



COMMUNICABLE DISEASES INTELLIGENCE

ISSN 0725-3141 VOLUME 18 NUMBER 7 4 April 1994

CONTENTS

ARTICLES	Page
Invasive meningococcal disease in a rural agricultural college	162
Gonococcal surveillance, Australia, 1 July to 30 September 1993	165
A case of pertussis in an ACT child-care centre	165
OVERSEAS BRIEFS	167
CDI NOTICE TO READERS	167
COMMUNICABLE DISEASES SURVEILLANCE	168

Editor: Helen Longbottom
Deputy Editor: Jenny Hargreaves

Editorial and Production Staff: Leslee Roberts, Margaret Curran, David Evans, Toni Hogan, Michelle Wood and Leona Seib

CDI is produced fortnightly by:
AIDS/Communicable Diseases Branch
Department of Human Services and Health
GPO Box 9848 Canberra ACT 2601
Fax: (06) 289 7791 Telephone: (06) 289 1555

Contributions covering any aspect of communicable diseases are invited. Publication does not preclude authors from arranging publication of their material elsewhere.

Opinions expressed in *CDI* are those of the authors and not necessarily those of the Department of Human Services and Health or other Communicable Diseases Network - Australia affiliates. Figures given may be subject to revision.

Parts of *CDI* are also available on the *CDI* Bulletin Board System, accessible with a computer, communications software and a modem on (06) 281 6695.

Consent for copying in all or part can be obtained from:
Manager, Commonwealth Information Service
Australian Government Publishing Service
PO Box 84 Canberra ACT 2600



COMMONWEALTH
DEPARTMENT OF
HUMAN SERVICES
AND HEALTH

INVASIVE MENINGOCOCCAL DISEASE IN A RURAL AGRICULTURAL COLLEGE

Heath Kelly, Community Physician, Angela Corrigan, Advanced Community Nurse, Great Southern Health Region, Health Department of Western Australia; Michael Wong, General Practitioner, Narrogin, Western Australia

Introduction

Follow-up of a case of invasive meningococcal septicaemia in a resident of an agricultural college in a Western Australian country town led to the identification of two previous cases of invasive meningococcal septicaemia associated with the same college in the previous seven years. There had been a small outbreak of meningococcal disease in the region in 1989-90^{1,2} and the occurrence of three cases associated with the one college, although over seven years, raised the following possibilities. The first was that the college environment may have contained a reservoir of infection, the second was that each of the patients may have had some particular susceptibility to invasive meningococcal disease and the third was that these events were purely coincidental. The first hypothesis was raised by the community but was considered by us to be a very unlikely explanation of events over a seven year period. However, investigations were undertaken to pursue each of these possibilities. Details of the cases and results of these investigations are presented in this report.

Case reports

Case 1

On 27 October 1993 a 16 year old asplenic female boarder at an agricultural college presented to her general practitioner with symptoms suggestive of an upper respiratory tract infection. Initial examination suggested the patient had a bacterial tonsillitis, but she was thought to be bacteraemic and was hospitalised. Within the next six hours, the patient deteriorated and septicaemia was suspected. Blood cultures and a lumbar puncture were performed and intravenous penicillin and ceftriaxone were commenced. The patient's blood pressure dropped significantly and resuscitation was commenced. The patient was transferred to Perth via Royal Flying Doctor Service eight hours after admission to the local hospital and was clinically stable at the time of departure. Intravenous ceftriaxone and penicillin were continued in the intensive care unit at Royal Perth Hospital but, despite full support, the patient died 72 hours after admission to the intensive care unit. *Neisseria meningitidis* group W135 was isolated from blood culture and cerebrospinal fluid.

At the same time, another 16 year old girl was seen by the same general practitioner and was also thought to be suffering from an upper respiratory tract infection, although her symptoms resembled that of the earlier patient. Blood cultures and lumbar puncture were therefore performed and this patient was also trans-

ferred to Royal Perth Hospital. No organisms were cultured from tests done in the second case and the patient made an uneventful recovery. Two days later a male student from the same agricultural college presented with non-specific symptoms. Blood cultures and a lumbar puncture were performed. These were negative but a throat swab grew *Neisseria meningitidis*, identified using polyvalent anti-serum as group X, Y, Z or W135.

On the day that the culture results of the first patient were known, all members of the same boarding house at the agricultural college commenced rifampicin prophylaxis. Further inquiry revealed a number of boarders at the college, including the 16 year old index case, had just returned from a two week holiday to New Zealand and had been living and travelling together. It was also decided to give rifampicin to all students and staff members who had been on this holiday. A total of 32 students and five staff members were treated.

Case 2

In 1986 a 14 year old school boy became unwell on the night of 5 August with a sore throat and rigors. Shortly after this he developed a purpuric rash. He was admitted to the local hospital but transferred to Perth within 24 hours. A clinical diagnosis of meningococcal septicaemia was supported when Gram negative diplococci were seen in the cerebrospinal fluid, although no organisms were cultured from either CSF or blood. This patient had a prolonged illness, remaining in hospital for three months and losing two digits from his right hand from peripheral vascular complications.

At the time of his illness this boy was attending the high school in the same town as the agricultural college. As no organism was cultured, it was not possible to identify the serogroup of the organism causing his infection but nasopharyngeal swabs were taken from the immediate family and these grew *Neisseria meningitidis* group X, Y, Z or W135. The patient's elder brother, who was a pharyngeal carrier of *Neisseria meningitidis* group X, Y, Z or W135, was attending the agricultural college in the town at the time.

Case 3

Five years later, in November 1991, a younger brother of Case 2 was transferred to Perth with a history of nausea, vomiting, arthralgia and headache. During transfer he developed a rash on his left arm. By the time of arrival in Perth, the rash had become frankly purpuric and the diagnosis of meningococcal meningitis was made. This was confirmed by lumbar puncture and *Neisseria meningitidis* group X, Y, Z or W135 was cultured from the CSF. Appropriate therapy had been commenced early and this boy made a complete recovery.

ery. He was attending the agricultural college in the same town at the time of his illness.

Further investigations

Because there were three students from one town who had suffered invasive meningococcal disease, two of whom had attended the college and the third of whom had a brother, known to be a carrier of *Neisseria meningitidis*, attending the college, the unlikely possibility of a reservoir of infection at the college was raised. All 32 staff members at the college volunteered to have pharyngeal swabs taken. In addition, all the students who had had rifampicin prophylaxis and 20 other students in the same school years who had not had prophylaxis also volunteered to have pharyngeal swabs. No organisms were isolated from any of the students or staff members who had had rifampicin prophylaxis. *Neisseria meningitidis* group X, Y, Z or W135 was isolated from two students and *Neisseria meningitidis* group C was isolated from one staff member. *Neisseria meningitidis* group X, Y, Z or W135 was not isolated from any staff member. A carrier rate of *Neisseria meningitidis* of 10% was therefore found in the students who had not received rifampicin prophylaxis and a carrier rate of 4% was found in staff members who had not received rifampicin prophylaxis. A previous investigation of carrier rates in nearby towns documented a 3.5% carrier rate of *Neisseria meningitidis* in upper primary and lower secondary school children². From these results we concluded that there was no evidence that the college was a reservoir of infection.

It was also possible that each of the patients was peculiarly susceptible to infection with *Neisseria meningitidis*. This was certainly true for the 16 year old index case. She had had a splenectomy earlier in childhood for hereditary microspherocytosis. Splenectomy increases the risk of infection with *Streptococcus pneumoniae*, *Haemophilus influenzae* type b and *Escherichia coli* as well as for invasive meningococcal disease³.

Older children who are infected with an unusual serogroup of *Neisseria meningitidis* (groups X, Y, Z and W135) may have a complement deficiency⁴. The family with two affected members was investigated for complement deficiency and other immune deficiencies. Immunoglobulin concentrations were normal and there was no evidence of complement deficiency based on C3 and C4 concentrations and CH50 estimations. CH50 is a screening test for all complement components based on lysis of sheep red blood cells which have been antibody sensitised. Although this test will rule out homozygous deficiency, it will not detect heterozygous deficiencies in components of the complement pathway. We therefore have evidence of particular susceptibility to infection with meningococcus, due to splenectomy, in one of the three cases, but we have not been able to demonstrate any obvious problem in the two cases from one family.

Comment

Review of these three cases and the subsequent investigations raises a number of important points.

Meningococcal septicaemia often presents initially with upper respiratory tract symptoms, although the patients seem to be more unwell than a similar patient suffering from a viral upper respiratory tract infection or bacterial tonsillitis. Rash and symptoms of meningitis may not be prominent presenting signs.

Although the importance of pneumococcal vaccine has been emphasised in the literature for patients who have undergone splenectomy⁵, the importance of meningococcal vaccine in patients who have had their spleen removed has been largely overlooked. All patients who have had a splenectomy should be offered vaccination against meningococcus and *Haemophilus influenzae* type b in addition to pneumococcus.

Rifampicin is generally recommended as the first line of prophylaxis in close contacts of an index case with meningococcal disease, although long term efficacy has been questioned⁶. More recent recommendations suggest that a single intra-muscular dose of ceftriaxone may be appropriate in people for whom compliance cannot be guaranteed⁷. In this investigation, while three of 47 people who had not received rifampicin prophylaxis were found to be carriers of meningococci, no person who had received rifampicin prophylaxis was found to be a carrier. Although these differences are not statistically significant (Fisher's exact $p=0.26$), and carriage rates were not measured prior to treatment, the absence of carriers in the treated group support the use of rifampicin to eliminate or prevent the development of carriage, at least in the short term⁶. The first five days after the diagnosis of an index case is the peak time for the diagnosis of a second case who has been a close contact of that index⁸ and close contacts are at considerably increased risk of infection with meningococcus⁹.

Of the family with two affected sons, another son, who is due to start at the agricultural college this year, has been immunised with the newly available quadrivalent meningococcal vaccine.

Conclusions

We concluded that the occurrence of two cases of invasive meningococcal disease in one country agricultural college over a period of seven years was likely to be due to chance alone, especially since one of the cases had a known reason to be at increased risk of invasive disease caused by encapsulated organisms, and that the risk of meningococcal infection is higher in groups of adolescents and young adults living in close contact than it is in the community at large. We also concluded that there was no obvious underlying immune deficiency that could account for the occurrence of the two cases of meningococcal disease in one family, although a rare heterozygous complement deficiency remains a possibility.

Acknowledgements

The cooperation of the staff and students at the agricultural college is gratefully acknowledged. Ms Natasha Parsons and Ms Karen Spark, with one of the authors (AC), were responsible for collecting and processing the pharyngeal swabs. Dr Robert Condon, Dr Thomas Riley and Dr Jag Gill were involved in discussions of the investigation of the patient in 1993 and provided useful comments on this report.

References

1. Watson C, Gardner V. A cluster of cases of group C meningococcal infection in Katanning, Western Australia. *Comm Dis Intel* 1990;5:4-7.
2. Stevens M, Gill J, Watson C. Prevalence of *N. meningitidis* carriage in the Katanning area. *Comm Dis Intel* 1990;15:58-60.
3. McMullin M, Johnston G. Long term management of patients after splenectomy. *Br Med J* 1993;307:1372-1373.
4. Fijen CAP, Kiusper EJ, Hannema AJ, Sjolholm AG, van Patten JPM. Complement deficiencies in patients over ten years old with meningococcal disease due to uncommon serogroups. *Lancet* 1989;2:585-588.
5. Daly HM. Pneumococcal vaccine and splenectomy. *Br Med J* 1993;307:1561.
6. Stuart JM, Cartwright KA, Robinson PM, Noah ND. Does eradication of meningococcal carriage in household contacts prevent secondary cases of meningococcal disease? *Br Med J* 1989;298:569-570.
7. Hanna J, Alexander D. Invasive meningococcal disease in an Aboriginal community in North Queensland. *Comm Dis Intel* 1994;18: 8-9.
8. Greenwood BM, Hassan-King M, Whittle HC. Prevention of secondary cases of meningococcal disease in household contacts by vaccination. *Br Med J* 1978;1317-1319.
9. Peltola H. Meningococcal disease: still with us. *Rev Inf Dis* 1983;5:71-91.

CDI editorial comment

There was a total of 47 notifications of meningococcal infection in Western Australia last year (mostly group B)¹, many more than the 28 recorded for 1992. This increase was also recorded for Australia overall; a provisional total of 374 notifications was reported for 1993, compared with 292 for 1992 and 285 for 1991. There was a seasonal peak in onset dates in August-September. Sixty-three notifications of meningococcal infection have been received so far this year, including 14 from Western Australia.

The National Health and Medical Research Council recommends both meningococcal vaccine and pneumococcal vaccine for anatomically or functionally asplenic patients, and meningococcal vaccine for persons over the age of two years who have deficiencies of properdin or terminal components of complement². It is currently developing new guidelines for the control of meningococcal disease in Australia, and an update for the meningococcal recommendations contained in *Immunisation Procedures*. It is also considering the use of *Haemophilus influenzae* type b vaccines in asplenic patients, as recommended above and by the United States³ Advisory Committee on Immunisation Practices³.

It is interesting that the index case in this series had been to New Zealand immediately prior to becoming ill, as an epidemic of meningococcal infection has been occurring there since 1991. Group B organisms have been the most commonly reported (66.7% in 1992), but there have also been some groups Y and Z organisms reported⁴.

References

1. Sprague DL, Riley TV. A brief review of infectious diseases notifications for 1993. *Western Australia Notifiable Diseases Bulletin* 1993;3(12):8-14.
2. National Health and Medical Research Council. *Immunisation Procedures*. 4th ed. Canberra: Australian Government Publishing Service, 1991.
3. Centers for Disease Control and Prevention. General recommendations on immunization: recommendations of the Advisory Committee on Immunization Practices (ACIP). *MMWR* 1994;43(No. RR-1):1-38.
4. Communicable diseases in New Zealand, 1992. *Communicable Diseases New Zealand* 1993;93(S-1):1-46.

GONOCOCCAL SURVEILLANCE, AUSTRALIA, 1 JULY TO 30 SEPTEMBER 1993

Derived from the Australian Gonococcal Surveillance Program - AGSP, Co-ordinator JW Tapsall, The Prince of Wales Hospital, Sydney

Laboratories participating in the Australian Gonococcal Surveillance Programme examined 363 isolates of *Neisseria gonorrhoeae* for their sensitivities to penicillin in this quarter (Table). Three hundred and thirty-one strains were also tested for sensitivity to spectinomycin, ciprofloxacin and ceftriaxone and for high tetracycline resistance (TRNG).

Resistance to the penicillins was particularly noticeable in Melbourne with over one third of isolates showing intrinsic resistance (CMRNG). The number and proportion of PPNG was less than in the corresponding period in 1992 and in the preceding quarter of 1993. Sydney, Melbourne and Brisbane laboratories reported most of the PPNG isolates, but single isolates were also encountered in Darwin and Adelaide. Information on acquisition was available in 21 cases. Twelve patients

were infected overseas (South-East Asia) and nine locally (New South Wales, Victoria and Queensland).

All isolates tested were sensitive to spectinomycin and ceftriaxone. Eight strains (24%) showed decreased sensitivity to quinolone antibiotics (ciprofloxacin MICs 0.03-0.5 mg/L) but no strains with high level resistance (MIC \geq 1mg/L) were encountered. High level tetracycline resistance (TRNG) was detected in 10 strains (3% of isolates tested) and these were found in Melbourne, Adelaide, Brisbane and Darwin.

The total number of strains examined (363) is less than the 425 isolates examined in the same period in 1992 and the 468 strains seen in the April-June quarter of 1993.

Table. Penicillin sensitivity of *Neisseria gonorrhoeae* isolated in Australia, 1 July to 30 September 1993, per cent (n tested = 363)¹

Centre	Sensitive ²	Less sensitive ³	Relatively resistant ⁴	PPNG ⁵
Brisbane	13.5 (28)	77.0 (65)	0 (0)	9.5 (7)
Sydney	35.0 (36.5)	48.0 (49)	7.0 (5.5)	10.0 (9)
Melbourne	32.9 (62)	25.0 (18)	34.2 (13)	13.0 (7)
Adelaide	18.2	72.6	4.6	4.6
Darwin	4.5	91.0	0	4.5
Australia	23.6 (43)	58.5 (42.5)	10.2 (5.5)	7.7 (9)

1. Figures in parentheses represent data from the corresponding period in 1992.

2. Sensitive, MIC \leq 0.03 mg/L.

3. Less sensitive, MIC 0.06 - 0.5 mg/L.

4. Relatively resistant, MIC \geq 10 mg/L.

5. PPNG = penicillinase producing *N. gonorrhoeae*.

A CASE OF PERTUSSIS IN AN ACT CHILD CARE CENTRE

Leslee Roberts, Commonwealth Department of Human Services and Health and National Centre for Epidemiology and Population Health, Canberra; Cathy Mead, Medical Officer of Health, ACT Health; Irene Passaris, Communicable Disease Control Unit, ACT Health

Introduction

In August 1993, the Australian Capital Territory Department of Health received notification that an 18 month old boy in an ACT community child care centre had developed pertussis. The child had been cared for in the centre's nursery room at the onset of symptoms.

The child care centre, established in 1993, was licensed to care for 55 children in three groups: 15 children under 18 months of age, 18 children aged 18 months to 3 years of age and 22 preschool children aged 3 to 5

years. The nursery children mixed with children from other groups for short periods in the morning and afternoon.

The centre had a written health policy that was given to all parents at the time of enrolment. The policy listed exclusion requirements for specific diseases, fever and antibiotic administration. The health policy did not mention infection control protocols or immunisation records.

Methods

We identified close contacts of the child with pertussis: the 17 babies who had been in the nursery at various times and six staff members. We reviewed the centre held immunisation records for all children attending the centre and assessed completed records for the age at which each vaccine had been given to determine whether immunisations were given at ages recommended by the National Health and Medical Research Council (NHMRC). To assess side effects of erythromycin we distributed a questionnaire to 23 staff and parents two weeks after the investigation.

Results

The index case had not mixed with children other than those in the nursery in the preceding three weeks. We recommended erythromycin chemoprophylaxis for the 17 babies and 6 staff who were the index case's close contacts. All of the babies had been age-appropriately immunised with DTP; 16 had received three doses of diphtheria-tetanus-pertussis (DTP) vaccine and one had received one dose of DTP vaccine. The index case and his older sibling also received erythromycin. The older sibling had continued to attend the centre after the index case's diagnosis and before notification. We advised the sibling be excluded from the centre until erythromycin had been administered for five days.

No further cases of pertussis occurred.

Post treatment questionnaires were returned by 91% of parents and staff. The duration of medication completed ranged from five to 31 days, median 14 days, mean 13 days. Side effects were reported in 60% of children and 1% of adults (Table). Mild gastrointestinal disturbance was responsible for 38% of side effects. One child developed a rash, vomiting and diarrhoea 24 hours after commencing the antibiotic. Rotavirus antigen was present in her faeces and she was hospitalised because of dehydration.

Immunisation records, appropriate for the child's age, were incomplete for 34% of children. The proportion of completed records varied with age. Immunisation records were incomplete for 47% of babies in the nursery, 38% of toddlers and 19% of preschool aged children. There was no record of any immunisation for three children, recent immigrants.

Less than 1% of DTP vaccinations had been given one month after the due date. Forty children were over 12

months of age and had received measles-mumps-rubella vaccine (MMR). Eleven of these (28%) had received MMR later than 12 months of age (mean 14.3 months). These children would be classified as having received immunisation late according to current NHMRC recommendations of MMR at 12 months of age. However, at the time these immunisations were given, the NHMRC recommendation was to administer MMR at 12 to 15 months of age.

Discussion

Pertussis was not transmitted from the index case to other children in the child care centre. This successful outcome may have been due to a number of factors, including adequate immunity in the children who had received one to three doses of DTP, or successful chemoprophylaxis.

Side effects were commonly reported in children who received erythromycin. It is difficult to be certain that some of the reported side effects were not effects of concomitant rotavirus infection.

The immunisation records of children in the centre were poorly maintained. Legislation requiring immunisation for all children attending child care is insufficient to ensure adequate record maintenance. The difficulties in maintaining an immunisation register in a setting with many children of varying age need to be addressed. We are looking at methods to assist child care workers to maintain age appropriate records.

The ACT Long Day Care License Conditions were amended on 14 February 1994¹. The current licence conditions require parents to produce an immunisation record. Services are required to maintain a record of immunisation status of each child and forward copies of immunisation records to the ACT Department of Health.

Reference

1. ACT Long Day Care License Condition Clause 24(d) and (e) amended 14 February 1994.

Acknowledgment

We are grateful for the assistance of Ms Mary Fogarty and Ms Helen Scully, Children's Day care Services, ACT Housing and Community Services Bureau and the director and staff of the child care centre.

Table. Side effects reported from erythromycin chemoprophylaxis for 15 children and 6 adults in an ACT child care centre, August 1993

Side effects	% of children	% of total
No side effects	40	52
Diarrhoea	33	24
Other gastrointestinal disturbance	20	19
Rash, vomiting and diarrhoea	7	5

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO), the Institut Pasteur, Paris, and the Department of Foreign Affairs and Trade.

Japanese B encephalitis in Sri Lanka

Japanese B encephalitis activity is reported to have increased recently in Sri Lanka, particularly in areas around Colombo. The risk of travellers to the area contracting the disease is thought to have increased.

Influenza in the Northern Hemisphere

The Russian Federation was the only country in Europe reporting increasing influenza activity in the middle of March. Epidemic levels were reached in 21 of 36 cities, with the highest incidences in Minsk, Novgorod, Voronezh, Saratov, Smolensk, Volgograd, Dnepetrovsk and Kirov, and in children. Influenza A has been the main agent diagnosed.

In the first week of March, influenza activity was declining in the United States, with widespread or regional activity reported in four States only. Pneumonia and influenza death indices were back to expected levels after being elevated for nine consecutive weeks.

Israel has reporting increasing influenza activity in March. One virus isolation was made, an influenza A H₃N₂, similar to A/Beijing/32/92.

Rift Valley fever in Egypt

Rift Valley fever has reappeared in Egypt after a 12 year absence¹. The disease occurred in an explosive epidemic in 1977-78, resulting in 600 deaths and thousands of humans and domestic animals affected. Human and animal cases have now been recognised since May 1993. Cases in sheep, goats, cattle and water buffalo were identified after a abnormally high numbers of

abortions in cattle and buffalo occurred in May, June and July 1993. The human cases have been characterised by febrile illness accompanied by visual impairment, rather than the haemorrhagic form of 1977-78. One death has occurred, in a 17 year old female who had subcutaneous and rectal haemorrhage and severe jaundice. The virus was isolated from her serum.

In mid-1993, an animal vaccination program and surveillance for the disease was commenced, and mosquito control measures were undertaken. No human cases were reported between December 1993 and mid-February 1994.

Malaria outbreak in Papua New Guinea

A severe outbreak of malaria has been reported from the Trobriand Islands of Papua New Guinea. More than 200 persons are reported to have died, and hundreds more were seriously ill. Most deaths were among the old and very young. More information is being sought on this outbreak.

Cholera update

The Jaffna District of Sri Lanka has recently been declared cholera infected. Nampula Province and Chemba and Gorongosa Districts in Sofala Province in Mozambique has been removed from the infected areas list.

Cases of cholera have been reported for January and February from Argentina, Bolivia, Brazil, Burundi, Colombia, Ecuador, El Salvador, Guatemala, Honduras, India, Nicaragua, Peru, and Somalia.

Reference

1. Rift Valley fever. *Wkly Epidemiol Rec* 1994;69:74-76.

CDI NOTICE TO READERS

Malaria prophylaxis

The National Health and Medical Research Council has recently published its recommendations on malaria prophylaxis. They are the same as those published in *CDI* 1993;17:594-601 and *CDI* 1994;18:42, but in a self-contained format.

Copies are available from

The Publications Officer
NMHRC
GPO Box 9848
Canberra ACT 2601

phone (06) 289 7646 (24 hour answering machine)
fax (06) 289 7802.

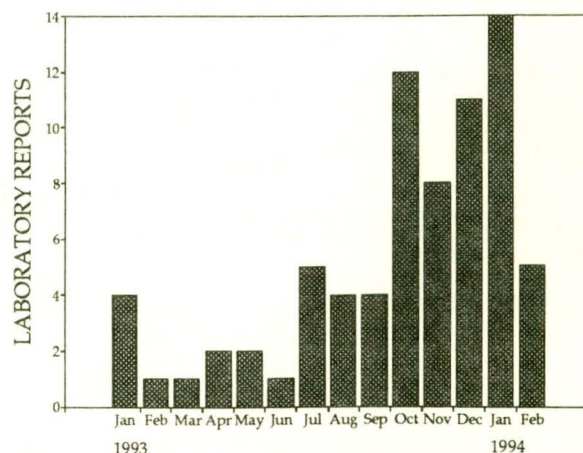
COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 934 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 7, 8 and 9).

- **Mumps** was reported for 15 and 17 year old males from Western Australia this fortnight, both diagnosed by viral IgM detection.
- **Rubella** was reported for 3 patients this fortnight, 15 and 16 year old males and a 41 year old female.
- Five reports of **hepatitis A** were received this fortnight, three females (two 3 year olds and a 30 year old) and two males (a 12 year old and a 27 year old).
- Positive **hepatitis B** serology was reported for 9 and 16 year old males, and an 18 year old female, all from Queensland.
- One hundred and thirty-one reports of positive **hepatitis C** serology were received this fortnight, 87 males and 44 females, in the age range 17 to 71 years. Included were 53 injecting drug users, 1 haemodialysis patient and one patient with a history of blood transfusion.
- **Ross River virus** infection was reported for 10 patients this period, 5 from the Northern Territory, 4 from Western Australia and one from South Australia. Two cases were confirmed (fourfold change in titre), one from Derby (specimen collection date 1 March) and the other from the Northern Territory (specimen collected mid-February). The remainder were presumptive diagnoses (IgM positive).
- Forty-five reports of **adenovirus** were received this fortnight, 26 isolations, 13 antigen detections and 6 single high titres. A total of 16 patients reported respiratory symptoms, 14 gastrointestinal disease and 4 eye disease. Included was **adenovirus type 8** isolated from the faeces of a 19 month old female with gastroenteritis. An increased number of reports of adenovirus type 8 was received during the summer months (Figure 1). This virus is usually reported in association with eye disease. **Adenovirus type 11** was isolated from a broncheolar lavage specimen from a 29 year old HIV positive male with a 2 month history of a cough. **Adenovirus type 22** was isolated from a broncheolar lavage specimen from a 41 year old HIV positive male with pyrexia and a cough. Untyped **adenovirus** was detected by latex agglutination in a rectal biopsy from a 30 year old male with gastroenteritis.
- **Herpes simplex virus type 1** was isolated from the eyes of 4 patients from Queensland, a 23 year old female and 32, 42 and 45 year old males.
- **Herpes simplex virus type 2** was isolated from the eye of a 13 year old female.
- Untyped **herpes simplex virus** was diagnosed by nucleic acid detection in CSF from a 51 year old female with encephalitis (high fever and confusion) and a nasopharyngeal specimen from a 59 year old male with encephalitis.
- There were 53 reports of **cytomegalovirus (CMV)** infection this fortnight. Forty three reports were of virus isolation, 3 of antigen detection, one single high titre and 6 of viral IgM detection. Included was a one day old female (virus isolated from urine and viral IgM detected) whose mother had a history of CMV in pregnancy. The child appeared well at the time of reporting. A thirty year old female with fever, arthralgia, neck stiffness and photophobia was positive for CMV IgM. CMV was isolated from a stomach biopsy from a 46 year old male bone marrow transplant recipient, from the pleural fluid of a 12 year old male with pneumonia, and from the nasopharynx of a one year old female with pneumonia. Cervical swabs from 18 and 38 year old females yielded CMV by virus isolation.
- **Varicella zoster virus** was detected by nucleic acid detection in the CSF of a 65 year old male with encephalitis.
- **Enteroviruses** were reported for 79 patients this fortnight, 12 of which were **echovirus type 30**. **Coxsackie virus type B3** was isolated from the CSF of a 34 year old Victorian male with meningitis. **Coxsackie virus type B4** was isolated from the CSF of a 27 year old female with meningitis and from CSF and nasopharyngeal specimens from a 2 month old male with meningitis.

Figure 1. Adenovirus type 8 laboratory reports, 1993 to 1994, by month of specimen collection



Australian Sentinel Practice Research Network

ASPREN data for week 7 are included in this issue if CDI (Table 1). There were 6943 patient encounters. Pertussis has been reported at an average rate of 0.6 per 1000 encounters since the end of December, higher than the average rate reported for the two months prior to that (0.3).

Table 1. Australian Sentinel Practice Research Network, Week 7, 1993

Condition	Week 7, to 20 February 1994	
	Reports	Rate per 1000 encounters
Influenza	25	3.6
Measles	3	0.4
Chickenpox	4	0.6
Pertussis	5	0.7
Gastroenteritis	97	14.0

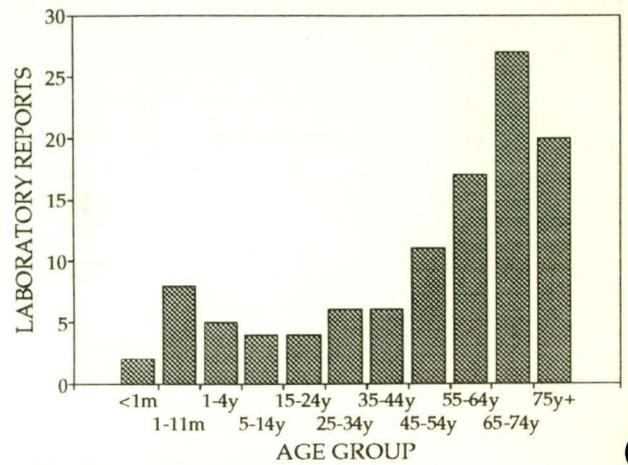
Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 7 laboratories. There were 141 reports of recent significant sepsis: Royal North Shore Hospital, New South Wales 41, Princess Margaret Hospital, Western Australia 14, Sir Charles Gairdner Hospital, Western Australia 35, Woden Valley Hospital, ACT 30, Northern Tasmanian Pathology Service 11, Nambour Hospital, Queensland 3, Central Queensland Pathology Service, Mackay 7.

Organisms reported 5 or more times from blood are detailed in Table 2. Other blood isolates not included in Table 2 were:

Gram positive: 2 *Streptococcus adjacens* (an 8 month old female, and a 57 year old female, both from Western Australia), 3 group B *Streptococcus* (1 neonate, 1 post

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



partum), 1 *Streptococcus pneumoniae* (2 year old with osteomyelitis), 1 *Corynebacterium jeikeium*, 1 *Corynebacterium xerosis*, 1 *Enterococcus faecalis*, 1 *Bacillus* species, 4 coagulase negative staphylococci, 1 *Streptococcus sanguis*, 1 *Streptococcus viridans*, 1 *Streptococcus mitis*.

Gram negative: 1 *Salmonella* Typhi (21 year old female from the ACT who had recently travelled to Papua New Guinea), 1 *Haemophilus influenzae* type b (3 year old female with epiglottitis), 1 *Salmonella* species, 1 *Enterobacter aerogenes*, 4 *Acinetobacter* species (3 *A. calcoaceticus*), 1 *Klebsiella oxytoca*, 3 *Enterobacter cloacae*, 3 *Pseudomonas aeruginosa*, 1 *Pseudomonas cepacia*, 2 *Proteus mirabilis*, 1 *Xanthomonas maltophilia*, 1 *Morganella morganii*, 2 *Serratia marcescens*, 1 *Serratia* species.

Anaerobes: 2 *Bacteroides fragilis*, 1 *Bacteroides* species, 2 *Clostridium perfringens*, 1 *Clostridium septicum*, 1 *Fusobacterium necrophorum*.

Fungi: 1 *Candida* species.

Most of the blood isolates were in patients over the age of 55 years (Figure 5).

Table 2. 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	Hospital acquired	Neonatal	
<i>Staphylococcus aureus</i>	4	1		1	3	4	3	8	2			27 ²
<i>Escherichia coli</i>		1		5	13	1	2	6				28
<i>Klebsiella pneumoniae</i>				3	1			2			1	8

1. Only organisms with 5 or more reports are included in this table.
 2. MRSA 2.

Table 3. LabDOSS reports of CSF isolates and/or meningitis, by organism and age group

	<1 months	1-11 months	1-4 years	5-14 years	15-24 years	25-34 years	35-44 years	Total
<i>Neisseria meningitidis</i>			1 ¹		1 ²			2
<i>Enterobacter cloacae</i>	1							1
<i>Klebsiella pneumoniae</i>							1	1
<i>Haemophilus influenzae</i> type b			1					1
<i>Acinetobacter calcoaceticus</i>					1			1
<i>Cryptococcus neoformans</i> var <i>gatti</i>							1	1
<i>Streptococcus 'viridans'</i>		1						1

1. Group W135.

CSF isolates and/or meningitis reports

There were 8 reports of CSF isolates and/or meningitis (Table 3).

Isolates from sites other than blood or CSF

Peritoneal dialysate: 3 coagulase negative *Staphylococcus*, 1 *Bacillus subtilis*, 1 *Escherichia coli*.

Joint fluid: 4 *Staphylococcus aureus*, 1 Group G *Streptococcus*, 1 *Enterococcus faecalis*, 1 *Staphylococcus epidermidis*.

Other: 1 *Nocardia asteroides*, 1 *Escherichia coli*, 5 *Staphylococcus aureus*, 1 *Streptococcus pneumoniae*, 1 *Enterobacter aerogenes*, 1 *Candida albicans*.

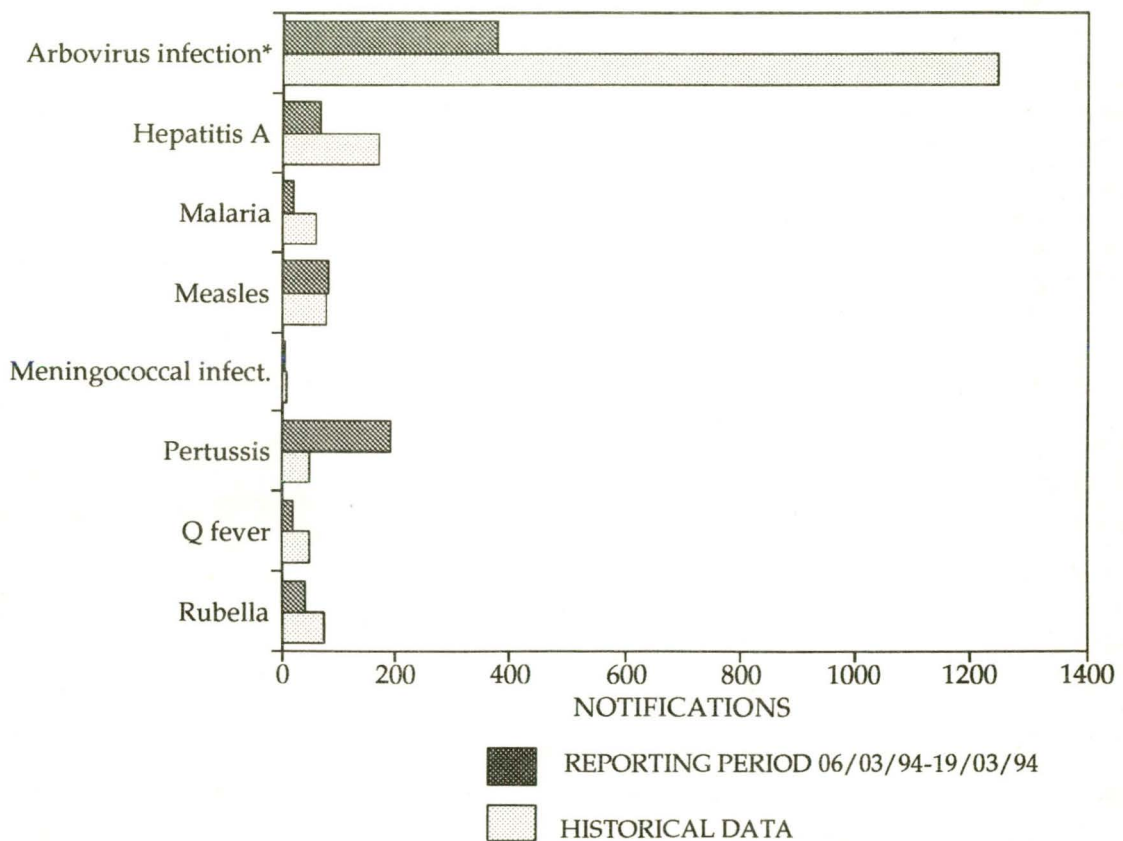
National Notifiable Diseases Surveillance System, 6 March to 19 March 1994

There were 2174 reports received for this period (Tables 4, 5 and 6 and Figure 9).

- There were 340 notifications of **Ross River virus infection** in this period, 168 males and 172 females. Cases ranged in age between the 5-9 years and the 85-89 years age groups with a mean age of 40.2 years. Age was unrecorded for 4 cases. The majority of cases were from Queensland (268). Recorded onset dates were December (one), January (7), February (71), and March (261).
- Two notifications of **brucellosis** have been received. One case was male and one female. They were in the 30-34 and 45-49 years age groups. Cases were resident in rural Victoria and Queensland and recorded onset dates were December and January.
- There was a single case of **cholera** notified in a male in the 60-64 years age group resident in Victoria. The case was acquired in Bali and reported in *CDI* 1994;18:144.
- One case of **dengue** was notified for a male in the 50-54 years age group who was resident in the Northern Territory. The recorded onset date was February.
- Four cases of **diphtheria** were notified for a previous reporting period; 2 cases were male and 2 were female. Cases ranged in age from the 20-24 years to the 40-44 years age group. All cases were resident in the Northern Territory. Two cases were reported as Aboriginal and Aboriginality was unrecorded in the remaining cases.
- Eighty-five notifications of **gonococcal infection** were reported in the period. Fifty-one cases were males and 33 were females. Sex was unrecorded for one case. Recorded ages ranged between the 15-19 years and 80-84 years age groups. Age was unrecorded for 4 cases.
- **Haemophilus influenzae type b infection** was reported for 8 cases. Five cases were male and 3 were female. There were 6 cases in the 0-4 years age group and 2 cases in the 5-9 years age group. Recorded onset dates were March for 7 and unrecorded for one case. There were no apparent clusters.
- Sixty-eight notifications of **hepatitis A** were received for the period, 36 males and 32 females. Ages ranged from the 0-4 to the 85-89 years age groups. Age was unrecorded for one case.
- There were 65 notifications for **hepatitis B** received in the period; 4 of these notifications were from States that report incident cases only. One of the incident cases was male and three were female. They ranged in age between the 15-19 years and 55-59 years age groups.
- Eight notifications for **legionellosis** were received; seven cases were male and one case was female. Cases ranged in age between the 25-29 and 65-69 years age groups. All recorded onset dates were March. There were no apparent clusters.
- A case of **leprosy** was notified to the Victorian Department of Health and Community Services in January. The case was a male in the 25-29 years age group.
- There were four cases of **leptospirosis** reported in the period. All cases were male. One case was in the

- A single case of congenital rubella syndrome was notified for a child aged less than one year who was a resident in Sydney. The sex of the child was unrecorded.
- Sixty-six notifications of **syphilis** were received in the period. Thirty-eight cases were male, 26 cases were female and sex was unrecorded for 2 cases. Cases ranged in age between the 0-4 and the 85-89 years age groups with age unrecorded for one case. There was one case aged less than one year of age.
- A case of **tetanus** was notified in a previous reporting period for a female in the 80-84 year age group resident in Melbourne. Recorded onset date was February.
- There were 30 notifications of **tuberculosis** received; 17 cases were male, 12 cases were female, and sex was unrecorded for one case. Cases ranged in age between the 20-24 years and 80-84 years age groups with age unrecorded for one case. Recorded onset dates were January (4), February (14) and March (10). Information on onset date was unrecorded for 2 cases.
- Two cases of **typhoid** were notified in the period. Both cases were female, one each in the 20-24 years and 30-34 years age groups. Recorded onset dates were January (one) and February (one).
- Seventeen notifications of **yersiniosis** were received. One case was male and 16 cases were females. Recorded ages ranged between the 0-4 years and 75-79 years age groups. There were no apparent clusters.

Figure 9. Selected National Notifiable Diseases Surveillance System reports, and historical data¹



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

* Includes Ross River virus infection, dengue and arbovirus, not elsewhere classified.

Table 4. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 6 to 19 March 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA ¹			
									This period	This period	Year to date	Year to date
									1994	1993	1994	1993
Diphtheria	0	0	0	0	0	0	0	0	0	0	5	0
<i>Haemophilus influenzae</i> b infection	0	4	0	1	1	1	1	0	8	21	46	38
Measles	0	21	0	54	1	0	1	6	83	35	748	96
Mumps	0	0	NN	NN	0	NN	0	0	0	0	3	0
Pertussis	0	73	0	48	41	0	19	10	191	53	1196	117
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella ²	0	5	0	12	6	1	12	7	41	114	431	210
Tetanus	0	0	0	NN	0	0	0	0	0	0	2	0

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: CRS only.
NN Not Notifiable.

Table 5. Notifications of other diseases¹ received by State and Territory health authorities in the period 6 to 19 March 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA ²			
									This period	This period	Year to date	Year to date
									1994	1993	1994	1993
Arbovirus infection												
Ross River virus infection	0	33	34	268	1	NN	0	4	340	893	1703	1633
Dengue	0	-	1	0	-	NN	0	NN	1	7	3	12
NEC ³	0	2	4	24	0	2	3	1	35	53	153	82
Campylobacteriosis ⁴	18	-	1	63	86	25	83	30	306	350	2014	664
Chlamydial infection (NEC) ⁵	3	NN	2	72	41	19	29	34	200	298	1378	504
Donovanosis	0	NN	1	3	NN	NN	0	0	4	0	23	3
Gonococcal infection ⁶	0	4	1	26	4	2	0	48	85	125	616	255
Hepatitis A	3	29	1	24	2	4	4	7	68	76	403	166
Hepatitis B ⁷	8	2	0	53	0	0	0	2	65	92	381	190
Hepatitis C	22	0	12	89	0	12	60	34	229	238	1913	384
Hepatitis (NEC)	0	0	0	1	0	0	0	NN	1	0	16	3
Legionellosis	0	3	0	0	0	0	5	0	8	9	34	19
Leptospirosis	0	0	0	4	0	0	0	0	4	8	48	14
Listeriosis	0	0	NN	0	0	0	0	0	0	1	7	5
Malaria	2	4	2	6	0	0	6	2	22	12	119	49
Meningococcal infection	0	6	0	1	0	0	0	1	8	4	62	10
Ornithosis	0	NN	0	0	1	0	0	0	1	2	23	5
Q fever	0	4	0	0	15	0	0	0	19	44	124	65
Salmonellosis (NEC)	7	59	8	99	31	21	58	19	302	263	1596	499
Shigellosis ⁴	1	-	0	19	5	0	2	9	36	61	176	102
Syphilis	1	45	2	10	0	0	1	7	66	134	429	230
Tuberculosis	0	12	0	3	2	2	11	0	30	45	177	72
Typhoid ⁸	1	0	0	1	0	0	0	0	2	4	9	5
Yersiniosis (NEC) ⁴	0	-	0	13	3	0	1	0	17	23	120	41

1. For HIV and AIDS, see Tables 1 and 2, CDI 1994;18:125. For rarely notified diseases, see Table 6.

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. SA, 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. Acute cases only are reported by NSW, NT, SA, Tas and WA.

8. NSW and Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

- Elsewhere Classified.

Table 6. Notifications of rare¹ diseases received by State and Territory health authorities in the period 6 to 19 March 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	0		2
Chancroid	0		0
Cholera	1	Vic	1
Hydatid infection	0		8
Leprosy	0		1
Lymphogranuloma venereum	0		0
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 7. Virology and serology laboratory reports by State or Territory¹ for the reporting period 10 to 23 March 1994, historical data², and total reports for the year

	State or Territory ¹								Total this fortnight	Historical data ²	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Measles virus							1	1	2	6.5	437
Mumps virus								2	2	3.2	26
Rubella virus					1			2	3	18.0	228
HEPATITIS VIRUSES											
Hepatitis A virus				2	2		1		5	21.0	84
Hepatitis B virus	3		1	23	3		11	14	55	94.3	634
Hepatitis C virus	12				47		3	69	131	125.8	1,414
ARBOVIRUSES											
Ross River virus			5		1			4	10	146.8	700
Barmah Forest virus								1	1	11.7	82
Dengue not typed			2						2	.8	8
Flavivirus (unspecified)							1		1	3.2	4
ADENOVIRUSES											
Adenovirus type 1							2		2	1.0	27
Adenovirus type 2							1		1	1.8	27
Adenovirus type 3		1							1	7.2	7
Adenovirus type 8							5		5	.8	40
Adenovirus type 11							1		1	.2	1
Adenovirus type 22							2		2	.0	3
Adenovirus not typed/pending				9	11		7	6	33	37.3	430
HERPES VIRUSES											
Herpes simplex virus type 1			2	34	29		37	34	136	155.5	1,402
Herpes simplex virus type 2		1	1	24	28	2	28	39	123	172.8	1,539
Herpes simplex not typed/pending	8	2					6	1	17	25.8	187
Cytomegalovirus	2	1		22	3		18	7	53	69.8	442
Varicella-zoster virus					7		5	5	17	27.3	297
Epstein-Barr virus	1	1			26		7	8	43	70.0	453

Table 7. Virology and serology laboratory reports by State or Territory¹ for the reporting period 10 to 23 March 1994, historical data², and total reports for the year, continued

	State or Territory ¹								Total this fortnight	Historical data ²	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
PICORNA VIRUS FAMILY											
Coxsackievirus A16							3		3	.5	14
Coxsackievirus B3							1		1	.2	2
Coxsackievirus B4							2		2	.2	5
Echovirus type 22							2		2	.2	3
Echovirus type 30					2	2	8		12	.0	147
Rhinovirus (all types)		3		22	1		11		37	29.2	285
Enterovirus not typed/pending		5		34			17	3	59	25.8	434
ORTHO/PARAMYXOVIRUSES											
Influenza A virus					4		1	2	7	7.8	132
Influenza B virus	1				1				2	3.2	83
Parainfluenza virus type 1				3			5		8	12.0	33
Parainfluenza virus type 2				1			1		2	2.0	10
Parainfluenza virus type 3							2		2	14.5	70
Parainfluenza virus typing pending							2	1	3	2.3	8
Respiratory syncytial virus		4	2	7			4	9	26	24.3	198
OTHER RNA VIRUSES											
Rotavirus	3	1			1		7	14	26	22.7	255
OTHER											
<i>Chlamydia trachomatis</i> not typed					32	3	13	17	65	125.2	788
<i>Mycoplasma pneumoniae</i>					4	1	5		10	48.7	331
<i>Coxiella burnetii</i> (Q fever)							1		1	16.5	123
<i>Bordetella pertussis</i>							3	16	19	3.5	183
<i>Toxoplasma gondii</i>							1		1	1.5	7
TOTAL	30	19	13	181	203	8	225	255	934	1,341.2	11,583

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 8. Virology and serology laboratory reports by clinical information for the reporting period 10 to 23 March 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
OTHER RNA VIRUSES													
Rotavirus						24						2	26
OTHER													
<i>Chlamydia trachomatis</i> not typed									1		54	10	65
<i>Mycoplasma pneumoniae</i>					8							2	10
<i>Coxiella burnetii</i> (Q fever)												1	1
<i>Bordetella pertussis</i>					19								19
<i>Toxoplasma gondii</i>												1	1
TOTAL	4	26	5	1	175	50	60	150	14	6	160	283	934

Table 9. Virology and serology laboratory reports by contributing laboratories for the reporting period 10 to 23 March 1994

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	31
New South Wales	Royal Alexandra Hospital for Children, Camperdown	17
Queensland	State Health Laboratory, Brisbane	180
South Australia	Institute of Medical and Veterinary Science, Adelaide	202
Tasmania	Northern Tasmanian Pathology Service, Launceston	5
Victoria	Microbiological Diagnostic Unit, University of Melbourne	13
	Royal Children's Hospital, Melbourne	76
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	141
Western Australia	Princess Margaret Hospital, Perth	49
	State Health Laboratory Services, Perth	220
TOTAL		934