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

HEPATITIS C NOTIFICATIONS IN THE NORTHERN TERRITORY, JUNE TO DECEMBER 1994

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Introduction

Little is known about the epidemiology of hepatitis C in Northern Territory, as testing for and notification of the disease have only occurred in recent years. Laboratory testing for hepatitis C, introduced in 1990, has lead to notification of cases in both blood donation and other screening and clinical settings. Notifications from sources other than blood donor testing have increased exponentially since 1990 in the Northern Territory; ten notifications were received in 1991, 90 in 1992, 190 in 1993 and 310 in 1994.

I set out to gather more information about cases testing positive for antibody to the hepatitis C virus that were notified from sources other than blood donor screening. Information was sought on which cases were acute infections and which were prevalent, and on the risk factors operating for hepatitis C seropositivity and transmission in the Northern Territory, for targeting of the at risk groups for preventive education, and to help in resource planning.

Methods

An extended notification system was piloted in the Northern Territory from June 1994. The Disease Control Centre at Darwin developed a detailed questionnaire, which the laboratories sent to the requesting doctors in the event of a positive result. The requesting practitioner was asked to complete the questionnaire, which sought demographic details, the reason(s) for testing, and the patient's risk factors for hepatitis C infection. The doctors were asked to determine which cases were acute and which were prevalent using the case definitions of the Communicable Diseases Network of Australia and New Zealand (CDNANZ):

Acute hepatitis C:

(a) Demonstration of documented seroconversion to hepatitis C virus when the most recent negative specimen was within the last 12 months

or

(b) i) Demonstration of anti-hepatitis C virus positive test or hepatitis C virus polymerase chain reaction positive test

and

ii) a clinical illness consistent with acute hepatitis C within the last 12 months where other causes of acute hepatitis can be excluded.

All other cases are to be classified as prevalent or unspecified. A case is to be excluded if previously notified.

The completed form was forwarded to the Disease Control Centre in Darwin, where the information was entered onto a confidential Epi Info database for analysis and for reporting of notifications of acute cases to the CDNANZ. The doctors completing the forms were able to request an appointment for patients to be seen for individual counselling and education about hepatitis C at a special clinic within the Disease Control Centre. Laboratories also notified the Disease Control Centre in Darwin directly all cases of seropositivity and these were cross checked against returns from practitioners to determine compliance.

Results

From June to December 1994 the Disease Control Centre received 174 notifications of hepatitis C antibody positivity from laboratories within the Northern Territory. To date 117 doctor questionnaire forms have been returned completed (67%).

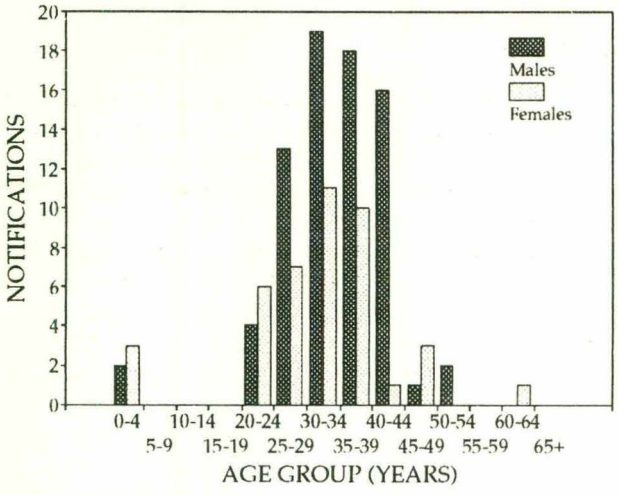
Three cases were consistent with the CDNANZ definition of acute infection and the remainder were classed as prevalent cases. The acute cases were all females, aged 23, 33 and 41 years. In two cases there was a clinical illness consistent with hepatitis C: jaundice, abdominal pain with abnormal LFTs for one patient, and lethargy with muscle weakness with abnormal LFTs for the other. Infection with hepatitis B and A were excluded. Both patients had a history of injecting drug use; one had commenced use in 1990 and the other in 1994. The third case was a current injecting drug user who was noted to have had a negative test in early 1994.

Of all 117 cases for whom a questionnaire was completed, males accounted for 64% (75) of cases and females 36% (42). Aboriginality was reported for 107 (93%); seven cases were identified as being Aboriginal persons, six of these male and one female.

The great majority (90%) of notifications for which questionnaires were completed were in the 20 to 45 year age group (Figure). Five notifications were received for infants of known seropositive mothers. These cases are likely to have passively acquired antibody and repeat testing at 18 months or older will be required to determine their true hepatitis C status.

Patients who were tested as part of a screening program accounted for 71 (61%) of the seropositive results. Most of these were detected in prison entry or STD clinic screening programs (Table 1).

Figure. Hepatitis C cases with questionnaires completed, by age group and sex



The doctors' reasons for testing other patients included a history of injecting drug use, clinical illness and patient request (Table 2).

Liver function tests results were known for 65 (51%) of the patients for whom questionnaires were completed. Twenty-six (35% of known results) were reported to be normal, while 48 (65%) were reported as abnormal.

Injecting drug use was reported for 70 cases (60%). Of those reporting drug use 50 were reported as past users and 20 (29%) were reported as current users.

Discussion

The extended notification system served to provide information about the testing practices of our local practitioners and the risk factors for hepatitis C in the Northern Territory, despite information only being available for 67% of notifications. Under-reporting of injecting drug use may be a source of bias in the figures, particularly in the context of prison screening where patients may be reluctant to report injecting drug use.

The demographic profile of those testing positive for hepatitis C allows for targeting of the population at risk for public health interventions and education. Screening programs in the Darwin prison system and consented testing of patients attending STD clinics in the Darwin urban region have shown seroprevalence rates of 8% and 9% respectively. Resource planning has been guided by calculation of the numbers of seropositive cases who are eligible by biochemical (ALT), demographic, and risk factor analysis for alpha interferon treatment under the Pharmaceutical Benefits Scheme. The extended surveillance system allows for potentially eligible patients to be identified and offered assessment for treatment.

Detection of 'outbreaks' of infection is within the scope of the extended notification system, and frequent review of data will alert us to clusters of incident cases. Full investigation of all incident cases will provide timely information on current transmission patterns.

Table 1. Seropositive patients detected in screening programs

Screening program	Cases
Prison entry	23 (20%)
STD clinic	24 (21%)
Drug and alcohol	15 (13%)
Antenatal	3 (3%)
Other	6 (5%)
Total	71 (61%)

Table 2. Reasons for testing of cases not detected in a screening program

Reason	Cases
Injecting drug use	18 (40%)
Clinical illness	13 (29%)
Patient request	10 (22%)
Abnormal liver function	8 (18%)
Tattoos	5 (11%)
Receipt of blood/blood product	1 (2%)
Hepatitis C positive mother	3 (7%)

HEPATITIS C NOTIFICATIONS IN THE AUSTRALIAN CAPITAL TERRITORY, JANUARY TO JUNE 1994

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Introduction

Hepatitis C is an infectious disease caused by the hepatitis C virus (HCV). It is not a new disease having been recognised as 'non A non B (NANB), hepatitis' in the mid-1970s. HCV attacks the liver, causing inflammation, and may lead to liver cancer. In the past, it is thought to have caused more than 90% of cases of NANB post transfusion hepatitis and up to 50% of all cases of cryptogenic chronic liver disease. Currently, important modes of transmission of HCV are thought to be sharing of needles in injecting drug use and, less commonly, perinatal transmission, needlestick injury, sexual or household contact[2] and tattooing and body piercing. Haemodialysis has also been recognised as a risk factor.

HCV can be detected in the serum by measuring antibody against HCV or by polymerase chain reaction detection of HCV RNA in blood. Antibody tests indicate whether the body has been exposed to the virus and hence developed antibody to viral protein. They do not determine whether or not an individual has an acute infection, a chronic infection, or has been infected in the past. Chronically HCV infected individuals may or may not have clinical symptoms.

The test to detect antibody to the virus became available in February 1990, and since then the diagnostic laboratories and the Australian Blood Banks have been testing for anti-HCV, initially using first generation tests and later using the more sensitive second and third generation tests.

Hepatitis C has been included in the National Notifiable Diseases Surveillance System (NNDSS) since 1991[3]. Until mid-1993, 18,000 positive test results had been reported to health authorities in Australia[4] and then to the NNDSS. The reported positive test results have not necessarily indicated that a patient had a current acute or chronic infection, therefore, notification has not provided information on the incidence of the disease. The few epidemiological studies undertaken in Australia suggest that injecting drug use has accounted for 75% of past infection, with blood transfusions in the past accounting for less than 20%, while tattooing and needlestick injuries account for a very small proportion[4].

The National Health and Medical Research Council (NHMRC) recommends the following case definitions[4]:

Acute hepatitis C:	A clinical illness consistent with acute hepatitis C together with either demonstration of seroconversion to HCV or a rising anti-HCV titre.
Prevalent hepatitis C:	An individual who is anti-HCV positive on testing.
Chronic hepatitis C:	The demonstration of viraemia for six months or more.

More than 600 notifications have been received by the Communicable Disease Section of the Australian Capital Territory (ACT) Department of Health and Community Care since testing for HCV became available in 1990. In the ACT notification of hepatitis C became a statutory requirement under the ACT Public Health (Infectious and Notifiable Disease) regulations from June 1992, but prior to then cases were being notified on a voluntary basis.

There were no data available on the incidence and prevalence of hepatitis C in the ACT, so the major aims of the study were to determine which of the notified cases of hepatitis C in the ACT notification system were incident and which were prevalent cases, to document the demographics of the cases, to ascertain sources of notification and to assess potential risk factors.

This study was also designed to provide information to the Communicable Disease Network Australia New Zealand for incorporation into a national hepatitis C risk factor dataset.

Methods

A questionnaire was designed to classify cases according to the NHMRC case definitions above. It also sought demographic information and information on reasons for testing and the risk factors (including multiple risk factors) of which the medical practitioners was aware. To publicise the survey an article on HCV and the questionnaire were published in the *ACT Medical Practitioners Bulletin*. The article also sought the cooperation of medical practitioners in the completion of the questionnaire.

All HCV notifications from 1 January 1994 to 31 June 1994 were examined for duplicates by entering name, age and sex on a confidential database, and duplicate notifications were excluded from the survey. For every other notification received a follow-up questionnaire was sent to the doctor of the patient concerned.

A database was set up for the questionnaire using Epi Info Version 5. The data collection period was from 15 May 1994 to 31 August 1994. Most of the completed questionnaires were returned promptly. Follow-up visits and telephone contact were also made to some medical practitioners encouraging them to complete the questionnaires for their respective patients.

Results

Notifications

There were 208 notified cases of hepatitis C received from 1 January to 30 June 1994, from both private and public testing laboratories. There were 119 males (57%) and 89 females (43%) (Figure 1). For sexes combined the peak age group was 30 to 39 years (61 males and 39 females). In the 20 to 29 years age group there were 31 males and 36 females.

Questionnaire results

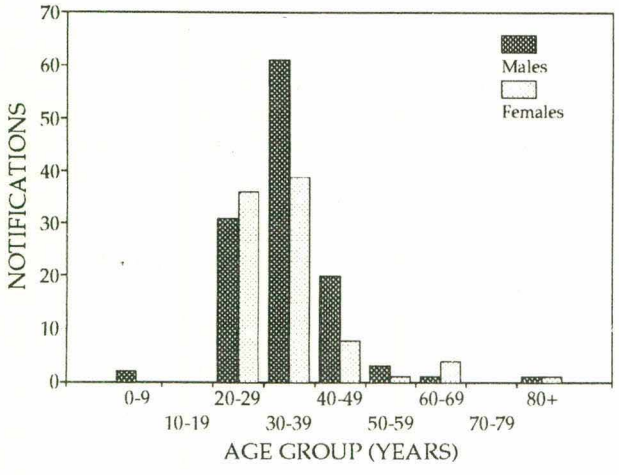
A questionnaire was sent for each of the 208 notifications and 177 completed questionnaires were returned (85%).

Of the 177 cases for which questionnaires were returned, five were acute cases, 58 were chronic cases and there were 114 cases for which the length of infection was not known (Table 1).

The age range was two months to 80 years, and the mean age was 34 years. There were 104 males (59%), and 73 females (41%) (Figure 2). For sexes combined the peak age group was 30 to 39 years (52 males and 32 females). In the 20 to 29 years age group, there were 26 males and 30 females.

There were two children notified; one, a two month old baby who was reported as anti-HCV positive, was born to parents who were IDUs, and was to be re-tested after

Figure 1. Hepatitis C notifications in the ACT, 1 January to 30 June 1994, by age group and sex



six months. The other was a five year old child who was reported as anti-HCV positive.

There were two male and three female acute cases. The males were aged 28 years and 40 years and the females were aged 23 years, 29 years and 49 years.

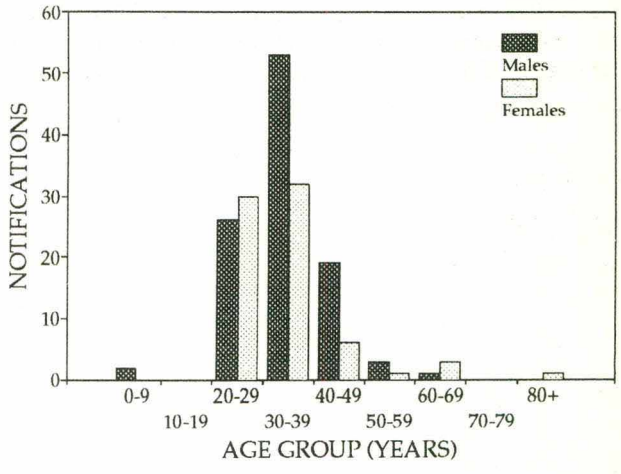
The most common risk factor reported was a history of injecting drug use, reported for 130 persons (73%) (Table 2). Most were in the 30 to 39 years age group (43 males and 26 females) and the 20 to 29 years age group (20 males and 25 females).

The second most commonly reported risk factor was household or sexual contact with HCV positive persons (28 or 16%), however, most of these cases also had a history of injecting drug use. For 17 cases, a history of receipt of blood or blood products (9.6%) was reported (Table 2). Fifteen (8.4%) had received blood or blood products in Australia and two (1.1%) overseas. Of those for whom receipt of blood or blood products in Australia was reported, there were 10 for whom receipt was reported to have been prior to February 1990, and five for whom receipt was reported to have been after first generation testing for HCV became available. Fourteen persons reported tattoos as a risk factor. Of those, 13 had one or more other risk factors.

Table 1. Classification of hepatitis C notifications for which questionnaires were completed, by sex

Type of infection	Male	Female	Total
Acute	2	3	5
Chronic	38	20	58
Unknown period of infection	64	50	114
Total	104	73	177

Figure 2. Hepatitis C notifications with completed questionnaires, 1 January to 30 June 1994, by age group and sex



Other risk factors or related information reported included a history of imprisonment or residence in an institution (4) and alcohol abuse (4).

Three of the five incident cases were injecting drug users (two females and one male), and one of the females also reported a male partner who was an hepatitis C positive injecting drug user. The other incident cases were a female from Vietnam whose male partner was hepatitis C positive and a male whose female partner was hepatitis C positive.

Of the 29 cases with multiple risk factors, 24 had a history of injecting drugs. Three of the remaining five had received tattoos and two had HCV positive sexual partners. Two had received blood products and one of them had a HCV positive partner (Table 3).

Information on reason for testing was included in 162 responses received (91%). The majority of those reported were from a drug and alcohol program (Table 4). Of the 31 (17.5%) responses categorised as 'other reason for testing', seven (3.9%) were abnormal liver function tests, four (2.2%) dialysis, three (1.7%) cirrhosis, three (1.7%) previous injecting drug use, and two (1.1%) needlestick injury. For the remaining 12 (6.7%),

Table 2. Risk factors reported for hepatitis C cases

Risk factor	Number	Per cent
History of injecting drug use	130	73
Household or sexual contact with HCV+ person	28	16
Receipt of blood or blood products	17	9.6
Tattoo	14	7.9
Prison or institution	4	2.2
Alcohol abuse	4	2.2
Acupuncture	1	0.5
Unknown	15	8.5

abdominal pain, tiredness, pre-operative testing, liver enlargement or psychosis were reported.

'Patient request' was the reason for testing for 54, of whom 29 gave reasons. Of the reasons given 19 (10.7% of the total cases) were tested for HCV whilst tested for HIV, eight (4.5%) had previously tested positive for HCV, one (0.5%) had received a HCV contaminated blood product in 1990, and one (0.5%) had been stabbed with a syringe.

Most questionnaires were completed and returned by general practitioners or hospital-based clinics (Table 5).

Table 3. Cases with multiple risk factors reported

Risk factors	Cases
IDU[1] + tattoo	6
IDU + partner anti-HCV positive	5
IDU + sex with IDU	4
IDU + tattoo + sex with IDU	3
IDU + prison	1
IDU + father anti-HCV positive	1
Tattoo + partner anti-HCV positive	1
RBB[2] + tattoo	1
RBB + partner anti-HCV positive	1
RBB + alcoholic	1
RBB + IDU + male homosexual contact	1
IDU + sex with IDU + prison	1
IDU + tattoo + prison	1
Tattoo + sex with IDU + acupuncture	1
IDU + male homosexual contact + alcoholic	1
Total	29

1. IDU - History of or current injecting drug use.
2. RRB - Receipt of blood or blood products.

Table 4. Reason for testing

Reason for testing	Number	%
Drug and alcohol program	68	38.4
Blood bank	6	3.4
Antenatal	3	1.7
Patient request	54	30.5
Other	31	17.5

Table 5. Source of completed questionnaires

Source	Number	Per cent
General practititioners	77	43.5
Aboriginal health service	4	2.2
Blood bank	3	1.7
Drug rehabilitation hostel	16	9.0
Hospital alcohol and drug unit	34	19.3
Hospital sexually transmissible disease unit	21	11.9
Hospital gastroenterology unit	11	6.3
Hospital accident and emergency unit	4	2.2
Hospital renal unit	3	1.7
Hospital obstetrics and gynaecology unit	2	1.1
Other hospital	2	1.1
Total	177	100

Discussion

Out of a total of 208 questionnaires which were sent to the medical practitioners, 177 (85%) were completed and returned. The high response rate contributes to the usefulness of this study. Some of the questionnaires contained incomplete information and also the questionnaires were completed by the patient's doctor after referring to the medical records, which may have been incomplete. However, the data obtained do provide information for future studies on hepatitis C.

The number of new infections noted in this study is very low, as only five acute cases were reported. The small number of acute cases may be a true reflection of the incidence or may reflect under-ascertainment of cases. The annualised rate of notifications of total HCV was 139 per 100,000 per year. The annualised rate for incident cases was 3.3 per 100,000 per year prior to adjustment for non-return of questionnaires. If the total incident cases occurred in the same proportion as in the cases for whom questionnaires were received then the annualised rate of new notified cases would be 3.9 per 100,000 per year.

It is imperative that medical practitioners whether private or public, are aware of the need to differentiate incident and prevalent cases when reporting.

The age range of cases notified in the ACT was wide. There were more cases notified in males than in females and almost half of those were between the ages of 30 and 39 years. A similar result was reported in Victoria in 1993, where 1151 of 2662 cases were in 30 to 39 years age group, and there were more males (703) than females (420)[5].

This study suggests that injecting drug use is a major risk factor for the transmission of HCV. It was estimated in 1986 that there were 5,000 to 7,000 IDUs in the ACT[6]. Assuming a population at risk of 6,000 IDUs and three incident cases in IDUs in this study, the annualised adjusted rate of reported incident cases was 117.5 per 100,000 IDUs per year.

The NHMRC report[4] states that the incidence of hepatitis C is high among those who are currently injecting drugs, because of even occasional sharing of contaminated injecting equipment, and the high prevalence of hepatitis C among IDUs.

Although there are needle exchange programs available in the ACT, it is not clear whether sufficient quantities of injecting equipment are available or sharing of injecting equipment takes place among the IDUs. With this uncertainty, there is a clear need to prevent further transmission

of HCV among injecting drug users. Health education strategies should therefore be aimed at reducing spread of the virus in the high risk group of IDUs.

In this study 16% of individuals reported having sexual or household contact with HCV positive persons, however, the evidence for sexual transmission is scant. It was difficult to pinpoint whether sexual contact with an HCV positive individual was the primary cause of HCV infection, because most of these individuals had a history of injecting drugs which could have been the route of HCV infection. As a complication, contact with a HCV positive individual could have been preferentially reported as a risk factor, due to limitations on practitioner knowledge of risk behaviours of the patient and of risk factors for hepatitis C in general, and possibly the design of the questionnaire. Therefore this study could not conclusively establish that sexual or household contact with an HCV positive individual was a mode of HCV transmission in any individual patient.

The risk factor or receipt of blood and blood products was reported for only a few patients. It is of concern that five individuals were reported to be HCV positive and to have received blood or blood products since 1990, however, they may have acquired their infections prior to their receipt of blood products. Also, these reports may reflect limitations in practitioner knowledge of the history of their patients and in patient recollection or disclosure of risk behaviour.

Fifteen patients had no known risk factors for HCV infection. It is extremely difficult to draw any conclusions but it may be that the infected person may not have remembered risk behaviour, or did not want to disclose it, or the practitioner had no record of it. Similarly, HCV positive blood donors identified in this study may not have remembered past risk behaviour.

The results in this study show that HCV transmission is occurring in the ACT. The major route is probably injecting drug use, however transmission by other routes may also occur. It may be possible to keep the spread of the virus to a minimum especially amongst the injecting drug users through education and prevention programs and also create an awareness among the community. Ongoing research on hepatitis C is also required for the prevention and cure of this disease.

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CDI editorial comment

The National Notifiable Diseases Surveillance System (NNDSS) has compiled notifications of hepatitis C since 1991, and separate identifications of incident cases since 1993. New South Wales, South Australia and the Northern Territory have reported 75 notifications of incident hepatitis C, 30 in 1993, 39 in 1994 and 6 so far this year. Thirty-nine cases have been males, 34 females (male:female ratio 1.00:0.87) and there has been one transsexual and case for whom sex was not reported. Sixty-four (85%) have been in the 20 to 39 year age group. In addition, there have been 31,147 reports of unspecified hepatitis C, 18,770 for males and 11,561 for females (816 sex not reported), male:female ratio 1.00:0.62. Seventy-eight per cent have been in the 20 to 39 year age group.

An expanded national system of hepatitis C notification surveillance is to be instituted in the near future. States and Territories will determine which of their hepatitis C notifications are incident cases, and will collect and report basic risk factor information on them in addition to the demographic information already collected for the NNDSS. The system will incorporate reporting of injecting drug use, receipt of blood/blood products, medical procedure, non-medical skin penetration and other risk factors, and comments. Reports are expected to be published in *CDI* quarterly.

The *CDI* Virology and Serology Reporting Scheme has collected reports of hepatitis C since 1990. There has been a total of 15,278 reports received, not specified as incident or prevalent. A total of 9375 have been males, 5589 females and 314 unknown, and 11,769 (78% of those with age reported) have been between the ages of 20 and 39 years.

Risk factor and related information has been reported for a small proportion (2117, or 13.9%), including some with more than one risk factor reported. A history of injecting drug use has been the most commonly reported (1657), and there have been 29 reports with unspecified drug use as a risk factor, eight with alcohol and drug use and 25 with excessive alcohol use. There have been 107 reports of blood transfusion or other blood product receipt some time in the past, including 56 for haemophilia, 16 thalassaemia, five von Willebrand's disease, two sickle cell disease, one factor 5 deficiency and one spherocytosis. Renal fail-

ure/haemodialysis has been the reported risk factor for 21, tattoos for seven, a history of imprisonment for 16, needlestick or other health care work injury for 17, a hepatitis C positive partner for 14, sex work for three, and a hepatitis C positive mother for 20 seropositive infants, and there have been 93 reports of hepatitis C positive pregnant women.

BARMAH FOREST VIRUS EPIDEMIC ON THE SOUTH COAST OF NEW SOUTH WALES

P Van Buynder[1], G Sam[1], R Russell[2], J Murphy[3], A Cunningham[4], L Hueston[4], J Aaskov[5], L Coolahan[1], W Matthews[1]

Introduction

During the months of February and March 1995, the South Eastern New South Wales Public Health Unit (PHU) received a total of 80 notifications of Barmah Forest virus (BFV) infection. Barmah Forest virus, a member of the alphavirus genus, of the family Togaviridae, was first isolated in 1974 from *Culex annulirostris* mosquitos collected in the Barmah Forest in northern Victoria[1]. It was shown to cause clinical disease in humans along the south coast of New South Wales in the mid 1980s[2] and smaller clusters of illness have been described in Queensland since 1988-1989[3], in the Northern Territory in 1992[4], and in the south-west of Western Australia in 1993[5]. The current outbreak is the largest cluster of human illness ever described. A small number of cases of Ross River virus (RRV) illness has also been notified to the PHU.

Case definition

Surveillance case definitions for the *CDI* Laboratory Reporting Scheme classify aphavirus cases as 'confirmed' if a fourfold change in antibody titre is demonstrated in paired sera, or 'presumptive' if a positive IgM is demonstrated on a single specimen[6]. In a clinical setting, few practitioners collect a second specimen in situations with a positive IgM and consistent clinical picture.

Patients have been classified as cases if fever coincided with polyarthritis, arthralgia, and/or rash and:

1. seroconversion to BFV IgM/IgG in convalescent sera, or
2. a single positive IgM ELISA with or without a positive IgG result.

A number of other possible cases have had sera referred for neutralisation testing including those with:

1. suggestive symptomatology many weeks previously and a positive IgG with a negative IgM ELISA. BFV IgG may peak as early as four weeks post infection and then slowly declines. Information about the duration of BFV IgM is not available.
2. concurrent positive IgM results for both BFV and RRV.

As well as these patients, other sera have been referred blind for confirmation of the IgM ELISA results with good concordance to date.

Outbreak demography

In mid-January the PHU was informed anecdotally of a large number of persons in the Batemans Bay area of the South Coast of New South Wales with fever and a rash, described variously as vasculitic, morbilliform, maculopapular, vesicular and in one case SLE like. Some of these patients had associated polyarthritis/arthralgia.

Shortly thereafter the PHU was advised by Medical Entomology, Westmead of the presence of BFV in mosquitos in the Batemans Bay area.

Staff of the PHU wrote to all general practitioners on the South Coast advising of the presence of the virus, highlighting possible symptomatology, and requesting that all patients be concurrently tested for both BFV and RRV.

Established procedures for collection, transport, BFV testing and results reporting of sera were followed. Patients' sera were collected locally, in both private and public pathology collection centres, transported to laboratories using local and intercity couriers, referred to specialty private and public virology testing laboratories in Sydney and reported to the originating general practitioners and the PHU through routine channels.

Media releases at the same time warned residents of the need for mosquito avoidance measures and requested persons with suggestive symptoms to come forward for assessment even if symptoms had resolved. During March, emergency department registers were reviewed to identify patients with possible BFV illness who were not tested for BFV and each of these patients

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5. School of Life Sciences, Queensland University of Technology, Brisbane, Queensland.

was contacted by mail. Despite these measures it is likely that many cases were not identified.

Each case was sent a questionnaire via the attending practitioner to document symptoms and duration. Each case will be followed longitudinally until symptom resolution.

There were 80 notifications of confirmed BFV illness during the period 17 February to 4 April 1995. The onset of symptoms associated with these cases ranged from 8 January to the end of March. Most cases were residents of the Batemans Bay/Moruya area (Figure 1) but a number of notifications occurred in patients who had visited the Eurobodalla and Bega Valley shires from elsewhere. Cases were initially from the Batemans Bay/Moruya area but the postcodes of residence of notifications generally shifted towards the south as the epidemic progressed.

There were 43 notifications in males (male:female ratio 1.00:0.89). The age of patients ranged from nine years to 77 years with a mean of 43 years and three-quarters aged between 30 and 59 years (Figure 2).

The large component of case finding undertaken makes estimates of the epidemic time course, documented by week of serum collection (Figure 3), less valid. It is likely that the timecourse will be further skewed by batches of letters recently sent to emergency department register 'probable cases'. At the completion of the collection of patient questionnaires, a collation of symptom onset dates will allow a better description of the natural course of the epidemic.

Clinical picture

For the cases for which questionnaires have been returned to date, the commonest feature present was a rash, in 91% of cases. Arthritis/arthralgia was present in just over half of cases. The arthritis was most often present in multiple large joints with the knee and elbow the most prominent sites. No comment on the duration of symptoms or severity overall is possible yet, however, the general pattern is of an illness less severe than RRV illness, more likely than RRV to be confined to a fever, rash and constitutional malaise, and more likely to resolve early.

Entomology

The New South Wales arbovirus surveillance and mosquito monitoring program has been operating in the study area for several years. Above average rainfall in December 1994 (72mm in the last week), at a time of high minimum average temperatures, and high tides in early January 1995 (among the ten highest in the last decade), led to very high mosquito numbers which were sustained by rain throughout January. These mosquito numbers greatly exceeded the average weekly numbers trapped during the previous seven years.

Mosquito samples collected from Batemans Bay revealed the presence of Barmah Forest virus from 17 January and consistently thereafter. The arbovirus surveillance program identification of virus preceded the documented onset of symptoms in all but one case for whom questionnaires have been returned, although it is likely that many cases went undiagnosed prior to the widespread media reporting.

To date, 86% of all arbovirus isolations in New South Wales this season have been from the Batemans Bay

Figure 1. Barmah Forest virus infection notifications from the South Coast of New South Wales, by place of residence

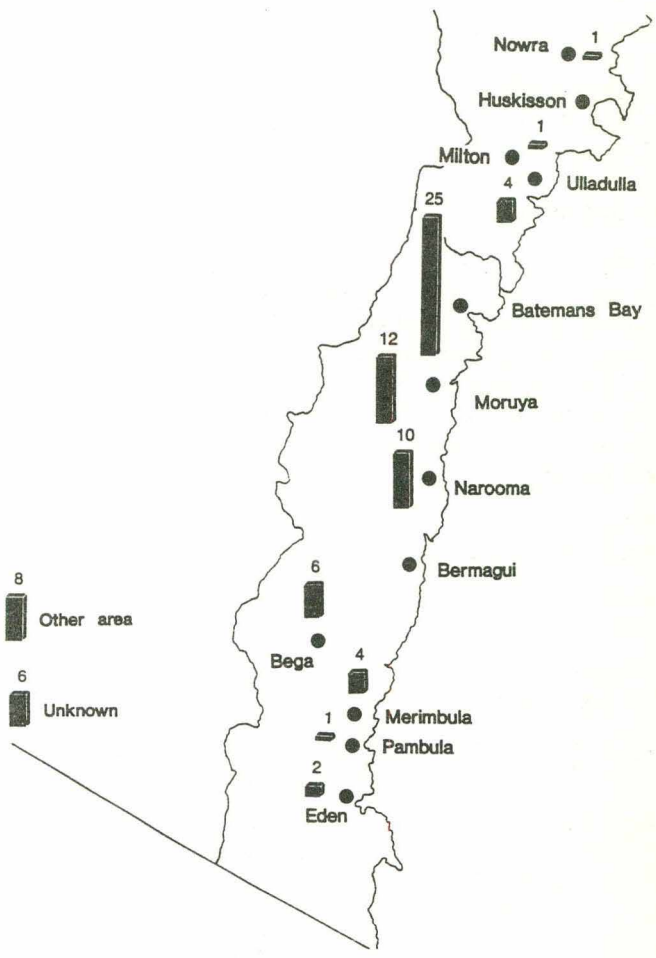


Table. Macropod sera neutralisation test results

Sample	Species	RRV[1]	BFV[1]
1	Red kangaroo	0	4.0[2]
2	Swamp wallaby	1.5	3.0[2]
3	Goat	2.0	1.5
4	Eastern grey kangaroo	0	5.0[2]
5	Red kangaroo	0.5	5.0[2]
6	Goat	0.5	0
7	Eastern grey kangaroo	3.5	4.5[3]
8	Red neck wallaby	0.5	5.0[2]
9	Red neck wallaby	0.5	1.5
10	Swamp wallaby	3.5	2.5

1. Next index (log 10).
2. Barmah Forest virus infection.
3. Likely Barmah Forest virus infection.

Figure 2. Barmah Forest virus infection notifications from the South Coast of New South Wales, by age group

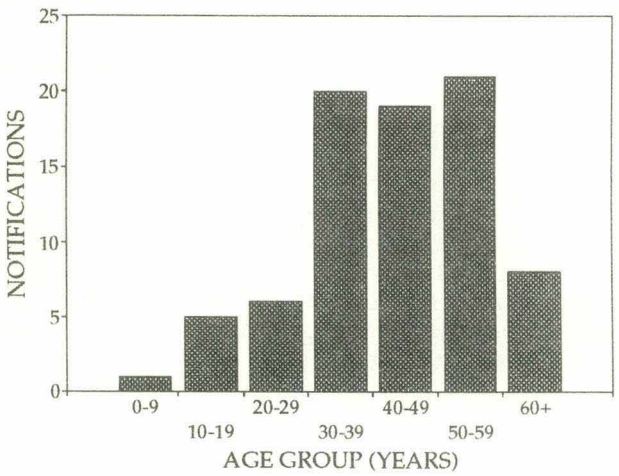
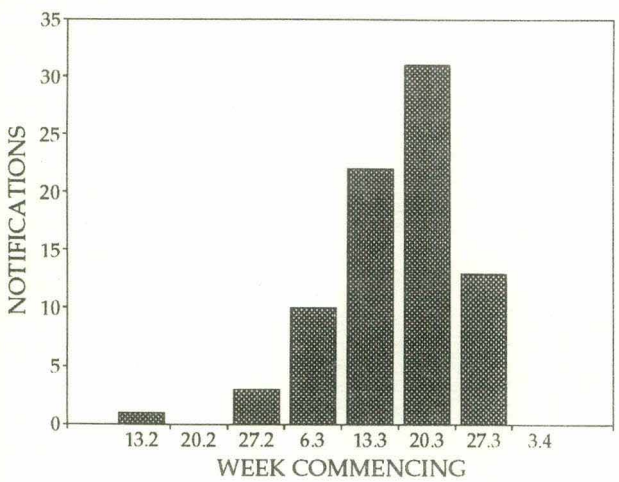


Figure 3. Barmah Forest Virus infection notifications from the South Coast of New South Wales, by week of serum collection



town trapping site or the neighbouring Mogo State Forest. Over 90% of isolates were from the salt marsh breeding. *Aedes vigilax* mosquito, including all BFV isolates from Batemans Bay. This mosquito bites during the day as well as at the night. Isolates of BFV from the lower South Coast collection site at Tathra began to be made in mid-February. The second of these, in early March, was from another salt marsh mosquito, *Aedes camptorhynchus*. This was the first isolate in New South Wales from this species of mosquito, which has been described as a vector in Victoria[7] and the main vector in Western Australia[5].

The pattern of isolations of BFV from mosquitos sequentially southward down the coast mirrored the pattern of notification of BFV illness.

Reservoir studies

Sera has been collected for testing from red and eastern grey kangaroos, swamp and red necked wallabies, and goats. Evidence of BFV infection was found in both species of wallabies and kangaroos but not in the goats (Table). Previous studies in this region found serum neutralising antibodies to BFV in only one of 25 (4%) eastern grey kangaroos tested and in no other native mammals[8]. Antibodies were found, however, in 29 of 113 (26%) cows, six of 70 (9%) horses and one of four sheep tested.

Discussion

The presence of such a large number of cases will enable a number of important unresolved issues surrounding BFV to be examined during the current outbreak.

From a clinical viewpoint the longitudinal monitoring of cases from the epidemic will enable comment on illness duration and any predictive risk factors for this. The sheer number of cases will enable a more complete picture of the pattern of symptomatology in human BFV illness to be determined.

Testing of sequential sera from an increased number of macropods will help to define the pattern of acute illness in these hosts and enable inferential statements about their importance as reservoirs.

From a diagnostic viewpoint, the collaborative approach to testing and confirmation will enable comment on the accuracy of BFV IgM ELISA tests. Longitudinal studies of sequential sera will enable comment on the likely persistence of IgM and IgG levels.

The PHU noticed a widespread lack of knowledge about BFV among primary care practitioners contacted. There is a need for 'emerging' viruses such as this to receive more publicity through literature read by general practitioners.

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CDI editorial comment

Barmah Forest virus infection is currently included in the category 'arbovirus infection, NEC' in the National Notifiable Diseases Surveillance System (NNDSS). Most States and Territories compile arboviral notifications separately, however, so beginning in the near future, the NNDSS will report Barmah Forest virus infections and Australian encephalitis separately.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization.

Yellow fever in Gabon

The epidemic of yellow fever at the end of 1994 is practically under control following mass vaccination which is being carried out in the whole country. The campaign has been completed in Libreville and in the Makokou area, where the first cases were reported, and is continuing in the rest of the country.

Cholera update

Cholera cases have been reported for December, January and February from Afghanistan, Angola, Brazil, Cambodia, Cameroon, Cape Verde, Chile, Djibouti, Ecuador, El Salvador, Gaza, Ghana, Guinea Bissau, Guyana, India, Iraq, Italy, Kenya, Laos, Nigeria, Philippines, Sierra Leone, Singapore and Tanzania (in Rwandan refugee camps).

CDI NOTICE TO READERS

Contributions

CDI publishes contributed reports on the incidence of and risk factors for communicable diseases in Australia which can be used to inform and assist those with responsibility for disease control. Contributions which have a public health focus and deal with any relevant aspect of the epidemiology, surveillance or control of communicable diseases in Australia are therefore invited. They can be in the form of short or longer articles, short reports of emergent surveillance results or case reports, if they illustrate a point of public health importance. Coordinators of communicable disease surveillance schemes or registers other than those for which *CDI* already publishes reports are also invited to contribute data or reports for publication.

Text is acceptable as hard copy or on floppy disk in any of the common word processing formats. When data are presented in graphs, it is preferred that the relevant details are also included in tabular form to allow production of graphs in house style.

Contributions should be accompanied by a covering letter, signed by all coauthors. The letter should include contact details of the corresponding author who will be responsible for communicating with the other authors about revisions and final approval of proofs. The authors are responsible for the content of articles in *CDI* and opinions expressed are those of the authors and not those of the Department of Human Services and Health or of the Communicable Diseases Network Australia New Zealand.

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1119 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 7, 8 and 9).

- Six reports of **measles** were received this period for 3 males and 3 females. All diagnoses were by IgM detection.
- **Rubella** was reported for 5 patients this fortnight including 2 females (one of childbearing age) and 3 males. A report of congenital rubella was received for a 15 month old male with a cataract. Diagnosis was by IgM detection (2), fourfold rise in titre (one), single high titre (one) and other serology (one). The number of reports has continued to fall after peaking in October (Figure 1).
- **Hepatitis A** was reported for 16 patients this period including a 33 year old male who had recently returned from Brazil.
- Positive **hepatitis B** serology was reported for 74 patients this fortnight, 34 males and 35 females (5 sex not stated). Forty-six patients were in the 25 to 44 year age group, and 20 in the 15 to 24 year age group. Included were 7 pregnant females and 2 injecting drug users.
- One hundred and eighty-four reports of positive **hepatitis C** serology were received this period. Included were 112 males and 67 females (5 sex not stated). One hundred and sixteen reports were for the 25 to 44 year age group. Included were 20 injecting drug users, 2 HIV positive patients, one pregnant female, a newborn of a seropositive mother and 2 patients both of whom were index cases in needlestick injuries.
- **Hepatitis D** was reported for a 54 year old Western Australian male.
- **Ross river virus** was reported for 21 patients this fortnight from the Northern Territory (3), South Australia (2), Western Australia (14) and Tasmania (2). All diagnoses were presumptive (IgM detected). Included were 11 males, 9 females and one patient for whom sex was not stated. Specimen collection dates ranged from late February to late March. The number of reports remains low for the time of year.
- Two reports of **Barmah Forest virus** were received this period, one from New South Wales and one from South Australia. The number of reports has risen in recent months but is lower than usual for the time of year (Figure 2).
- **Dengue type 1** was reported for a 28 year old male from New South Wales.
- Two reports of **untyped dengue** were received this period, for 26 and 27 year old males from Western Australia, one of whom reported a recent history of overseas travel.
- **Flavivirus (unspecified)** was reported for 3 patients this period, two of whom had recently returned from Thailand and one from Bali. Included was a 19 year old male with clinical dengue, a 30 year old male and a 25 year old female.
- Thirty-six reports of **adenovirus** were received this fortnight, 26 virus isolations, 9 antigen detections and one single high titre. Included were 5 reports of **adenovirus type 3**, all for males 4 of whom were under the age of one year. Also included was **untyped adenovirus** detected by latex agglutination in the faeces of an infant who also had rotavirus.
- Herpes simplex virus type 1 was reported for 133 patients this fortnight. Diagnosis was by virus isolation (123), antigen detection (9) and IgM detection (one).

Figure 1. Rubella laboratory reports, 1993 to 1995, by month of specimen collection

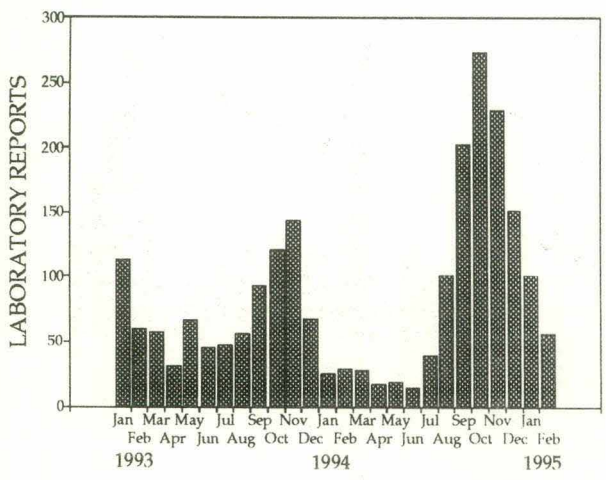
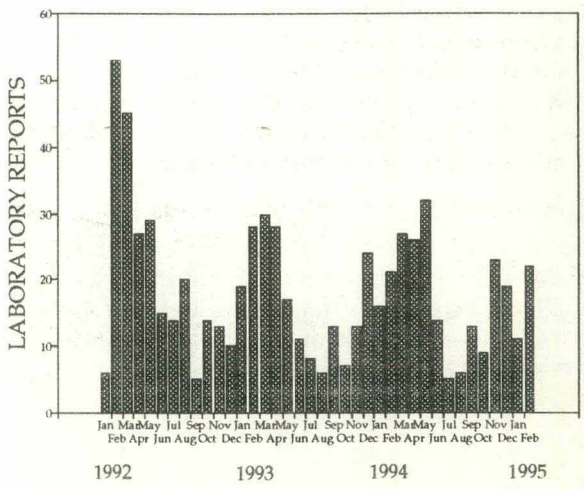
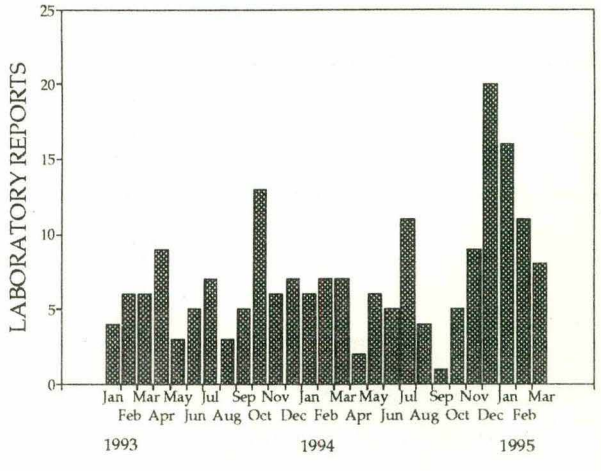


Figure 2. Barmah Forest virus laboratory reports, 1992 to 1995, by month of specimen collection



- One hundred and seventeen reports of **herpes simplex virus type 2** were received, diagnosed by virus isolation (115) and antigen detection (2).
- Twenty-six reports of **untyped herpes simplex virus** were received this period. Included was a 78 year old male with encephalitis who died (diagnosed by PCR on a brain biopsy specimen).
- There were 58 reports of **cytomegalovirus** (CMV) this fortnight, 42 virus isolations, 2 antigen detections, 13 IgM detections and one single high titre.
- **Varicella-zoster virus** was reported for 35 patients this period. Method of diagnosis included virus isolation (18), antigen detection (6), IgM detection (9) and single high titre (2).
- **Papovavirus** was detected by electron microscopy in the urine of a 29 year old male bone marrow transplant recipient who was febrile.
- One report of **molluscum contagiosum** was received, for a 26 year old Western Australian male (diagnosed by electron microscopy).
- Four reports of **echovirus type 3** were received, for 3 males and one female. Three were one year of age or under.
- **Untyped enterovirus** was reported for 53 patients this period. Included was virus isolation from post-mortem heart tissue from a 55 year old Queensland female who had had pericarditis. This virus was also isolated from tonsil and lymph node specimens from a 3 year old male
- Thirty-one reports of **rhinovirus** were received this period, 16 for children under the age of 4 years.
- **Influenza A** was reported for 7 patients this fortnight. This virus was isolated from the nasopharynx of 2 patients, a 5 year old male from South Australia and a 44 year old female from Western Australia with a diagnosis of encephalitis, both with specimen collection dates in mid March. Other methods of diagnosis included fourfold rise in titre (one, a 21 year old Western Australian male) and single high titre (4). A total of 31 reports has been received so far this year from New South Wales (7), Queensland (8), South Australia (4), Victoria (4) and Western Australia (8).
- Two reports of **influenza B** were received this period, one virus isolation (28 year old Victorian male, specimen collected mid March) and one single high titre. Eleven reports have been received so far this year, from New South Wales (2), Queensland (5), South Australia (one) and Victoria (3).
- Four reports of **parainfluenza virus type 2** were received this period, all for children under the age of 4 years.
- **Parainfluenza virus type 3** was reported for 8 patients this fortnight, 6 of whom were in the under 4 years age group. Diagnosis was by virus isolation (4) and antigen detection (4).
- Twenty-six reports of **respiratory syncytial virus (RSV)** were received this fortnight, 17 for patients under one year of age. Diagnosis was by virus isolation (10) and antigen detection (16). A total of 54 reports has been received so far for the month of March which is average for the time of year.
- **Rotavirus** was reported for 18 patients this period including 8 males and 10 females. Fifteen patients were under the age of 4 years.
- Fifty reports of ***Chlamydia trachomatis*** were received this fortnight including 27 males and 23 females. Forty-six patients were in the 15 to 44 year age group. Diagnosis was by culture (26), antigen detection (23) and single high titre (one).
- Five reports of ***Chlamydia psittaci*** were received this period, for 4 females and one male all in the age range 25 to 74 years. More reports than usual have been received in recent months (Figure 3).
- **Q fever** was reported for 5 patients this period, all for males in the 31 to 67 year age group. Diagnosis was by single high titre (3), fourfold rise in titre (one) and IgM detection (one). A total of 35 reports has been received so far this year, 29 from Victoria, 5 from Queensland and one from Western Australia.
- Forty-four reports of ***Bordetella pertussis*** were received this fortnight. Included were 21 males and 21 females (2 sex not stated). A total of 131 reports was received for the month of February, more than for any month recorded by this Scheme.
- Nine reports of positive serology for ***Schistosoma* species** were received this period, for 6 males and 3 females all over the age of 15 years. Included were 21 and 32 year old males, both of whom had visited Africa and a male who had a past history of bilharzia.

Figure 3. *Chlamydia psittaci* laboratory reports, 1993 to 1995, by month of specimen collection



- *Echinococcus granulosus* (hydatid disease) was reported for a 59 year old male from Western Australia who had a large hepatic cyst mass.

Correction: A case of hepatitis E from Tasmania was incorrectly reported in *CDI* 1995;**19**:144,151. This should have been hepatitis C.

Australian Sentinel Practice Research Network

Data for week 10 (ending 12 March), week 11 (ending 19 March), week 12 (ending 26 March) and week 13 (ending 2 April) are included in this issue of *CDI* (Table 1). There were 8421 consultations reported for week 10, 8949 for week 11, 9217 for week 12 and 8749 reported for week 13. The influenza reporting rate remained fairly constant during this four week period. Highest rates were reported from Victoria, New South Wales, Western Australia and South Australia.

Australian Encephalitis: Sentinel Chicken Surveillance Programme, serological results, January and February 1995

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

Sentinel chicken serology was undertaken for all of the 22 flocks in the Kimberely, Pilbara and Gascoyne regoins of Western Australia in January and February 1995. There were two seroconversions to Murray Valley Encephalitis virus at Wyndham in the Kimberley in late February.

Eight of the nine flocks in the Northern Territory were tested, and there was no evidence of seroconversions to flavivirus in the sera tested.

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

1. Department of Microbiology, The University of Western Australia.
2. Veterinary Research Institute, Victoria.
3. Virology Department, Westmead Hospital, New South Wales.
4. Department of Microbiology, The University of Queensland.
5. Berrimah Agricultural Research Centre, Darwin, Northern Territory.
6. State Health Laboratories, Perth.

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 12 laboratories. There were 146 reports of recent significant sepsis:

New South Wales: John Hunter Hospital 48; Liverpool Hospital 35.
Queensland: Nambour General Hospital 16; Central Queensland Pathology Laboratory 4.
Tasmania: Royal Hobart Hospital 13.
Australian Capital Territory: Woden Valley Hospital 30.

An additional 71 reports of sepsis with specimen collection dates from October 1994 to February 1995 were received. Included was *Neisseria meningitidis* serogroup C isolated from the blood of a 2 year old male with meningitis and two reports of *Listeria monocytogenes* (isolated from the CSF and blood of a 75 year old male with meningitis and from the blood of a 70 year old female). Also included were 4 reports of *Streptococcus pneumoniae* (isolated from the blood of one and 3 year old males and 66 and 84 year old females, the latter with a diagnosis of pneumonia) and 3 reports of MRSA (all blood isolates, a 23 year old immunocompromised female and 42 and 53 year old males). Reports with specimen collection dates prior to the first day of last month are not included in the fortnightly report in *CDI* but are added to the annual data.

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

Gram positive: 1 *Corynebacterium* species, 1 *Enterococcus faecalis*, 1 *Enterococcus* species, 3 *Staphylococcus epidermidis*, 1 *Staphylococcus haemolyticus*, 1 *Streptococcus* Group A, 1 *Streptococcus* Group B, 1 *Streptococcus* Group G, 2 *Streptococcus sanguis*, 1 *Streptococcus* 'viridans', 2 *Streptococcus* species.

Gram negative: 2 *Acinetobacter* species, 1 *Agrobacterium radiobacter*, 1 *Citrobacter diversus*, 1 *Commamonas acidovorans*, 1 *Enterobacter aerogenes*, 1 *Enterobacter cloacae*, 1 *Haemophilus influenzae* (2 year old female with septic arthritis, no serogroup), 1 *Klebsiella* species, 1 *Morganella morganii*, 1 *Proteus mirabilis*, 1 *Proteus vulgaris*, 2 *Pseudomonas aeruginosa*, 4 *Salmonella* species (Queensland 2, New South Wales 1, Australian Capital Territory 1; a

Table 1. Australian Sentinel Practice Research Network, weeks 10, 11,12 and 13, 1995

	Week 10, to 12 March 1995		Week 11, to 19 March 1995		Week 12, to 26 March 1995		Week 13, to 2 April 1995	
Condition	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	49	5.8	45	5.0	58	6.3	3	6.1
Rubella	3	0.4	0	0	2	0.2	0	0
Measles	0	0	1	0	0	0	1	0.1
Chickenpox	13	1.5	3	0.3	15	1.6	14	1.6
Pertussis	9	1.1	6	0.7	6	0.7	2	0.2
Gastroenteritis	109	12.9	140	15.6	139	15.1	111	12.7

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

Organism	Clinical information						Risk factors				Total[1]
	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary tract	Skin	Surgery	Immunosuppressed	IV line	Neonatal	
Staphylococcus aureus	2				2	3	2	4	2		20[2]
Staphylococcus coagulase negative							1	2	1	1	13
Streptococcus pneumoniae		1									5
Escherichia coli		1		4	11			4			30
Klebsiella pneumoniae		1		2				1			10

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 3.

one year old female and 20 and 35 year old males all with gastrointestinal disease and a 79 year old male), 1 *Serratia marcescens*.

Anaerobes: 1 *Bacteroides fragilis*, 1 *Fusobacterium* species.

Fungi: 1 *Candida albicans*, 1 *Candida* species, 1 *Cryptococcus neoformas* var *neoformans*.

There were 9 blood isolates from patients aged less than one year and 55 from patients aged 65 years and over (Figure 4).

Hospital acquired blood isolates

A total of 29 isolates were reported as being hospital acquired. The most commonly reported organisms were: *Staphylococcus aureus* (8, including 1 MRSA), *Staphylococcus* coagulase negative (8), *Escherichia coli* (3) and *Acinetobacter* species (2).

Meningitis and/or CSF isolate reports

There were 8 reports of meningitis and/or CSF isolates. Included was 1 *Cryptococcus neoformans* (28 year old HIV positive male), 1 *Haemophilus influenzae* (20 year old male from New South Wales, isolate untypable), 1 *Neisseria meningitidis* (17 year old Queensland female, no serogroup), 1 *Staphylococcus* coagulase negative (57 year old female following neurological surgery), 1 *Staphylococcus epidermidis* (54 year old male following neurological surgery), 2 *Streptococcus* Group B (both newborn males) and 1 *Streptococcus sanguis* (newborn female).

Isolates from sites other than blood or CSF

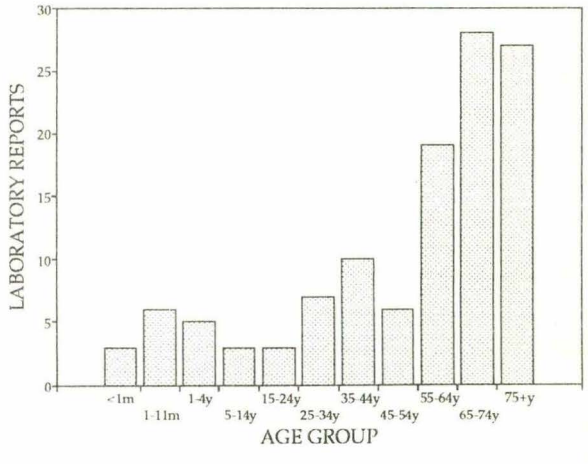
Joint fluid: 6 *Staphylococcus aureus*.

Peritoneal dialysate: 1 *Enterococcus* species.

Pleural fluid: 1 *Staphylococcus aureus*, 1 *Streptococcus* Group B, 1 *Streptococcus* species, 1 *Escherichia coli* and 1 *Pseudomonas aeruginosa*.

Other: 5 *Staphylococcus aureus* (including 1 MRSA), 2 *Escherichia coli* and 1 *Klebsiella oxytoca*.

Figure 4. LabDOSS reports of blood isolates, by age group



National Notifiable Disease Surveillance System, 19 March 1995 to 1 April 1995

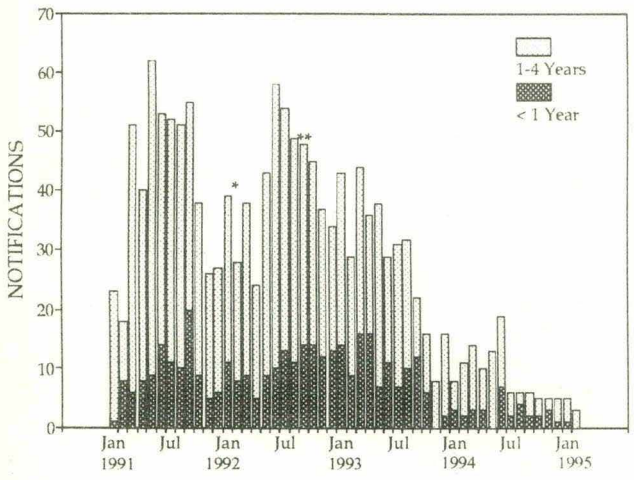
There were 1942 reports received in the period (Tables 4, 5 and 6 and Figure 7).

- There were 99 notifications of **Ross River virus infection** received; 48 cases were male and 51 were female. Recorded ages were between the 5-9 and the 80-84 years age group. Onset dates were in January (one), February (13), and March (85). Sixty-five per cent of the cases were resident in Queensland and the highest proportion of these reports were for residents of the Statistical Division of Far North Queensland.
- Four hundred cases of **campylobacteriosis** were reported; 203 cases were male, 195 cases were female, and the sex of 2 cases was not recorded. The

cases were aged between the 0-4 and the 80-84 years age group with 25% of cases aged less than 5 years.

- There were 76 notifications of **gonococcal infection** received; 52 cases were male and 24 cases were female. Cases were aged between the 0-4 and the 55-59 years age group with 2 cases reported for children aged less than one year.
- Six cases of ***Haemophilus influenzae* type b infection** were reported; all cases were female. Two cases were in the 0-4 years age group, 3 cases were in the 5-9 years age group, and one case was in the 25-29 years age group. All recorded onset dates were in March (Figure 5). The number of reports in children aged less than five years has remained relatively stable since July 1994.
- Fifty-three notifications of **hepatitis A** were received; 30 cases were male, 22 cases were female, and the sex of one case was not recorded. The cases were aged between the 0-4 and the 75-79 years age group with 81% of cases aged less than 40 years. Sixteen cases were resident in the Statistical Division of Sydney and 13 were resident in the Statistical Division of Perth.
- There were 10 incident case of **hepatitis B** reported; 6 cases were male and 4 cases were female. Recorded ages were between the 15-19 and the 60-64 years age groups.
- There were 2 cases of **hydatid infection** reported. One case was a male in the 40-44 years age group and one case was a female in the 55-59 years age group.
- Ten notifications of **legionellosis** were received; 5 cases were male and 5 cases were female. Recorded ages were between the 30-34 and the 80-84 years age groups. Onset dates were in January (one), February (2), and March (7).
- A single notification of **leprosy** was received for a male in the 60-64 years age group resident in a rural Statistical Division of Western Australia.
- A single notification of **leptospirosis** was received for a male in the 20-24 years age group resident in a rural Statistical Division of Queensland.
- There were 3 cases of **listeriosis** reported; 2 cases were male and one case was female. The recorded ages were between the 60-64 and the 75-79 years age groups.
- Twenty-eight notifications of **malaria** were received; 18 cases were male and 10 cases were female. The cases were aged between the 0-4 and the 40-44 years age groups (Figure 6).
- The number of reports of **measles** continues to decline with 45 notifications received in the period. Twenty-seven cases were male and 18 cases were female. The cases were aged between the 0-4 and the 35-39 years age group with 13 cases aged less than 5 years and 4 cases aged less than one year. There were 5 apparent clusters of between 2 and 5 cases each resident in the same postcode area. Apparent clusters occurred in the Australian Capital Territory (one), New South Wales (2) and Queensland (2).
- Six cases of **meningococcal infection** were reported; 3 cases were male and 3 were female. Recorded ages were between the 0-4 and the 25-29 years age group with 2 cases one year of age.
- There were 126 cases of **pertussis** reported; 59 cases were male, 66 cases were female, and the sex of one case was not recorded. The cases were aged between the 0-4 and the 75-79 years age group with 6 cases aged less than one year. There were 17 apparent clusters of between 2 and 7 cases each resident in the same postcode area. Apparent clusters oc-

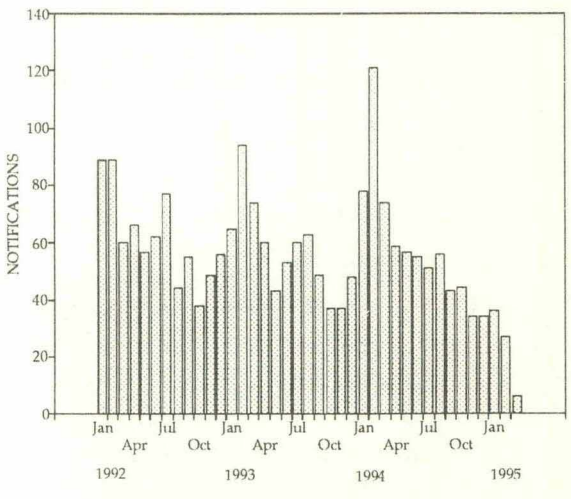
Figure 5. Notifications of *Haemophilus influenzae* type b infection, January 1991 to March 1995, by age group



* PRP-D approved in February 1992.

** Infant vaccine approved in September 1992.

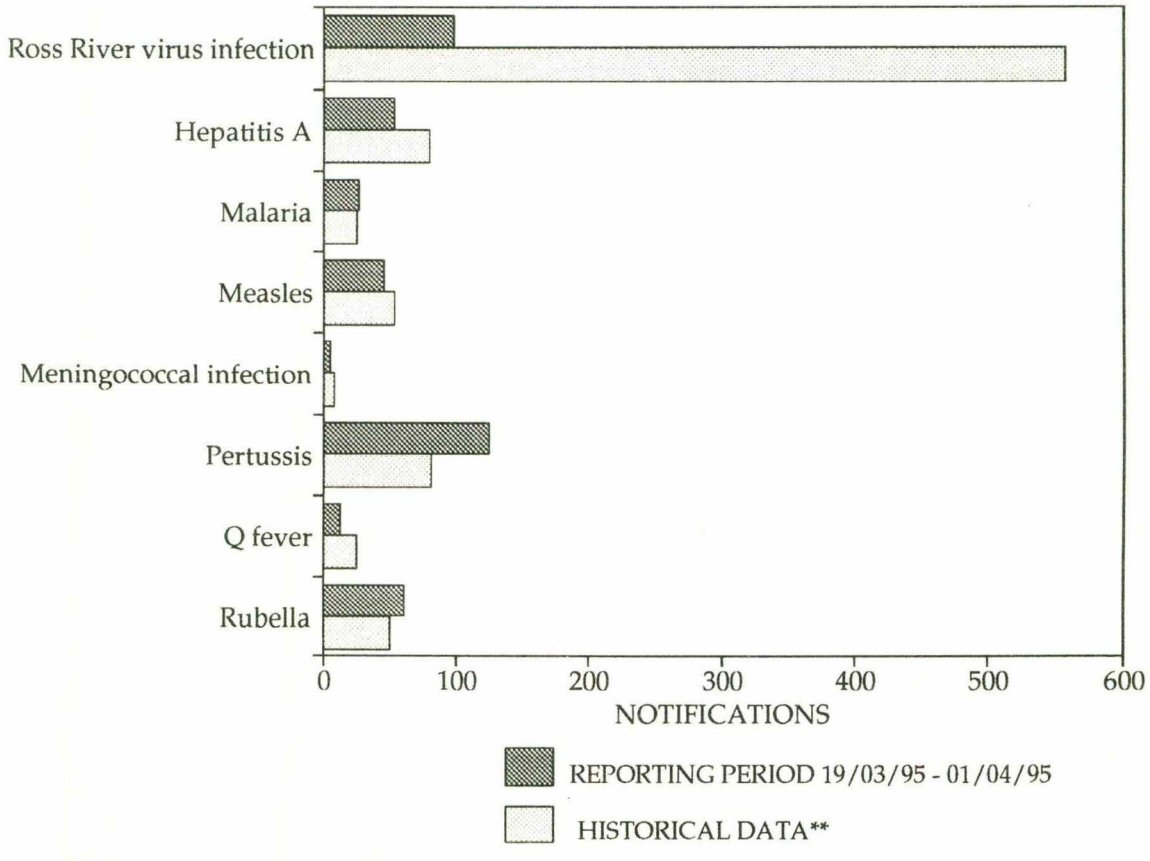
Figure 6. Notifications of malaria, by month of onset, January 1992 to March 1995



curred in the Australian Capital Territory (one), Queensland (8), South Australia (one), Western Australia (4), and Tasmania (2).

- Fourteen cases of **Q fever** were reported; 11 cases were male and 3 cases were female. Recorded ages were between the 20-24 and the 65-69 years age groups.
- There were 61 notifications of **rubella** received; 44 cases were male and 17 cases were female. The recorded ages were between the 0-4 and the 70-74 years age group with 9 cases recorded for females in the 15-44 years age group.
- There were 306 cases of **salmonellosis** reported; 158 cases were male, 146 cases were female, and the sex of 2 cases was not reported. The cases were aged between the 0-4 and the 85-89 years age groups with 39% of cases in the 0-4 years age group.
- Forty-two cases of **syphilis** were reported;16 cases were male, 23 cases were female, and the sex of 2 cases was unrecorded. The cases were aged between the 0-4 and the 85-89 years age groups.
- There were 41 cases of **tuberculosis** reported; 23 cases were male and 18 cases were female. The cases were aged between the 0-4 and the 95-99 years age groups.
- There were 15 cases of **yersiniosis** reported; 9 cases were male and 6 cases were female. Recorded ages were between the 0-4 and the 45-49 years age groups.

Figure 7. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



1. The historical data are the averages of the number of notifications in 9 previous 2-week reporting periods: the corresponding periods of the last 3 years and the periods immediately preceding and following those.

Table 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 19 March to 1 April 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1]			
									This period 1995	This period 1994	Year to date 1995	Year to date 1994
Diphtheria	0	0	0	0	0	0	0	0	0	0	1	11
Haemophilus influenzae b infection	0	3	0	1	2	0	0	0	6	4	26	51
Measles	3	17	2	14	0	3	5	1	45	96	569	933
Mumps	0	0	NN	NN	0	NN	0	0	0	0	12	5
Pertussis	2	17	4	51	5	13	15	19	126	160	1323	1792
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	0	3	0	38	2	0	13	5	61	45	713	518
Tetanus	0	0	0	0	0	0	0	0	0	3	2	5

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. Tas: CRS only.

NN Not Notifiable.

Table 5. Notifications of other diseases[1] received by State and Territory health authorities in the period 19 March to 1 April 1995

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2]			
									This period 1995	This period 1994	Year to date 1995	Year to date 1994
Arbovirus infection												
Ross River virus infection	0	9	18	65	1	-	4	2	99	338	650	2072
Dengue	0	0	0	0	0	-	0	0	0	1	6	6
NEC[3]	0	10	2	23	1	5	3	0	44	51	178	198
Campylobacteriosis[4]	25	-	17	76	89	22	133	38	400	321	2824	2456
Chlamydial infection (NEC)[5]	3	NN	5	96	10	1	31	25	171	270	1577	1706
Donovanosis	0	NN	0	1	NN	NN	0	0	1	4	25	28
Gonococcal infection[6]	0	7	15	23	3	0	6	22	76	143	739	810
Hepatitis A	1	17	0	7	2	0	12	14	53	84	491	520
Hepatitis B incident	0	0	0	3	1	0	6	0	10	15	76	71
Hepatitis C incident	-	0	0	-	0	-	-	-	0	0	9	3
Hepatitis C unspecified	17			89		3	169	34	312	311	2089	2214
Hepatitis (NEC)	0	0	0	0	0	0	0	NN	0	0	11	16
Legionellosis	0	0	0	2	1	0	6	1	10	7	58	49
Leptospirosis	0	0	0	1	0	0	0	0	1	10	35	60
Listeriosis	0	1	0	0	0	0	2	0	3	0	24	7
Malaria	0	0	0	23	1	0	3	1	28	15	141	142
Meningococcal infection	0	3	0	1	1	0	1	0	6	11	78	73
Ornithosis	0	NN	0	1	0	0	4	0	5	4	45	28
Q fever	0	2	0	9	0	0	3	0	14	26	113	174
Salmonellosis (NEC)	10	44	20	86	36	16	59	35	306	285	2290	1957
Shigellosis[4]	1	-	9	10	10	0	7	7	44	42	267	223
Syphilis	0	14	5	11	0	0	12	0	42	99	521	606
Tuberculosis	0	4	0	12	4	0	15	6	41	39	284	277
Typhoid[7]	0	0	0	0	0	0	0	0	0	2	13	14
Yersiniosis (NEC)[4]	0	-	0	6	9	0	0	0	15	29	122	158

1. For HIV and AIDS, see Tables 2 and 3 *CDI* 1995;19:168. 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. Tas: includes Ross River virus and dengue.
4. NSW: only as 'foodborne disease' or 'gastroenteritis in an institution'.
5. WA: genital only.
6. NT, Qld, SA and Vic: includes gonococcal neonatal ophthalmia.
7. NSW, Vic: includes paratyphoid.

NN Not Notifiable.

NEC Not Elsewhere Classified.

\- Elsewhere Classified.

Table 6 Notifications of rare[1] diseases received by State and Territory health authorities in the period 19 March to 1 April 1995

DISEASES	Total this period	Reporting States or Territories	Year to date 1995
Botulism	0		0
Brucellosis	0		9
Chancroid	0		2
Cholera	0		0
Hydatid infection	2	NSW	8
Leprosy	1	WA	2
Lymphogranuloma venereum	1	Vic	1
Plague	0		0
Rabies	0		0
Yellow fever	0		0
Other viral haemorrhagic fevers	0		0

1. Fewer than 50 cases of each of these diseases were notified each year during the period 1988 to 1993.

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 23 March to 5 April 1995, historical data[2], and total reports for the year

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
MEASLES, MUMPS, RUBELLA											
Measles virus		4						2	6	12.7	225
Mumps virus							1		1	2.7	22
Rubella virus	1	1			1		1	1	5	17.2	440
HEPATITIS VIRUSES											
Hepatitis A virus		6					1	9	16	12.0	156
Hepatitis B virus		24		5	1	2	8	34	74	98.8	714
Hepatitis C virus	8	18	2		25	11	4	116	184	154.7	1,961
Hepatitis D virus								1	1	3.2	3
ARBOVIRUSES											
Ross River virus			3		2	2		14	21	146.2	409
Barmah Forest virus		1			1				2	12.5	80
Dengue type 1		1							1	.0	2
Dengue not typed								2	2	2.0	7
Flavivirus (unspecified)							3		3	3.0	14
ADENOVIRUSES											
Adenovirus type 1					1				1	1.8	12
Adenovirus type 2							1		1	1.7	12
Adenovirus type 3					4		1		5	7.7	26
Adenovirus type 7					1				1	.5	9
Adenovirus type 26							1		1	.5	1
Adenovirus not typed/pending		6	1	4	1		4	11	27	38.7	292

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 23 March to 5 April 1995, historical data[2], and total reports for the year, continued

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
HERPES VIRUSES											
Herpes simplex virus type 1	1	3		32	18		47	32	133	143.2	1,541
Herpes simplex virus type 2		4		17	11	4	27	54	117	159.7	1,452
Herpes simplex not typed/pending	7	17					1	1	26	21.2	168
Cytomegalovirus		9		8	1	5	26	9	58	54.0	467
Varicella-zoster virus	1	3		1	8		8	14	35	31.0	370
Epstein-Barr virus		10			9	1	8	13	41	59.2	701
Herpes virus group - not typed							1		1	.5	9
OTHER DNA VIRUSES											
Papovavirus group							1		1	.0	2
Molluscum contagiosum								1	1	.2	2
PICORNA VIRUS FAMILY											
Coxsackievirus B3							1		1	.5	16
Echovirus type 3	1	1					2		4	.0	15
Echovirus type 6							2		2	1.2	29
Echovirus type 30		2					1		3	8.7	29
Poliovirus type 1 (uncharacterised)							1		1	1.2	8
Rhinovirus (all types)		7		13			10	1	31	30.0	219
Enterovirus not typed/pending		8		24			4	17	53	37.8	300
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		2			2			3	7	4.5	56
Influenza B virus		1					1		2	2.5	16
Parainfluenza virus type 1							1		1	14.5	6
Parainfluenza virus type 2					1		3		4	2.7	11
Parainfluenza virus type 3		1		3			3	1	8	10.5	192
Parainfluenza virus typing pending							2		2	1.2	11
Respiratory syncytial virus		8		4	1	1	10	2	26	33.8	156
OTHER RNA VIRUSES											
Rotavirus	4	1		1	2	3		7	18	23.8	280
OTHER											
Chlamydia trachomatis not typed	2	1			13		16	18	50	104.8	757
Chlamydia psittaci							5		5	3.3	65
Chlamydia species					1				1	.3	21
Mycoplasma pneumoniae		2			1				3	48.7	111
Coxiella burnetii (Q fever)		2					3		5	13.8	87
Rickettsia sp - other								1	1	.0	2
Salmonella paratyphi		2							2	.0	2
Yersinia enterocolitica		3							3	.2	17
Brucella species		1							1	.3	5
Bordetella pertussis			4				13	27	44	13.0	306
Legionella longbeachae								1	1	.2	2

Table 7. Virology and serology laboratory reports by State or Territory[1] for the reporting period 23 March to 5 April 1995, historical data[2], and total reports for the year, continued

	State or Territory[1]								Total this fortnight	Historical data[2]	Total reported this year
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA			
Legionella species								1	1	.0	23
Cryptococcus neoformans		6							6	.0	6
Cryptococcus species		1							1	.3	10
Treponema pallidum		48						5	53	21.8	240
Entamoeba histolytica								1	1	.2	5
Toxoplasma gondii		2							2	2.3	29
Schistosoma species			1					8	9	.2	18
Strongyloides stercoralis		1							1	.0	1
Echinococcus granulosus								1	1	.5	7
TOTAL	25	207	11	112	105	29	222	408	1,119	1,367.3	12,155

[redacted] State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
[redacted] The historical data are the averages of the numbers of reports in 6 previous 2 week reporting periods: the corresponding periods of the last [redacted] years and the periods immediately preceding and following those.

Table 8. Virology and serology laboratory reports by clinical information for the reporting period 23 March to 5 April 1995

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus												6	6
Mumps virus												1	1
[redacted]bella virus				1								4	5
HEPATITIS VIRUSES													
Hepatitis A virus							5					11	16
Hepatitis B virus							17					57	74
Hepatitis C virus							8					176	184
Hepatitis D virus												1	1
ARBOVIRUSES													
Ross River virus								4		8		9	21
Barmah Forest virus												2	2
Dengue type 1												1	1
Dengue not typed												2	2
Flavivirus (unspecified)												3	3

Table 8. Virology and serology laboratory reports by clinical information for the reporting period 23 March to 5 April 1995, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ADENOVIRUSES													
Adenovirus type 1					1								1
Adenovirus type 2												1	1
Adenovirus type 3					3				1			1	5
Adenovirus type 7									1				1
Adenovirus type 26												1	1
Adenovirus not typed/pending					8	13			3			3	27
HERPES VIRUSES													
Herpes simplex virus type 1					7	1		79	6		30	10	133
Herpes simplex virus type 2					1			44			67	5	117
Herpes simplex not typed/pending	1							10			8	7	26
Cytomegalovirus					18	1	1	1	3			34	58
Varicella-zoster virus								26				9	35
Epstein-Barr virus							1					40	41
Herpes virus group - not typed								1					1
OTHER DNA VIRUSES													
Papovavirus group												1	1
Molluscum contagiosum								1					1
PICORNA VIRUS FAMILY													
Coxsackievirus B3					1								1
Echovirus type 3						1		1				2	4
Echovirus type 6		1										1	2
Echovirus type 30		2							1				3
Poliovirus type 1 (uncharacterised)					1								1
Rhinovirus (all types)					27							4	31
Enterovirus not typed/pending		3	2		16	11		2				19	53
ORTHO/PARAMYXOVIRUSES													
Influenza A virus	1				2							4	7
Influenza B virus					1							1	2
Parainfluenza virus type 1					1								1
Parainfluenza virus typing pending					2								2
Respiratory syncytial virus					23							3	26
OTHER RNA VIRUSES													
Rotavirus						17						1	18

Table 8. Virology and serology laboratory reports by clinical information for the reporting period 23 March to 5 April 1995, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
OTHER													
Chlamydia trachomatis not typed								1	4		39	6	50
Chlamydia psittaci					3							2	5
Chlamydia species					1								1
Mycoplasma pneumoniae					3								3
Coxiella burnetii (Q fever)												5	5
Rickettsia spp - other												1	1
Salmonella paratyphi												2	2
Yersinia enterocolitica												3	3
Brucella species												1	1
Bordetella pertussis					34							10	44
Legionella longbeachae												1	1
Legionella species												1	1
Crytococcus neoformans												6	6
Cryptococcus species			1										1
Treponema pallidum				2			1				3	47	53
Entamoeba histolytica						1							1
Toxoplasma gondii												2	2
Schistosoma species						1						8	9
Strongyloides stercoralis												1	1
Echinococcus granulosus												1	1
TOTAL	2	6	3	3	163	46	33	170	19	8	147	519	1119

Table 9. Virology and serology laboratory reports by contributing laboratories for the reporting period 23 March to 5 April 1995

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	29
New South Wales	Prince Henry/Prince of Wales Hospitals, Sydney	84
	Royal Alexandra Hospital for Children, Camperdown	27
	Royal Prince Alfred Hospital, Camperdown	22
	South West Area Pathology Service, Liverpool	68
Queensland	State Health Laboratory, Brisbane	107
	Nambour Hospital	3
South Australia	Institute of Medical and Veterinary Science, Adelaide	107
Tasmania	Northern Tasmanian Pathology Service, Launceston	8
	Royal Hobart Hospital, Hobart	13
Victoria	Microbiological Diagnostic Unit, University of Melbourne	16
	Royal Children's Hospital, Melbourne	63
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	153
Western Australia	Princess Margaret Hospital, Perth	35
	State Health Laboratory Services, Perth	384
TOTAL		1119