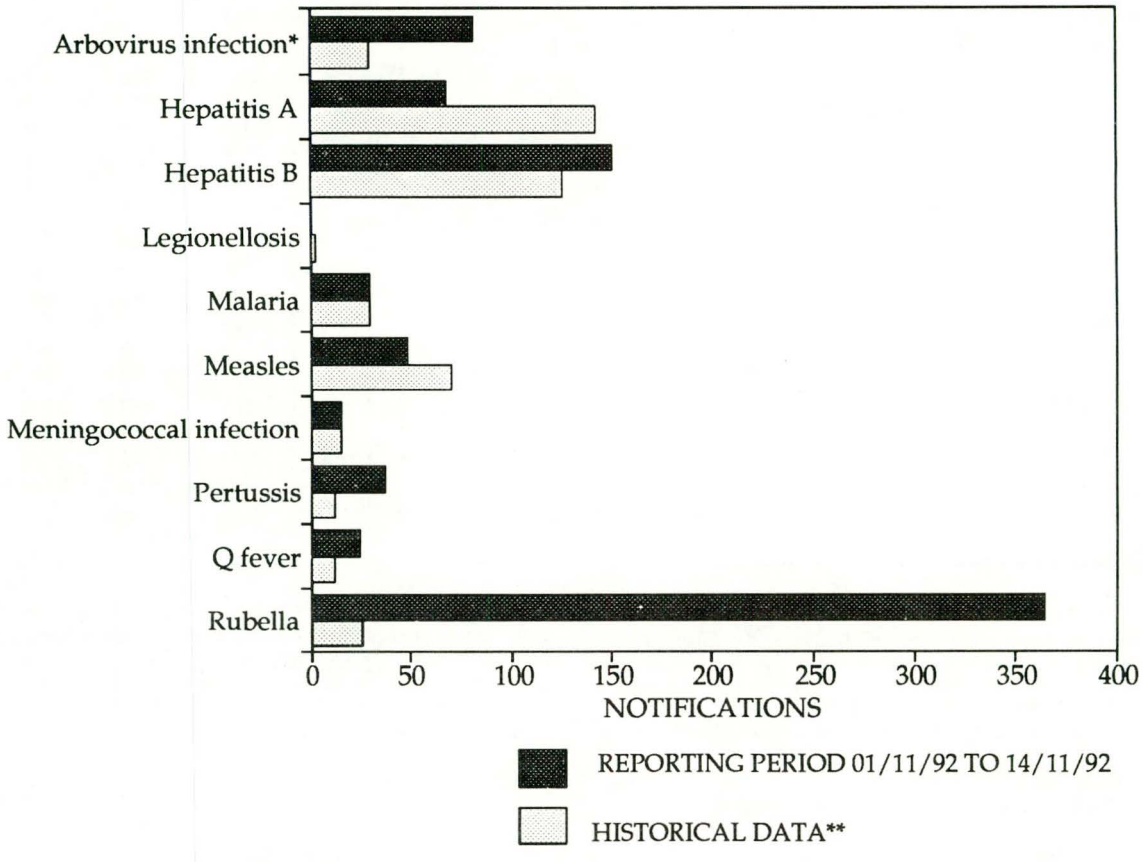
Figure 6. Rubella notifications, 1992, by month of onset



years age group; of the males, 43 were in the 10-14 years age group, 84 in the 15-19 years age group and 44 were in the 20-24 years age group. For the sexes combined, age was not recorded in 7 cases, 3 cases were aged less than 1 year, and the mean age was 19.5 years. There were 69 apparent clusters in separate postcode areas with 2 to 18 cases in each cluster.

- There were 77 **syphilis** notifications, 37 were in males and 39 were in females. Five cases were recorded as being aged less than 15 years and 2 were aged less than 1 year.

Figure 7. Selected National Notifiable Diseases Reports, and historical data **



* Includes Ross River virus and Dengue.

** The Historical data are the averages of the number of notifications in 3 previous 2-week reporting periods: the corresponding period of last year and the periods immediately preceding and following it.

Table 2. Diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation for the reporting period 18 October to 1 November 1992

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This Period 1992	This Period 1991	Year to Date 1992	Year to Date 1991
Diphtheria	0	0	1	0	0	0	0	0	1	1	13	8
Measles	8	25	0	4	1	0	9	1	48	69	890	1111
Mumps	2	0	NN	NN	NN	NN	0	NN	2	NN	18	NN
Pertussis	1	5	0	9	5	2	5	10	37	16	499	301
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	93	32	0	104	11	0	124	0	364	23	2378	527
Tetanus	0	0	0	NN	0	0	0	0	0	0	13	6

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

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

NN Not Notifiable.

Table 3. Other Notifiable Diseases[1], for the reporting period 18 October to 1 November 1992

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This Period 1992	This Period 1991	Year to Date 1992	Year to Date 1991
Arbovirus infection (NEC)[3]	0	1	1	9	0	0	2	0	13	1	306	188
Ross River virus infection	0	2	6	51	-	NN	1	6	66	17	5309	3438
Dengue	0	-	1	2	-	NN	0	NN	3	0	344	45
Campylobacteriosis[4]	0	-	10	145	151	7	30	41	384	435	7523	7417
Chlamydial infection (NEC)	1	NN	33	103	0	16	17	0	170	162	4820	3488
Donovanosis	0	NN	2	1	NN	NN	0	3	6	5	68	62
Gonococcal infection[5]	0	7	28	23	0	0	1	30	89	121	2479	2172
Haemophilus influenzae type b[6]	0	5	2	3	2	0	2	NN	14	22	423	493
Hepatitis A	1	18	4	21	14	0	5	5	68	126	1694	1838
Hepatitis B	3	62	1	50	0	1	20	14	151	133	5868	3291
Hepatitis C	14	121	7	73	0	3	25	NN	243	218	7301	3408
Hepatitis (NEC)	0	2	0	1	0	0	0	NN	3	17	52	253
HIV infection[7]	0	12	0	0	2	4	0	0	18	10	211	49
Legionellosis	0	0	0	0	0	0	0	0	0	5	151	93
Leptospirosis	0	0	0	0	1	0	4	0	5	12	105	145
Listeriosis	0	0	NN	0	NN	0	0	0	0	3	31	41
Malaria	1	2	0	17	1	0	6	3	30	40	630	719
Meningococcal infection	0	4	0	7	1	0	3	0	15	13	247	253
Ornithosis	0	NN	0	1	0	0	0	0	1	9	83	108
Q fever	0	8	0	15	0	0	2	0	25	12	435	548
Salmonellosis (NEC)	0	18	15	34	20	1	16	27	131	155	4099	4857
Shigellosis[4]	1	-	13	2	3	0	1	13	33	43	579	821
Syphilis	2	20	23	20	0	0	1	11	77	88	2260	1772
Tuberculosis	3	8	1	3	9	1	1	0	26	22	785	485
Typhoid[8]	0	0	0	0	0	0	0	0	0	6	41	69
Yersiniosis (NEC)[4]	0	-	0	7	4	0	1	1	13	24	506	466

1. For rarely notified diseases, see Table 4.
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. NSW, SA, Tas: includes Ross River virus and dengue. WA: includes dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
6. SA: only as 'bacterial meningitis'; meningococcal infection is separately notified; Tas: only as 'non-meningococcal meningitis'; Vic: epiglottitis and meningitis only.
7. More complete data on new diagnoses of HIV infections are presented in the monthly *Australian HIV Surveillance Report*.
8. NSW and Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 4. Rarely Notified Diseases[1] for the reporting period 18 October to 1 November 1992

DISEASES	Total this period	Reporting States or Territories	Year to Date 1992
Botulism			
Brucellosis	1	Qld	21
Cholera			2
Chancroid			5
Hydatid infection	2	WA	35
Leprosy	2	NT	14
Lymphogranuloma venereum			2
Plague			
Rabies			
Yellow fever			
Other viral haemorrhagic fevers			

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1986 to 1991.

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 4 November to 17 November 1992, historical data[1], and total reports for the year

	STATE OR TERRITORY OF REPORTING LABORATORY							Total this fortnight	Historical data[1]	Total reported this year
	ACT	NSW	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA										
Measles virus		2	3	4				9	9.8	173
Mumps virus			1			1		2	1.0	45
Rubella virus	1	1	56	7		12	15	92	21.3	453
HEPATITIS VIRUSES										
Hepatitis A virus		6	4	10		1	4	25	10.7	332
Hepatitis B virus		43	29	2		17	28	119	100.5	2,159
Hepatitis C virus	1		25	69	12		70	177	37.7	2,253
ARBOVIRUSES										
Ross River virus			15			1	3	19	9.7	1,251
Barmah Forest virus			6			1	3	10	1.0	228
Dengue type 2			3					3	.0	289
Dengue not typed							1	1	.7	69
Flavivirus (unspecified)			2			3		5	.7	36
ADENOVIRUSES										
Adenovirus type 1		4				1		5	5.5	96
Adenovirus type 2						2		2	6.8	116
Adenovirus type 3				10				10	3.5	67
Adenovirus type 4				17				17	.7	56
Adenovirus type 5						1		1	1.5	32
Adenovirus type 8						3		3	2.5	34
Adenovirus type 11		1						1	1.3	13
Adenovirus not typed/pending		13	24	21		13	11	82	34.0	1,035
HERPES VIRUSES										
Herpes simplex virus type 1		1	67	41	2	46	49	206	143.3	3,286
Herpes simplex virus type 2		12	89	11	2	19	96	229	168.5	4,056
Herpes simplex not typed/pending	1	11	1			6	5	24	28.8	814
Cytomegalovirus	2	8	35		1	24	15	85	81.2	1,697
Varicella-zoster virus		9	16			9	7	41	20.8	625
Epstein-Barr virus		29	35	16		11	23	114	61.7	1,477
Herpes virus group - not typed			1				2	3	8.5	42
OTHER DNA VIRUSES										
Papovavirus group						1		1	.5	14
Contagious pustular dermatitis (Orf virus)							1	1	.0	6
Parvovirus						16		16	1.3	150
PICORNA VIRUS FAMILY										
Coxsackievirus A9						1		1	2.3	11
Coxsackievirus B1						1		1	.2	20
Coxsackievirus B5				1			10	11	.7	47
Echovirus type 4						1		1	.2	14
Echovirus type 6		1						1	.2	87
Echovirus type 9	1					6		7	.0	183
Echovirus type 11		1				1		2	.5	11
Echovirus type 25		3				1		4	.2	19
Poliovirus type 1 (uncharacterised)		3		1		2		6	1.0	65
Poliovirus type 2 (uncharacterised)						1		1	1.8	47
Rhinovirus (all types)	1	3	4			31	10	49	21.7	622

Table 5. Laboratory reports by State or Territory of reporting laboratory for the reporting period 4 November to 17 November 1992, historical data[1], and total reports for the year, continued

	STATE OR TERRITORY OF REPORTING LABORATORY							Total this fortnight	Historical data[1]	Total reported this year
	ACT	NSW	Qld	SA	Tas	Vic	WA			
Enterovirus not typed/pending		3	25			9	10	47	19.8	780
ORTHO/PARAMYXOVIRUSES										
Influenza A virus			5	15			17	37	12.7	1,126
Influenza B virus			1				6	7	14.7	143
Parainfluenza virus type 1						1		1	1.0	283
Parainfluenza virus type 3	2	8	21	1		13	1	46	20.5	491
Parainfluenza virus typing pending						1		1	2.5	83
Respiratory syncytial virus		6	7	7	15		7	42	34.0	3,600
OTHER RNA VIRUSES										
HIV-1			1				2	3	1.3	32
Rotavirus		100	51	11	7	9	17	195	120.2	2,062
Reovirus (unspecified)		1				1		2	.0	10
Norwalk agent						1		1	.8	2
Small virus (like) particle		3						3	3.5	61
OTHER										
Chlamydia trachomatis - A-K			1					1	1.2	10
Chlamydia trachomatis not typed		11	58	17		8	46	140	109.7	2,444
Chlamydia psittaci			1			1		2	7.7	92
Chlamydia species		2						2	.0	4
Mycoplasma pneumoniae		52	36	10		37	13	148	18.5	1,297
Coxiella burnetti (Q fever)		7	7			2		16	8.5	239
Streptococcus group A			3					3	.0	34
Bordetella pertussis		1						1	.0	8
Bordetella species			4					4	.0	20
Treponema pallidum		7	12					19	.0	180
Toxoplasma gondii			2			1		3	.0	25
TOTAL	9	352	651	271	39	317	472	2,111	1,168.7	35,057

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

Table 6. Laboratory reports by clinical information for the reporting period 4 November to 17 November 1992

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus		1						6				2	9
Mumps virus					1							1	2
Rubella virus								37		2		53	92
HEPATITIS VIRUSES													
Hepatitis A virus							18					7	25
Hepatitis B virus							33				1	85	119
Hepatitis C virus						2	51				1	123	177

Table 6. Laboratory reports by clinical information for the reporting period 4 November to 17 November 1992, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ARBOVIRUSES													
Ross River virus					1					5		13	18
Barmah Forest virus										6		4	10
Dengue type 2												3	3
Dengue not typed												1	1
Flavivirus (unspecified)										1		4	5
ADENOVIRUSES													
Adenovirus type 1					1	2						2	5
Adenovirus type 2					1			1					2
Adenovirus type 3					3	3		1	3				10
Adenovirus type 4					6	2			8			1	17
Adenovirus type 5					1								1
Adenovirus type 8									3				3
Adenovirus type 11												1	1
Adenovirus not typed/pending	1				34	23		4	4		1	15	82
HERPES VIRUSES													
Herpes simplex virus type 1					14			119	10		56	7	206
Herpes simplex virus type 2					2			125			96	6	229
Herpes simplex not typed/pending					4			9			5	6	24
Cytomegalovirus	1			3	27	2	6					46	85
Varicella-zoster virus			1		2			29				9	41
Epstein-Barr virus					14		2	7		1		90	114
Herpes virus group - not typed								2			1		3
OTHER DNA VIRUSES													
Papovavirus group												1	1
Contagious pustular dermatitis (Orf virus)								1					1
Parvovirus								6		3		7	16
PICORNA VIRUS FAMILY													
Coxsackievirus A9		1											1
Coxsackievirus B1		1											1
Coxsackievirus B5		7										4	11
Echovirus type 4		1											1
Echovirus type 6		1											1
Echovirus type 9		5										2	7
Echovirus type 11			1					1					2
Echovirus type 25		1			1	1						1	4
Poliovirus type 1 (uncharacterised)					4	1						1	6
Poliovirus type 2 (uncharacterised)					1								1
Rhinovirus (all types)			1		34			1		1		12	49
Enterovirus not typed/pending	1		1	1	14	10	1	7				12	47
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					25					3		9	37
Influenza B virus					5							2	7
Parainfluenza virus type 1					1								1

Table 6. Laboratory reports by clinical information for the reporting period 4 November to 17 November 1992, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
Parainfluenza virus type 3					43							3	46
Parainfluenza virus typing pending					1								1
Respiratory syncytial virus					41							1	42
OTHER RNA VIRUSES													
HIV-1												3	3
Rotavirus						163						32	195
Reovirus (unspecified)					1							1	2
Norwalk agent						1							1
Small virus (like) particle						2						1	3
OTHER													
Chlamydia trachomatis - A-K											1		1
Chlamydia trachomatis not typed					2				4		86	48	140
Chlamydia psittaci					2								2
Chlamydia species					2								2
Mycoplasma pneumoniae		1			108			1		2		36	148
Coxiella burnetti (Q fever)					1					1		14	16
Streptococcus group A								1				2	3
Bordetella pertussis					1								1
Bordetella species					3							1	4
Treponema pallidum								1			2	16	19
Toxoplasma gondii												3	3
TOTAL	3	19	4	4	401	212	111	359	32	25	250	691	2111

Table 7. Laboratory reports by contributing laboratories for the reporting period 4 November to 7 November 1992

STATE	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	9
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	199
	Royal Alexandra Hospital for Children, Camperdown	48
	South West Area Pathology Service, Liverpool	48
	Tamworth Laboratory, New England Pathology	57
Queensland	Dr TB Lynch, Pathologist, Rockhampton	97
	Queensland Medical Laboratory, West End	280
	State Health Laboratory, Brisbane	274
South Australia	Institute of Medical & Veterinary Science, Adelaide	271
Tasmania	Royal Hobart Hospital, Hobart	39
Victoria	Fairfield Hospital, Melbourne	204
	Microbiological Diagnostic Unit, University of Melbourne	6
	Royal Children's Hospital, Melbourne	107
Western Australia	Princess Margaret Hospital, Perth	32
	State Health Laboratory Services, Perth	440
TOTAL		2111