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CONTENTS

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A National Network for Communicable Diseases Surveillance

METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* IN WESTERN AUSTRALIA, 1983 TO 1992

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Introduction

Staphylococcus aureus remains an important cause of nosocomial infection, particularly nosocomial surgical wound infection and bloodstream infection. Methicillin resistant *S. aureus* (MRSA) first emerged as an important clinical problem in the United Kingdom in the early 1960s, shortly after methicillin was introduced for therapeutic purposes. In the United States, reports of MRSA also occurred in the early 1960s, however hospital outbreaks of infection were not recorded until later in the decade. A similar pattern was followed in Australia until the early 1980s, with isolated cases of MRSA infection and sporadic outbreaks of infection in hospital patients. At that time an increased incidence of infection with multiply-resistant 'epidemic' MRSA (termed EMRSA) was noted in hospitals in eastern Australia[1].

In 1982 an outbreak of infection with EMRSA occurred in Royal Perth Hospital (RPH) in Western Australia following the admission of a patient from a hospital in another part of Australia[2]. After this outbreak a policy was instituted in Western Australia whereby all patients being admitted to a hospital in Western Australia who had been in a hospital outside Western Australia in the previous 12 months should be screened for carriage of MRSA. This policy has been highly successful in preventing MRSA from becoming established in any hospital in Western Australia. At the same time a system of voluntary notification of infection with, or carriage of, MRSA was commenced, with notifications being sent to the Infection Control Unit of the State Health Laboratory Service (ICU SHLS).

About five years ago a new type of MRSA (Western Australia MRSA, WAMRSA) appeared in some communities in the Kimberley region of northern Western Australia[3]. This new type of MRSA has been isolated from a number of patients both in the Kimberley region and from Kimberley patients admitted to hospitals in Perth. Numbers of notifications of WAMRSAs rose in 1993 and we thought it an appropriate time to review notifications for MRSA in Western Australia for the period 1983 until 1992.

Methods

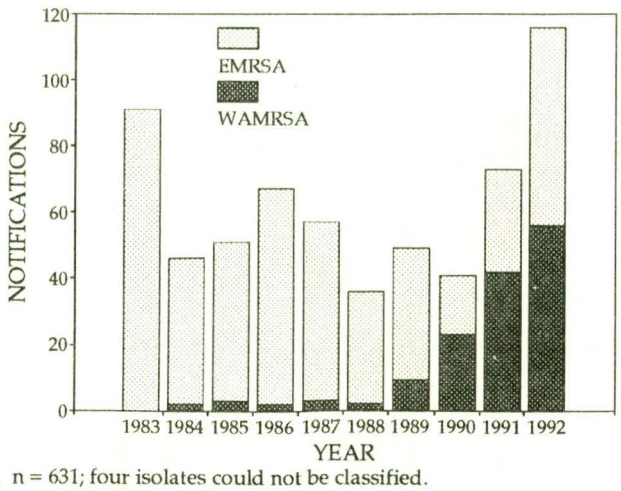
Databases held by the ICU SHLS and the Chief Microbiologist, SHLS provided the main source of information. Although MRSA was made officially notifiable in 1985, until the last two to three years the voluntary system has prevailed. Information collected included basic patient demographic details and details of the isolate. Cases included infected and colonised patients, and staff identified on screening. In most cases isolates were also sent to the ICU for confirmation of identity and antibiotic resistance pattern. MRSA were categorised into EMRSA or WAMRSA based on antibiotic resistance pattern. EMRSA were resistant to β-lactam antimicrobial agents, gentamicin and/or both erythomycin and tetracycline. Strains resistant to β-lactams and erythromycin or tetracycline, but susceptible to gentamicin were classified as WAMRSA.

Results

There was a total of 631 notifications of MRSA for the 10 year period 1983 to 1992. These ranged from a low of 36 notifications in 1988 to a high of 117 in 1992. After a relatively high number of notifications in 1983 (92) the numbers fell during the early and mid-1980s but have increased in the last two years (Figure 1). The proportion of notifications coming from private laboratories remained at less than 5% until 1992 when the proportion increased sharply to 16%.

The proportion of MRSA classified as WAMRSA remained at about 6.0% or less until 1989 when there was a rapid increase to 57.5% in 1991, with only a slight decline in the following year (Figure 1).

Figure 1. MRSA in Western Australia, 1983 to 1992, by year and type[1]



1. n = 631; four isolates could not be classified.

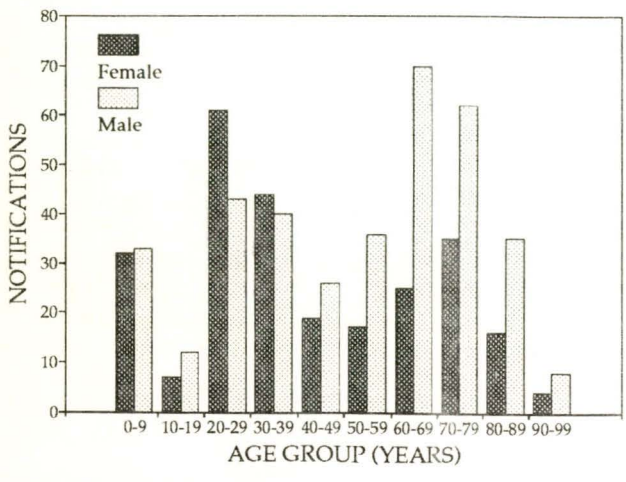
Table. Notifications of EMRSA and WAMRSA in the Kimberley and Metropolitan regions, 1983 to 1992, by year

	Kimberley				Metropolitan			
	EMRSA		WAMRSA		EMRSA		WAMRSA	
Year	Number	%	Number	%	Number	%	Number	%
1983	11	100	0	0	67	100	0	0
1984	2	67	1	33	31	97	1	3
1985	1	100	0	0	37	93	3	8
1986	0	0	0	0	45	96	2	4
1987	1	100	0	0	43	96	2	4
1988	0	0	0	0	25	93	2	7
1989	1	13	7	88	31	100	0	0
1990	2	12	15	88	14	82	3	18
1991	5	20	25	80	12	57	9	43
1992	1	5	19	95	39	65	21	35

It is of interest to compare the number and type (EMRSA or WAMRSA) of MRSA isolated in the Kimberley region and the three metropolitan regions between 1983 and 1992. In 1983, all 11 MRSA isolates from Kimberley patients and all 67 MRSA isolates from metropolitan patients were EMRSA. In 1989 only one of eight (12.5%) MRSA isolates from Kimberley patients was EMRSA, however, all 31 metropolitan MRSA isolates were still EMRSA. By 1990 the percentage of EMRSA in the metropolitan regions had declined slightly to 82.3% (14 of 17) but then fell to 57.1% (12 of 21) in 1991. The percentage of EMRSA in the Kimberley region remained between 5% and 20% during this latter period (Table).

Three peaks in the age distribution of the MRSA cases were apparent (Figure 2), in the 0-9 years age group, the 20-39 years age groups and the 60-79 years age groups. The distribution by sex varied with age group. In the youngest age group numbers of males and females were approximately equal. In the 20-39 years age group there was a predominance of females, however, above this age group there is a predominance of males which was most marked in the greater than 50 years age group where the male to female ratio was at least 2.0:1.0. Overall, the male to female ratio was 1.4:1.0.

Figure 2. MRSA in Western Australia, 1983 to 1992, by age group and sex



Data were also collected on the susceptibility of MRSA isolates to various antimicrobial agents over the 10 year study period. Uniform susceptibility to vancomycin was recorded. The majority of isolates were susceptible to fusidic acid, novobiocin, rifampicin and, apart from 1983, bacitracin. Susceptibility to amikacin, chloramphenicol and framycetin varied but all remained reasonably active throughout the 10 year period. For erythromycin, minocycline and tetracycline the percentage of susceptible strains increased significantly during the last three to four years of the study period as the proportion of WAMRSA increased. Clindamycin susceptibility was similar although in the earlier years of the study a greater percentage of MRSA was susceptible.

Discussion

Epidemic strains of MRSA have become established in many hospitals in eastern Australia however, to date, policies instituted in Western Australia[4] have prevented the importation and establishment of EMRSA in Western Australian hospitals. Recently a new type of MRSA which displays resistance, in many cases, only to β-lactam antimicrobial agents has appeared in Western Australia. In view of these secular trends and the apparently changing epidemiology of MRSA infections in Western Australia, a review of MRSA in Western Australia was undertaken.

The data in this analysis should be interpreted with some caution. First, as a voluntary system of reporting MRSA was used it is possible that some under-reporting has occurred and that the extent of under-reporting has varied over time. This may be particularly true from smaller hospital laboratories and private pathology services. Second, hospitals with MRSA at any particular time, for example RPH, are more likely to obtain specimens for culture than hospitals without a perceived problem with MRSA. Third, while the majority of isolates were sent to a reference laboratory to

confirm their identity and susceptibility pattern some were not, leading to the possibility of over-reporting. However, given the importance attached to MRSA in Western Australia, this is likely to have been a small problem only.

Finally, the emergence of the WAMRSA was not recognised by some workers initially. These strains were thought to be hyperproducers of β-lactamase and not true MRSA, until they were shown to contain the *mec* A gene (CL Golledge and GL Turbett, unpublished observations). In addition, the classification of MRSA into EMRSA and WAMRSA was based on susceptibility patterns. Early in the 10 year study period a smaller range of antimicrobial agents was tested and there was greater variability in those antimicrobials that were tested. As a consequence the classification of some isolates from early in the study was difficult. These isolates are now being genetically typed to confirm their heritage.

Given these limitations, however, some interesting trends are apparent. Notifications of MRSA in 1983 were high compared to later years. This may have been due to increased awareness of the problems associated with MRSA, and the implementation of screening procedures as a result of an outbreak of infection with MRSA at RPH the previous year[2]. For the next six years notifications were below 60 per year apart from 1986 when an outbreak occurred at the Albany Regional Hospital in the south of the State.

There has clearly been an increase in notifications of MRSA since 1990 and an increase in the proportion of WAMRSA since 1989. Despite the problems alluded to above, these increases appear real and have continued during 1993 (data not shown). In addition, the data show that the WAMRSA first appeared in the Kimberley region in the north of the State in high proportions in 1989. Significant changes in proportions of WAMRSA occurred in the metropolitan areas of Perth were not noticeable until 1991, suggesting spread over time from the Kimberley region to Perth. Similar conclusions regarding temporal trends were reached by Udo et al[3] following genetic analysis of a small group of community isolates of MRSA from Western Australia.

The occurrence in the Perth metropolitan area of sporadic isolates of MRSA with the WAMRSA phenotype prior to 1989 is of difficult to interpret. While all infected or colonised individuals gave residential addresses within the Perth metropolitan area, it is possible they had either worked in or travelled to the Kimberley region. The northern regions of Western Australia, including the Kimberley, have a large population of itinerant workers who travel regularly between Perth and their place of work. Conclusive evidence to demonstrate a relationship with WA MRSA isolated after 1989 requires genetic analysis and this is currently in progress.

The age and sex distribution of individuals infected or colonised with MRSA is also of interest. Three peaks were apparent, in the 0-9 years age group, the 20-39 years age groups and the 60-79 years age groups. In the 0-9 years age group, males and females were almost equally represented and the majority were aged one year or less. In the 20-39 years age groups, there is an apparent bias towards females. This may be explained in the contribution of pre-employment and staff screening to these age groups. Fifty-nine of the 70 known positive pre-employment and staff screenings came from these age groups and 47 of the 59 individuals were female. If these screenings are removed from the totals then there is a male dominance in all age groups which is most marked in the older age groups (50 years or more). The ratio of males to females in the 60-69 years age group was nearly 3.0:1.0. To our knowledge such a dominance of males has not been reported previously and, at present, the reason(s) for this phenomenon remain obscure.

Nearly 12% of notifications with appropriate information were as a result of staff or pre-employment screening. The role of employee carriage of MRSA in both initiating and maintaining outbreaks has been debated. Some workers do not consider employee carriage important, while others do. A recent study by Reboli et al[5] concluded that healthcare workers may comprise a sizeable MRSA reservoir and, while our results would support this finding, this may be a reflection of our biased sample.

Changes in MRSA in hospitals in the United States were monitored for the period 1975 to 1991 by Panlilio et al[6]. They showed that MRSAs as a percentage of all *S. aureus* isolates in hospitals rose from 2.4% in 1975 to 29% in 1991. The rate of increase was related to hospital bed size, and more MRSA were found in larger hospitals (more than 500 beds) however, little additional information was provided. RPH is the largest hospital in Western Australia (about 950 beds) and was responsible for nearly 36% of notifications although, as mentioned earlier, some of these notifications may have been as a result of greater awareness and increased screening.

Despite the large size of Western Australia, the comparatively small population and number of hospitals, and the extent of cooperation between interested parties has facilitated this study of MRSA over an extended period. Similar studies have not been performed elsewhere.

The two most important features documented in this study are the increasing incidence of MRSA in Western Australia over the last three years and the rapid emergence of a new type of MRSA (WAMRSA). The increasing number of reports of WAMRSA coming from private laboratories provides evidence of a reservoir of WAMRSA in the community and suggests that these strains are being transferred into the hospital environment. So far WAMRSA have not demonstrated the ability to spread as rapidly as some 'epidemic' strains, however, the development of plasmid-mediated mupirocin and tetracycline resistance in these strains[7] indicates they can acquired additional genetic determinants and may subsequently display increased virulence. Indeed, the recent outbreak of infection with

WAMRSA at Carnarvon Regional Hospital should serve as a warning of this potential.

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INTERCEPTION OF LARVAE OF AN EXOTIC FLY PEST IN SKIN LESIONS ON AUSTRALIAN TRAVELLERS

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Only a few Australian flies infest wounds in people and animals and none specifically parasitise humans. Consequently, human myiasis is extremely rare in Australia and, not surprisingly, most medical practitioners would probably not recognise lesions caused by fly larvae (maggots). In other parts of the world, however, a number of flies commonly attack domestic livestock, inflicting severe trauma and significant economic losses. A number of these species will also infest humans.

Ease of access to air travel and the popularity of many new tourist destinations have increased the risk of exotic parasitic flies entering Australia. Indeed, to some extent, there is a preparedness to cope with the arrival of *Chrysomya bezziana*, the Old World screw worm fly, because of the great threat it poses to Australian agriculture[1].

Recently, maggots taken from sores on two Australian tourists returning from Central and South America were submitted to this laboratory for identification and comment. The scenario leading to the submission of one sample is worthwhile presenting here, to demonstrate problems that may occur before a definitive diagnosis is made.

In mid-January 1994 a male travelling in Guatemala noticed two 'sun spots' on his hand which he suspected he had scratched as they became itchy. Subsequently he flew to Los Angeles, staying there for one week during which time the 'sun spots' became sores resembling two large pimples. On his return to Sydney (24 January) they resembled two boils. A week later he went to his usual general practitioner (GP) who prescribed antibiotic treatment even though the patient believed by this stage that there was something in the sores. On returning a week later when the sores were quite painful and oozing black blood, he was sure there was something inside them but was referred to a dermatologist who took a biopsy and prescribed ointment and antibiotics. The pathology was negative and corticosteroid treatment was prescribed. Coincidentally, a pharmacist friend who also believed there were parasites inside the sores recommended he try an old-fashioned black drawing ointment. This was applied on the evening of 26 February and the next morning a maggot was seen protruding from each wound. These were removed from the wound with forceps and frozen.

Two days later the incident was reported to Dr B Hudson of Royal North Shore Hospital, Sydney, who contacted Mr R Jones, Executive Officer with the New South Wales Stock and Station Agents' Association who, in turn, alerted Dr H Scott-Orr, Chief, Division of Animal Industries, New South Wales Agriculture. Dr Scott-Orr recommended the maggots be sent to the Entomology Section at the Biological and Chemical Research Institute where I identified them as larvae of the human bot fly, *Dermatobia hominis* on 4 March. The specimens were third (final) instar larvae; one was almost fully mature (about 20mm long) and the other (Figure) was about 10mm long.

Figure. *Dermatobia hominis* third instar larva, removed from the skin of the patient's hand

Comment

D. hominis is a serious pest of cattle in South America. An early 1970s estimate of damage caused to the cattle industry by it was US$260 million. This loss took the form of reduced growth rates, lowered milk yield and hide damage[2]. Sheep, dogs, cats, rabbits and humans may also be attacked. Female *D. hominis* lay their eggs onto mobile insects, mostly mosquitoes and other flies. Mosquitoes may carry six to ten eggs and larger flies about 30 eggs[3]. The eggs hatch when the carrier fly comes into close contact with a warm blooded host. The young larvae penetrate the skin and feed on tissue exudate. During the four to 18 weeks' development time, the wounds must be open to the air or, as in this case when suffocated with ointment, the larvae will emerge.

The long larval development time increases the opportunity for *D. hominis* to be carried from one country to another. It has been intercepted in Canada and Australia previously, but fortunately has not established anywhere outside its normal range. Although increasing the discomfort of affected travellers, slow diagnosis of *D. hominis* infestation is less critical than for some other species because of this long development time. Specimens of *Cochliomyia hominivorax*, the New World screw worm fly from South America, and *Cordylobia anthropophaga*, the tumbu fly of East Africa, have also been submitted to this laboratory by intervening medical practitioners in the past. *C. anthropophaga* and *D. hominis* have also been identified from patients in Brisbane by the Department of Parasitology, University of Queensland. Affected humans have had up to 12 *C. anthropophaga* lesions (P Prociv, personal communication). Although the number of specimens submitted for identification has been low, with more frequent travel to places like South America and South Africa, the risk to agriculture and public health may increase.

Treatment of lesions caused by these flies is not difficult once correctly diagnosed. Smearing the boil-like wounds with petroleum jelly suffocates the maggots and forces them to leave the wound[4]. Once removed, the wounds usually heal unaided.

Currently, incoming travellers are advised to contact a medical practitioner upon developing any illness within the few months of arrival, and to ensure that the medical practitioner is aware of their travel history. This instruction is generally sound but, given the situation described above, in cases of myiasis, the chance of rapid, correct diagnosis is probably remote. Since a GP is most likely to be the first contact, GPs should become alerted to the possibility that small boils in travellers which do not respond to treatment may, in fact, be the wounds made by exotic fly larvae. The threat to Australian agriculture and public health is real and should not be underestimated. Any medical officer who finds larvae in wounds, especially on persons recently arrived from overseas, should preserve them in alcohol and submit them without delay to either the local State or Territory department of agriculture, the CSIRO Division of Entomology in Canberra or to the State or Territory medical entomology facilities in New South Wales, Western Australia, Queensland or the Northern Territory.

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HIV/AIDS INTERNATIONAL UPDATE

*Based on WHO Weekly Epidemiological Record 1994;***69**:*5-8 and Australian HIV Surveillance Report 1994;***10(1)**:*28*

As of 31 December 1993, 851 628 cumulative AIDS cases in adults and children have been reported to the World Health Organization (WHO) (Table 1).

The reported numbers of AIDS cases tend to be biased as a result of under-diagnosis, under-reporting, and delays in reporting; it is estimated that over 3 million AIDS cases have occurred to date (Figure). Although about one half of cumulative AIDS cases reported have been from developing countries, WHO estimates that well over three-quarters of all AIDS cases to date have occurred in these countries. When these estimates of AIDS cases are considered along with available data on the distribution and spread of HIV infection worldwide, it is estimated that as of late 1993, over 14 million adults and over 1 million children have been infected with HIV since the start of the pandemic (Table 2).

Table 1. Cumulative AIDS cases, by country/area, reported to the WHO as at 31 December 1993

Country/Area	Number of cases	Date of report	Country/Area	Number of cases	Date of report
AFRICA			Namibia	311	31.03.93
Algeria	138	08.08.93	Niger	921	15.06.93
Angola	608	26.05.93	Nigeria	722	02.06.93
Benin	566	10.12.93	Reunion	65	20.03.92
Botswana	1156	30.08.93	Rwanda	10 138	10.12.93
Burkina Faso	2886	31.12.92	Sao Tome and Principe	24	10.12.93
Burundi	7225	10.12.93	Senegal	911	31.05.93
Cameroon	2870	10.12.93	Seychelles	2	10.12.93
Cape Verde	143	10.12.93	Sierra Leone	95	07.07.93
Central African Republic	3730	30.11.92	Somalia	13	01.01.91
Chad	1523	08.12.93	South Africa	1803	01.02.93
Comoros	3	31.05.93	Sudan	834	03.11.93
Congo	5267	31.12.92	Swaziland	248	19.01.93
Côte d'Ivoire	14 655	05.07.93	Togo	2381	10.12.93
Djibouti	419	08.11.93	Tunisia	136	21.05.93
Egypt	88	14.11.93	Uganda	34 611	01.11.92
Equatorial Guinea	31	31.05.93	United Republic of Tanzania	38 719	07.01.93
Eritrea	372	31.12.92	Zaire	21 008	10.06.93
Ethiopia	8376	30.09.93	Zambia	29 734	20.10.93
Gabon	472	10.12.93	Zimbabwe	25 332	30.09.93
Gambia	240	10.06.93	TOTAL	301 861	
Ghana	11 044	30.04.93	AMERICAS		
Guinea	655	10.12.93	Anguilla	5	30.09.93
Guinea-Bissau	380	11.06.93	Antigua and Barbuda	36	30.09.93
Kenya	38 220	09.07.93	Argentina	2767	30.06.93
Lesotho	479	10.12.93	Bahamas	1329	30.09.93
Liberia	191	10.12.93	Barbados	397	30.09.93
Libyan Arab Jamahiriya	10	01.02.93	Belize	53	30.09.92
Madagascar	4	31.05.93	Bermuda	223	30.06.93
Malawi	29 194	20.08.93	Bolivia	60	31.03.93
Mali	1874	25.11.93	Brazil	43 455	02.10.93
Mauritania	40	25.07.93	British Virgin Islands	6	30.09.93
Mauritius	17	30.06.93	Canada	8640	30.09.93
Morocco	156	15.07.93	Cayman Islands	15	30.09.93
Mozambique	826	27.07.93	Chile	805	30.09.93

Table 1. Cumulative AIDS cases, by country/area, reported to the WHO as at 31 December 1993, continued

Country/Area	Number of cases	Date of report	Country/Area	Number of cases	Date of report
Colombia	3870	30.09.93	Indonesia	42	30.11.93
Costa Rica	525	30.09.93	Iran (Islamic Republic of)	73	28.08.93
Cuba	204	30.06.93	Iraq	18	09.10.93
Dominica	12	30.06.90	Israel	253	30.09.93
Dominican Republic	2179	30.09.93	Japan	621	31.10.93
Ecuador	265	30.06.93	Jordan	29	01.11.93
El Salvador	514	30.06.93	Kazakhstan	0	30.09.93
French Guiana	232	30.09.90	Kuwait	10	10.08.93
Grenada	51	30.09.93	Kyrgyzstan	0	30.04.93
Guadeloupe	353	31.01.93	Laos	3	10.09.93
Guatemala	520	30.09.93	Lebanon	55	19.08.93
Guyana	359	31.03.93	Macao	5	01.09.93
Haiti	3086	31.12.90	Malaysia	90	05.10.93
Honduras	2865	30.06.93	Maldives	0	30.11.93
Jamaica	576	30.09.93	Mongolia	0	30.11.93
Martinique	266	30.09.93	Myanmar	133	30.11.93
Mexico	16 091	30.09.93	Nepal	24	30.11.93
Montserrat	1	30.09.93	Oman	31	05.11.93
Netherlands Antilles & Aruba	110	30.06.92	Pakistan	37	01.11.93
Nicaragua	51	30.09.93	Philippines	107	15.11.93
Panama	582	30.09.93	Qatar	34	31.01.93
Paraguay	62	30.09.93	Republic of Korea	13	30.04.93
Peru	883	30.06.93	Saudi Arabia	55	30.08.93
Saint Kitts and Nevis	39	30.09.93	Singapore	60	26.08.93
Saint Lucia	59	30.09.93	Sri Lanka	33	30.11.93
Saint Vincent and the Grenadines	54	30.09.93	Syrian Arab Republic	23	22.08.93
			Tajikistan	0	30.04.93
Suriname	146	30.06.93	Thailand	3001	30.11.93
Trinidad and Tobago	1404	30.09.93	Turkey	118	31.10.93
Turks and Caicos Islands	39	30.09.93	Turkmenistan	1	30.04.93
United States of America	339 250	30.09.93	United Arab Emirates	8	12.02.93
Uruguay	389	30.06.93	Uzbekistan	2	30.06.93
Venezuela	3150	30.09.93	Viet Nam	28	23.09.93
TOTAL	435 978		Yemen	8	07.11.93
ASIA			TOTAL	5559	
Afghanistan	0	15.02.92	EUROPE		
Armenia	2	30.04.93	Albania	0	30.09.93
Azerbaijan	0	30.09.93	Austria	1087	30.11.93
Bahrain	11	04.05.93	Belarus	10	30.09.93
Bangladesh	1	30.11.93	Belgium	1486	30.09.93
Bhutan	0	30.11.93	Bulgaria	20	30.06.93
Brunei Darussalam	3	17.05.93	Croatia	53	30.06.93
Cambodia	0	06.09.93	Czech Republic[2]	46	30.09.93
China[1]	14	07.08.93	Denmark	1296	30.09.93
Cyprus	28	03.11.93	Estonia	2	30.06.93
Democratic PR of Korea	0	30.11.93	Finland	141	30.09.93
Georgia	2	30.04.93	France	26 970	30.09.93
Hong Kong	89	21.09.93	Germany	10 447	30.09.93
India	494	30.11.93	Greece	845	30.09.93

Table 1. Cumulative AIDS cases, by country/area, reported to the WHO as at 31 December 1993, continued

Country/Area	Number of cases	Date of report	Country/Area	Number of cases	Date of report
Hungary	139	30.09.93	OCEANIA		
Iceland	29	30.09.93	American Samoa	0	31.08.93
Ireland	362	30.09.93	Australia	4258	09.11.93
Italy	18 832	30.09.93	Cook Islands	0	27.09.93
Latvia	4	30.06.93	Federated States of Micronesia	2	09.09.93
Lithuania	4	30.09.93	Fiji	6	01.10.93
Luxembourg	70	30.09.93	French Polynesia	33	13.10.93
Malta	29	30.09.93	Guam	18	03.09.93
Monaco	24	30.09.93	Kiribati	0	02.07.93
Netherlands	2783	30.09.93	Mariana Islands	4	10.09.93
Norway	349	30.11.93	Marshall Islands	2	30.09.93
Poland	156	30.11.93	Nauru	0	26.08.93
Portugal	1575	30.11.93	New Caledonia	31	29.09.93
Republic of Moldova	4	30.09.93	New Zealand	413	30.09.93
Romania	2545	30.09.93	Niue	0	14.05.93
Russian Federation	128	30.09.93	Palau	1	19.07.93
San Marino	1	30.09.93	Papua New Guinea	55	29.10.93
Slovak Republic[2]	6	30.09.93	Samoa	1	23.04.93
Slovenia	30	30.09.93	Solomon Islands	0	15.05.93
Spain	21 205	30.09.93	Tokelau	0	20.09.93
Sweden	904	30.09.93	Tonga	4	15.03.93
Switzerland	3415	30.09.93	Tuvalu	0	26.07.93
Ukraine	22	30.09.93	Vanuatu	0	31.07.93
United Kingdom	8115	30.09.93	Wallis and Futuna Islands	0	24.05.93
Yugoslavia[3]	268	31.12.92	TOTAL	4828	
TOTAL	103 402		WORLD TOTAL	851 628	

1. Does not include 48 cases in the Province of Taiwan.
2. Previously reported under Czechoslovakia.
3. Refers to states/areas of the former Socialist Federal Republic of Yugoslavia not otherwise listed separately.

Figure. Cumulative AIDS cases in adults and children, reported and estimated, late 1993

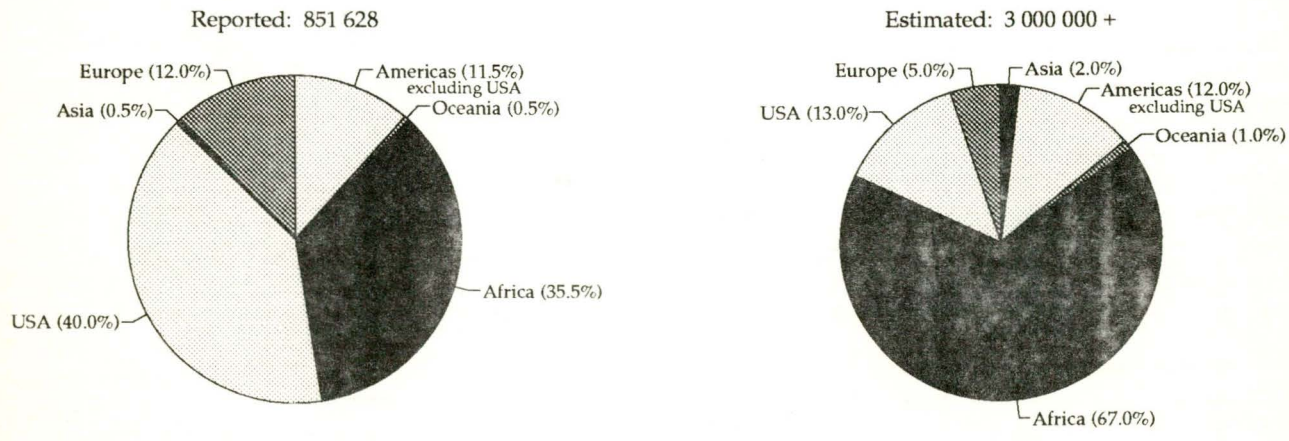


Table 2. Estimated cumulative adult HIV infections and HIV prevalence in adults in late 1993, by region

Region	Estimated cumulative HIV infection	Estimated HIV prevalence
North America	1 million +	800,000
Latin America and the Caribbean	1.5 million	1-1.5 million
Western Europe	500,000 +	400,000 +
North Africa and the Middle East	75,000 +	75,000 +
Sub-Saharan Africa	9 million	7 million +
Eastern Europe and Central Asia	50,000 +	50,000 +
East Asia and the Pacific	25,000 +	25,000 +
South and South-East Asia	2 million +	2 million +
Australasia	25,000 +	20,000 +
Total	14 million +	11-12 million

Cumulative HIV incidence estimates represent all estimated HIV infections since the onset of the pandemic in the late 1970s. HIV prevalence estimates represent the total number of persons with HIV infection (living) at any given moment in time (Table 2). For a chronic infection such as HIV, cumulative incidence estimates were close to prevalence estimates early in the pandemic. As many people infected with HIV early in the pandemic have died, the gap between the two measurements is now wider. As the pandemic progresses, the gap will widen further.

HIV prevalence estimates are most different from cumulative incidence for those regions or areas that are furthest into the epidemic: Australasia, Latin America and the Caribbean, North Ameria, sub-Saharan Africa, and Western Europe. For example, the estimate for South and South-East Asia is more or less the same at

Table 3. AIDS and HIV in the WHO Western Pacific Region by country/area, based on reports available at 30 September 1993

Country/Area	Cumulative AIDS cases				AIDS rate[2]	Cumulative HIV diagnoses
	Male	Female	Children <15 years	Total[1]		
American Samoa	0	0	0	0	0.0	0
Australia	4354	164	34	4530	25.7	17568
Brunei	3	0	0	3	1.1	10
Cambodia	0	0	0	0	0.0	176
China[3]	13	1	0	14	0.0	1106
Cook Islands	0	0	0	0	0.0	0
Fed. States of Micronesia	2	0	0	2	1.9	2
Fiji	3	3	1	6	0.8	17
French Polynesia	25	5	1	33	16.0	128
Guam	17	1	0	18	14.1	56
Hong Kong	84	5	3	89	1.5	389
Japan	527	16	0	543	0.4	2731
Kiribati	0	0	0	0	0.0	2
Laos	2	0	0	3	0.0	29
Macao	4	1	0	5	1.0	45
Malaysia	81	9	4	90	0.5	6225
Mariana Islands	4	0	0	4	0.0	7
Marshall Islands	1	1	0	2	4.2	8
Nauru	0	0	0	0	0.0	0
New Caledonia	28	3	1	31	18.1	89
New Zealand	395	18	0	413	11.9	884
Niue	0	0	0	0	0.0	0
Palau	1	0	0	1	0.0	1
Papua New Guinea	32	23	2	55	1.4	148
Philippines	70	35	3	121	0.2	459

Table 2. AIDS and HIV in the WHO Western Pacific Region by country/area based on reports available at 30 September 1993, continued

Country/Area	Cumulative AIDS cases				AIDS rate[2]	Cumulative HIV diagnoses
	Male	Female	Children <15 years	Total[1]		
Republic of Korea	10	3	0	13	0.0	261
Samoa	1	0	0	1	0.6	1
Singapore	59	1	1	60	2.2	190
Solomon Islands	0	0	0	0	0.0	0
Tokelau	0	0	0	0	0.0	0
Tonga	4	0	0	4	3.9	6
Tuvalu	0	0	0	0	0.0	0
Vanuatu	0	0	0	0	0.0	0
Vietnam	28	0	0	28	0.0	792
Wallis and Futuna	0	0	0	0	0.0	1
TOTAL	5748	289	50	6049	-	31331

1. Totals include persons who were reported as transsexuals.
2. AIDS cases per 100,000 total current population.
3. For Taiwan, 45 AIDS cases in males, 3 in females and 300 diagnoses of HIV infection were reported.

over 2 million, whether presented as cumulative HIV incidence or as HIV prevalence; in contrast, the HIV prevalence estimate for sub-Saharan Africa is about 2 million less than the estimate of cumulative HIV incidence.

A total of 31,331 diagnoses of HIV infection and 5748 cases of AIDS had been reported in the WHO Western Pacific Region to 30 September 1993 (Table 3). The highest AIDS rate (cumulative AIDS cases per 100,000 total current population) were reported by Australia, French Polynesia, New Caledonia, New Zealand and Guam.

OVERSEAS BRIEFS

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

Cholera update

The outbreak of cholera caused by *Vibrio cholerae* O139 in Yangon, Myanmar is continuing. At the end of April, the outbreak had affected every township in the Yangon Division and in particular, the densly populated and poor areas of Hlaingthiyar and Shwepyithar. Over 1,300 persons had been admitted to referral hospitals and there had been at least eight deaths.

Cases of cholera have also been reported for February, March and April from Bolivia, Brazil, Burundi, El Salvador, India and Somalia.

COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 1447 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 9, 10 and 11).

- Thirteen reports of **measles** were received this period, 5 males and 8 females in the age range 9 months to 22 years. All diagnoses were by viral IgM detection.
- **Rubella** was reported for 7 patients this fortnight, 6 males aged 18 to 47 years and one female 31 years of age. Diagnosis was by IgM detection in all cases.
- Fourteen reports of **hepatitis A** were received, 9 males and 3 females (one sex not stated), 5 of whom were in the 5 to 14 year age group.
- Positive **hepatitis B** serology was reported for 110 patients this fortnight, 62 males and 42 females. Sixty-one patients were in the 25 to 44 year age group. Included were 7 pregnant females, an 8 year old female with a diagnosis of hepatitis, two 12 year old males and a 15 year old female.
- Positive **hepatitis C** serology was reported for two hundred and twenty-seven patients this fortnight, 148 males and 74 females (5 sex not stated). One hundred and seventy-two reports were for the 25 to 44 year age group (Figure 1). Included were 43 injecting drug users, 5 patients with immunodeficiency (one HIV positive patient and 4 bone marrow transplant recipients of 5, 7, 16 and 18 years of age) and one pregnant female.
- **Ross River virus** was reported for 114 patients this period 83 of whom were from Queensland. One case from South Hedland, Western Australia was confirmed (fourfold change in titre); the remainder were presumptive diagnoses (IgM positive). The number of reports received remained high through the month of March (Figure 2).
- Thirteen reports of **Barmah Forest virus** were received from Queensland, all presumptive diagnoses (IgM positive). All specimen collection dates were in early April.
- Forty-one reports of **adenoviruses** were received this fortnight, 25 isolations, 15 antigen detections and one serological diagnosis. **Adenovirus type 3** was reported for 5 patients aged 11 months to 4 years including 4 cases of eye disease. Eye disease was also reported for 5 patients diagnosed with **adenovirus type 8,** age range 26 to 88 years (3 males and 2 females).
- A total of 308 **herpes simplex virus** reports were received this fortnight, 294 virus isolates, 12 antigen detections and 2 IgM detections. Nine cases of eye disease due to **herpes simplex virus type 1** were reported.
- There were 58 reports of **cytomegalovirus** this fortnight, 33 virus isolates, and 25 serological diagnoses. Included was a 14 month old bone marrow transplant recipient and two 2 day old twins (all IgM detection). This virus was also isolated from the nasopharynx of a 6 month old female with a diagnosis of pneumonia.
- **Varicella zoster** virus was reported for twenty-six patients. There were 13 virus isolations, 5 antigen detections, 7 serological diagnoses and one nucleic acid detection, in CSF from a 74 year old male with neck stiffness and ophthalmic shingles.
- Three reports of **parvovirus** were received this reporting period, two 19 year olds, one male and on

Figure 1. Hepatitis C laboratory reports for the reporting period, by age group and sex

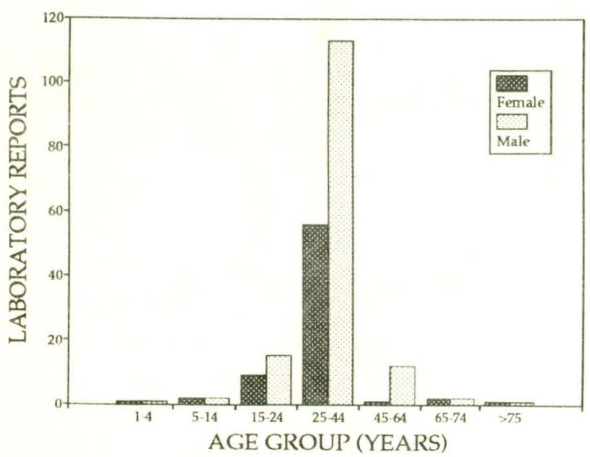
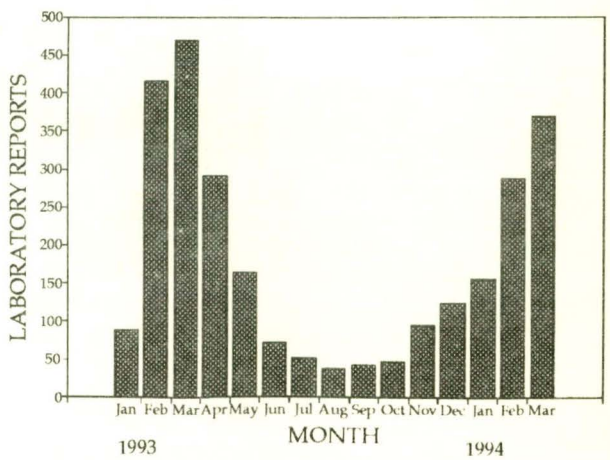


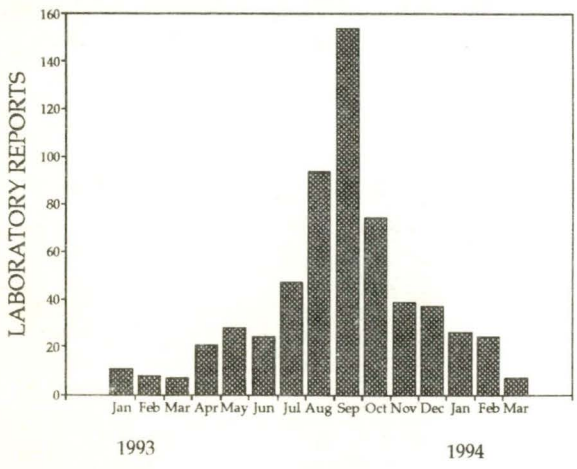
Figure 2. Ross River virus laboratory reports, 1993 to 1994, by month of specimen collection



female, and a 46 year old female. Two patients reported rash and arthritis. All were diagnosed by IgM detection.

- Seven reports of **coxsackievirus A16** were reported this fortnight, 4 males and three females in the age range 10 months to 12 years, all with skin disease.
- Four reports of **coxsackievirus type B** were received this fortnight including **coxsackievirus B1** isolated from the CSF of a one month old male with meningitis.
- **Echovirus type 6** was reported for 9 patients this period, including isolation from the CSF from a 42 year old male and a 61 year old female. An increased number of reports has been received since January.
- Eight reports of **echovirus type 30** were received including isolation from the CSF of a 30 year old female with meningitis and from the nasopharynx of an 8 year old male with CNS disease. The number of echovirus type 30 reports remained high throughout the month of March, the maximum number of reports having been received for December.
- Forty-four untyped **enterovirus** reports were received this fortnight including 4 Western Australian males with meningitis aged 3 months to 37 years (virus isolation from CSF). Untyped enterovirus was also isolated from the nasopharynx of 3 males, 3 weeks, 2 months and 4 months of age, 2 of whom had pneumonia.
- **Influenza A** was reported for 5 patients, one isolation, 2 antigen detections and 2 single high titres. The number of reports received for the month of March remained low (Figure 3).

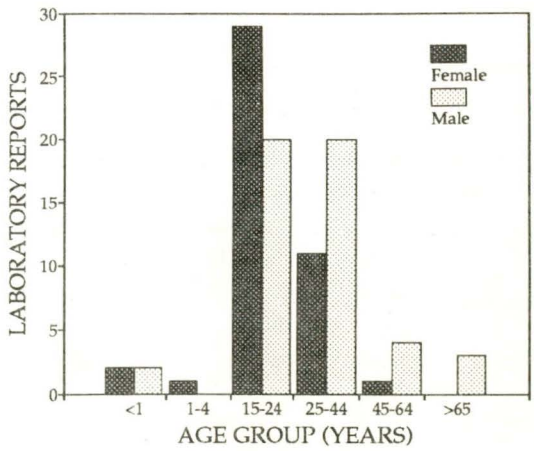
Figure 3. Influenza A laboratory reports 1993 to 1994, by month of specimen collection



- **Parainfluenza virus type 1** was reported for 37 patients this period, 6 diagnosed by virus isolation, 30 by antigen detection and one serological diagnosis. Twenty-six patients were in the one to 4 year age group.
- The number of **parainfluenza virus type 2** reports increased for the month of April, 14 having been received this fortnight.

  Nine patients were in the one month to 4 year age group. Diagnosis was by virus isolation (5) and antigen detection (9). Parainfluenza virus type 2 was detected by immunofluorescence in nasopharyngeal specimens from a 5 week old , a 7 month old with pneumonia, a 2 year old with croup and a 4 year old with suspected pertussis.
- Fifty-three reports of **respiratory syncytial virus (RSV)** were received this fortnight, 33 in the one to 11 month age group. Included were 2 oncology patients, both males, 2 and 6 years of age. Diagnosis was by virus isolation (10), antigen detection (41) and serology (2).
- **Rotavirus** was reported for 54 patients this period, 34 males and 20 females. Forty-seven patients were under 2 years of age.
- One hundred and one reports of ***Chlamydia trachomatis*** were received this fortnight, 80 in the 15 to 44 year age group (Figure 4). Included were 5 cases of eye disease. Diagnosis was by culture (66) and antigen detection (35).
- ***Bordetella pertussis*** was reported for 10 patients this period, one isolation, 2 antigen detections and 7 IgA detections. Included was a 78 year old female.

Figure 4. *Chlamydia trachomatis* laboratory reports for this reporting period, by age group and sex



Australian Sentinel Practice Research Network

Data for week 15 are included in this issue of *CDI* (Table 1). There were 8246 consultations this week. Influenza was reported at the same rate as overall so far this year.

Table 1. Australian Sentinel Practice Research Network, week 15, 1994

Condition	Week 15, to 17 April 1994	
	Reports	Rate per 1000 encounters
Influenza	30	3.6
Measles	1	0.1
Chickenpox	7	0.8
Pertussis	3	0.4
Gastroenteritis	96	11.6

HIV and AIDS Surveillance

Methodological note

National surveillance for HIV disease is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with State and Territory health authorities and the Commonwealth of Australia. Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, by either the diagnosing laboratory (ACT, New South Wales, Tasmania, Victoria) or by a combination of laboratory and doctor sources (Northern Territory, Queensland, South Australia, Western Australia). Cases of AIDS are notified through the State and Territory health authorities to the National AIDS Registry. Diagnoses of both HIV infection and AIDS are notified with the person's date of birth and name code, to minimise duplicate notifications while maintaining confidentiality.

Tabulations of diagnoses of HIV infection and AIDS are based on data available three months after the end of the reporting interval indicated, to allow for reporting delay and to incorporate newly available information. More detailed information on diagnoses of HIV infection and AIDS is published in the quarterly *Australian HIV Surveillance Report*, available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Telephone: (02) 332 4648 Facsimile: (02) 332 1837.

HIV and AIDS diagnoses and AIDS deaths reported for November 1993, as reported to 28 February 1994, are included in this issue of *CDI* (Tables 2 and 3).

Table 2. New diagnoses of HIV infection, new diagnoses of AIDS and deaths from AIDS occurring in the period 1 November to 30 November 1993 , by sex and State or Territory in which diagnosis was made

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA			
										This period 1993	This period 1992	Year to date 1993	Year to date 1992
HIV diagnoses	Female	0	5	0	0	1	0	0	0	6	7	71	87
	Male	0	25	2	13	1	0	22	11	74	88	852	1034
	Sex not reported	0	1	0	1	0	0	0	0	2	0	11	15
	Total[1]	0	31	2	14	2	0	22	11	82	95	937	1138
AIDS diagnoses	Female	0	0	0	0	0	0	2	0	2	2	34	23
	Male	0	22	0	4	0	0	8	0	34	32	543	549
	Total[1]	0	22	0	4	0	0	10	0	36	34	580	573
AIDS deaths	Female	0	1	0	1	0	0	0	0	2	0	15	11
	Male	0	19	1	12	1	0	11	0	44	28	418	387
	Total[1]	0	21	1	13	1	0	11	0	47	28	436	401

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

Table 3. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 30 November 1993, by sex and State or Territory

		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
HIV diagnoses	Female	9	494	4	75	39	3	131	43	798
	Male	139	9144	70	1288	491	68	2948	639	14787
	Sex not reported	0	2030	0	2	0	0	44	0	2076
	Total[1]	148	11676	74	1368	530	71	3130	683	17680
AIDS diagnoses	Female	2	98	0	20	12	2	29	9	172
	Male	54	2655	20	401	194	25	957	184	4490
	Total[1]	56	2758	20	423	206	27	991	193	4674
AIDS deaths	Female	2	54	0	12	6	1	11	3	89
	Male	35	1711	13	278	109	17	663	121	2947
	Total[1]	37	1770	13	291	115	18	677	124	3045

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

Australian Encephalitis; Sentinel Chicken Surveillance Programme, Serological Results, March and April 1994

AK Broom[1], L Hueston[2], JS Mackenzie[1], L Melville[3], D Phillips[4], L Smythe[4], J Whitehead[5]

Sentinel chicken serology was undertaken for 18 of the 26 flocks in the Kimberley, Pilbara and Gascoyne regions of Western Australia. In March 1994 there were a number of seroconversions to Murray Valley encephalitis virus (MVE) from both the Kimberley and Pilbara regions. There were 7 seroconversions at Broome, one at Wyndham, one at Derby and one at Kununurra in the Kimberley. In addition, there was one seroconversion to MVE at Opthalmia Dam (15 km east of Newman), 3 at the Harding Dam (60 km South-East of Karratha), and one at Whaleback minesite near Newman.

In April there were an additional 3 seroconversions to MVE at Wyndham and 2 at Kalumburu in the Kimberley. In the Pilbara there were 6 more seroconversions at Opthalmia Dam and 9 at the Harding Dam. Health warnings informing the public of increasing MVE activity in areas of the Pilbara were issued by the Health Department of Western Australia in April.

There were a large number of seroconversions to MVE in the Northern Territory in March and April. There were 4 seroconversions at Murganella, 9 at Leanyer and 9 at Coastal Plains Research Station in March. In April there were an additional 3 at Murganella, as well as 3 at Palumpa and 3 at Katherine. Health warnings were issued by the Northern Territory Department of Health in April.

There were 8 seroconversions to MVE in the Kowanyama flock in northern Queensland between January and March 1994, but no evidence of MVE activity elsewhere in the State.

There was no evidence of flavivirus activity in the sentinel flocks from New South Wales or Victoria in March or April 1994.

References

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

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 8 laboratories. There were 178 reports of recent sepsis: Greenslopes Repatriation Hospital, Queensland 12; Institute of Medical and Veterinary Science, South Australia 52; Ipswich General Hospital, Queensland 14; Sullivan Nicolaides, Queensland 11; Royal Hobart Hospital, Tasmania 9; Central Queensland Pathology Laboratory, Mackay 1; ICPMR, Westmead, New South Wales 53; Woden Valley Hospital, Australian Capital Territory 24. A further 16 reports of sepsis occurring prior to 1 April have been included in the cumulative data for 1994.

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	Hospital acquired	Neonatal	
Staphylococcus aureus	1	1	1	1				4	6			27[2]
Staphylococcus coagulase negative		1				2		5	5		6	23[3]
Enterococcus species		1		2		1		6				9[4]
Streptococcus pneumoniae		3										7
Escherichia coli	1			7	6			6				29
Enterobacter species		1		1				1	1	1		6[5]
Klebsiella pneumoniae		1		2	2				1			11
Pseudomonas aeruginosa	1	1		1	2	1		3				9

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 2.
3. *Staphylococcus epidermidis* 2.
4. *Enterococcus faecalis* 6.
5. *Enterobacter cloacae* 3, *E. aerogenes* 2.

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

	1-11 months	5-14 years	15-24 years	25-34 years	35-44 years	65-74 years	Total
Neisseria meningitidis group C[1]			1				1
Pseudomonas fluorescens			1				1
Staphylococcus aureus	1						1
Staphylococcus coagulase negative				1	1		2
Staphylococcus epidermidis					1		1
Streptococcus 'viridans'						1	1

1. South Australia.

Organisms reported 5 or more times from blood are detailed in Table 4. Other blood isolates not included in Table 4 were:

Gram positive: 1 *Listeria monocytogenes* (65 year old male in Queensland), 2 *Streptococcus* Group A, 2 *Streptococcus* Group B, 1 *Streptococcus* Group G, 2 *Streptococcus mitis*, 1 *Streptococcus* 'milleri', 1 *Streptococcus mutans*, 1 *Streptococcus sanguis*, 1 *Streptococcus* species, 4 *Streptococcus* 'viridans', 1 *Lactobacillus* species.

Gram negative: 1 *Vibrio vulnificus* (70 year old male from Tasmania), 2 *Acinetobacter* species, 1 *Citrobacter freundii*, 2 *Klebsiella oxytoca*, 1 *Klebsiella* species, 3 *Proteus mirabilis*, 1 *Proteus* species, 2 *Pseudomonas* species, 1 *Xanthomonas maltophilia*, 1 *Flavobacterium* species.

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

Fungi: 2 *Candida albicans*.

Most reports were for elderly persons (Figure 5).

CSF isolates and/or meningitis reports

There were 7 reports of CSF isolates and/or meningitis (Table 5).

Isolates from sites other than blood or CSF

Joint fluid: 1 MRSA, 3 *Staphylococcus aureus*, 1 *Streptococcus* group G, 1 coagulase negative *Staphylococcus*, 1 *Staphylococcus hominis*.

Other: 1 *Enterococcus* species (high level gentamicin resistance in 75 year old who had undergone recent surgery), 2 *Escherichia coli*, 3 *Staphylococcus aureus*, 1 *Staphylococcus saprophyticus*.

National Notifiable Diseases Surveillance System, 17 April to the 30 April 1994.

There were 2407 notifications received in the period. (Figure 8 and Tables 6, 7 and 8)

- The total number of cases of **Ross River virus infection** is lower than this time last year with 356 notifications received for the period (Figure 6) ;168 cases were male and 187 cases were female. Sex was not recorded for one case. While the majority of cases were resident in Queensland (93%), cases were also resident in New South Wales, Victoria, South Australia, and Western Australia. Recorded onset dates were February (3), March (155), and April (198).

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

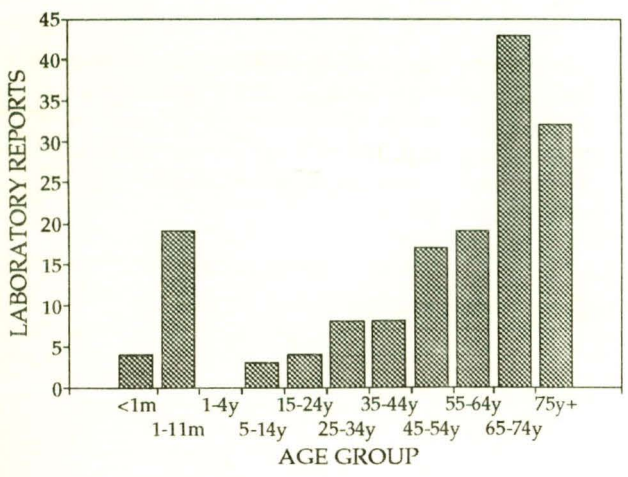
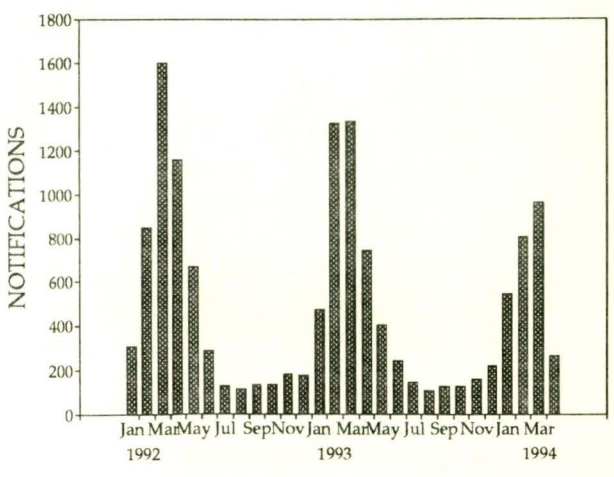
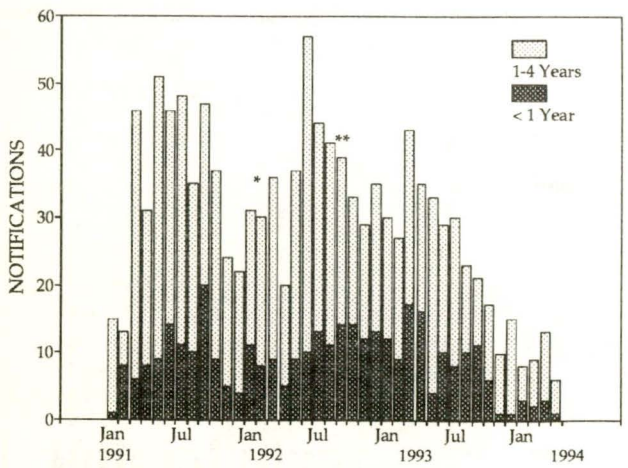


Figure 6. Ross River virus infection notifications by month of onset, January 1992 to April 1994



- Two cases of **dengue** were reported. Both cases were female, in the 20-24 year and 30-34 year age group, and resident in Queensland. Recorded onset dates were February.
- A single case of **cholera** was notified for a male in the 25-29 year age group who was resident in rural Queensland. Recorded onset date was April.
- Ninety-eight cases of **gonococcal infection** were reported; 79 cases were male and 18 cases were female. The sex of one cases was unrecorded. Cases occurred between the 10-14 and 90-94 year age groups.
- The decrease in notifications of ***Haemophilus influenzae* type b infection** continues with only 3 reports received for the period (Figure 7). All cases were male. Two cases were in the 0-4 years age group and one case was in the 15-19 years age group. Recorded onset dates were in April.
- Fifty-four cases of **hepatitis A** were reported; 31 cases were male, 20 cases were female and sex was unrecorded for three cases. Recorded onset dates ranged between the 0-4 and the 80-84 years age groups. Fifteen percent of cases were from the Far North Queensland Statistical Division.
- There were 63 notifications of **hepatitis B** received. From the States that report incident cases, 13 cases were male and 3 cases were female. The incident cases ranged in age between the 15-19 to the 55-59 year age group.
- Two cases of **hydatid infection** were reported in the period. Both cases were males in the 50-54 year age group.
- There were 15 cases of **legionellosis** reported. Eleven cases were male and 4 cases were female. Recorded ages ranged from the 30-34 to the 80-84 years age groups. Five cases were from the Statistical Division of Melbourne. Recorded onset dates were February (one), March (8) and April(6).
- Four cases of **leptospirosis** were reported. All cases were male and they ranged in age between the 25-29 years and the 40-44 years age groups. All recorded onset dates were April.
- Fifty-three cases of **malaria** were reported; 41 cases were male and 12 cases were female. Recorded ages ranged between the 0-4 and the 55-59 years age groups. Eight cases were resident in the 'malaria receptive zone'. Recorded onset dates were November (4), December (7), January (12), February (11), March (11), and April (8).
- There were 147 notifications of **measles** received; 77 cases were male and 70 cases were female. Cases ranged in age between the 0-4 to the 60-64 years age groups. Age was unrecorded for 33 cases. There were 11 apparent clusters with 2 or more cases in the same postcode area occurring in Victoria (one), Queensland (9), and Western Australia (one). There were 25 cases in one cluster in Queensland and 28 cases in the cluster in Western Australia.
- Seven cases of **meningococcal infection** were reported; 3 cases were male and 4 cases were female. Five of the cases were in the 0-4 years age group and 2 cases were in the 15-19 years age group. Two of the cases were less than one year old. All recorded onset dates were in April.
- One hundred and sixty cases of **pertussis** were reported; 66 cases were male and 94 cases were female. Cases ranged in age from the 0-4 to the 85-89 years age group. Twenty-three cases were in the 0-4 years age group and 5 cases were less than one year old.
- There were 18 cases of **Q fever** reported; 17 cases were male and one case was female. Cases ranged in age from the 15-19 years to the 70-74 years age groups.
- Forty-one cases of **rubella** were reported; 25 cases were male, 15 cases were female, and sex was unrecorded for one case. Recorded ages ranged from the 0-4 to the 70-75 years age group with a mean age of 20.4 years. Six cases were females in the 15-44 years age group.
- Ninety-one cases of **syphilis** were reported; 49 cases were male and 42 cases were female. Recorded ages ranged between the 0-4 and the 75-79 years age group. There were 7 cases aged less than 15 years and one case aged less than one year.

Figure 7. *Haemophilus influenzae* type b infection notifications by month of onset and age group, January 1991 to April 1994



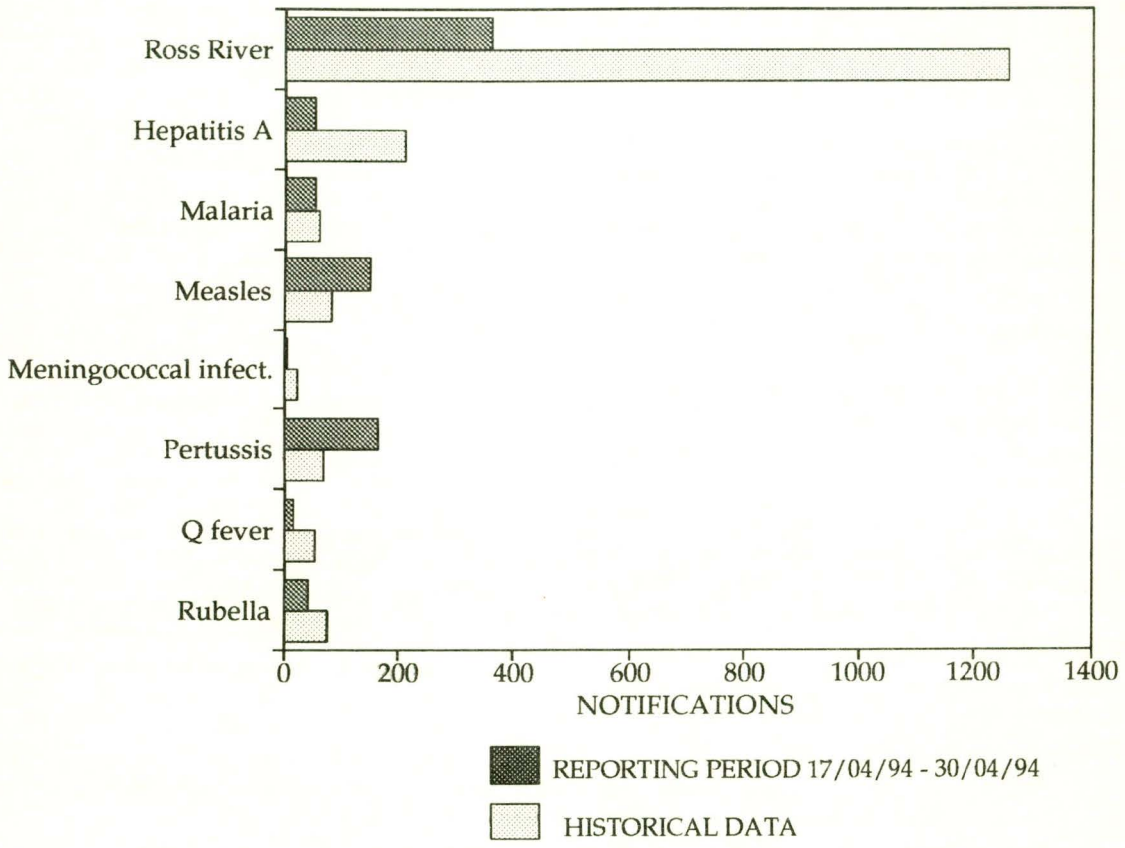
* PRP-D approved in February 1992.

** Infant vaccine approved in September 1992.

- Forty notifications of **tuberculosis** were received. Sixteen cases were male, 20 cases were female, and sex was unrecorded for 4 cases. Cases ranged in age between the 0-4 and the 85-89 years age group. Recorded onset dates were January (2), February (5), March (9), and April (23).

- There were 2 notifications of **typhoid** received. Both cases were female and they were in the 20-24 years and the 30-34 years age groups. Recorded onset dates were in April. Cases were resident in Statistical Divisions of Perth and Greater Hobart.

Figure 8. Selected National Notifiable Diseases Surveillance System reports, and historical data[1]



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

Table 6. Notifications of diseases preventable by vaccines recommended by the NHMRC for routine childhood immunisation, received by State and Territory health authorities in the period 17 to 30 April 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[1] This period 1994	This period 1993	Year to date 1994	Year to date 1993
Diphtheria	0	0	0	0	0	0	0	0	0	4	13	10
Haemophilus influenzae b infection	0	2	0	0	0	0	0	1	3	22	62	158
Measles	4	4	0	97	3	0	8	31	147	59	1064	421
Mumps	0	0	NN	NN	0	NN	0	0	0	0	3	0
Pertussis	1	41	0	51	36	1	17	13	160	47	1652	519
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0
Rubella[2]	2	0	1	24	2	0	7	5	41	48	558	1097
Tetanus	0	0	0	NN	0	0	0	0	0	0	4	3

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 7. Notifications of other diseases[1] received by State and Territory health authorities in the period 17 to 30 April 1994

DISEASES	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	TOTALS FOR AUSTRALIA[2] This period 1994	This period 1993	Year to date 1994	Year to date 1993
Arbovirus infection												
Ross River virus infection	0	8	0	332	5	0	1	10	356	401	2750	3646
Dengue	0	-	0	2	-	NN	0	NN	2	31	9	75
NEC[3]	0	1	NN	36	0	8	5	0	50	25	276	252
Campylobacteriosis[4]	13	-	0	102	46	27	102	31	321	250	3021	2737
Chlamydial infection (NEC)[5]	4	NN	31	82	36	11	43	19	226	213	2114	2178
Donovanosis	0	NN	1	1	NN	NN	0	0	2	4	34	17
Gonococcal infection[6]	1	23	15	29	7	0	5	18	98	119	998	1053
Hepatitis A	1	12	1	24	1	1	9	5	54	60	616	671
Hepatitis B[7]	6	2	0	41	0	5	2	7	63	103	561	812
Hepatitis C	13	0	1	83	0	20	176	56	349	297	2959	1959
Hepatitis (NEC)	0	0	0	0	0	0	0	NN	0	1	16	29
Legionellosis	0	4	0	5	0	0	5	1	15	14	63	60
Leptospirosis	0	0	0	3	0	0	1	0	4	14	69	68
Listeriosis	0	0	NN	0	0	0	0	0	0	2	12	18
Malaria	1	1	2	43	0	0	6	0	53	35	201	253
Meningococcal infection	0	3	0	1	1	0	1	1	7	9	91	73
Ornithosis	0	NN	0	0	2	0	1	0	3	5	37	34
Q fever	0	4	0	14	0	0	0	0	18	41	179	244
Salmonellosis (NEC)	4	45	1	86	13	9	58	28	244	188	2443	1942
Shigellosis[4]	0	-	3	6	3	0	4	25	41	20	312	338
Syphilis	0	28	4	57	0	0	1	1	91	87	706	761
Tuberculosis	0	4	0	3	1	1	30	1	40	34	296	270
Typhoid[8]	0	0	0	0	0	1	0	1	2	2	14	21
Yersiniosis (NEC)[4]	0	-	0	13	1	0	0	0	14	12	184	162

1. For HIV and AIDS, see Tables 2 and 3. For rarely notified diseases, see Table 8.
2. Totals comprise data from all States and Territories. Cumulative figures are subject to retrospective revision so there may be discrepancies between the number of new notifications and the increment in the cumulative figure from the previous period.
3. 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, Vic and WA.
8. NSW and Vic: includes paratyphoid.

NN Not Notifiable.
NEC Not Elsewhere Classified.
- Elsewhere Classified.

Table 8. Notifications of rare[1] diseases received by State and Territory health authorities in the period 17 to 30 April 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	0		4
Chancroid	0		0
Cholera	1	Qld	2
Hydatid infection	2	Qld 1, Tas 1	16
Leprosy	0		2
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 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 21 April to 4 May 1994, 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	1		4	4	13	6.0	502
Rubella virus		1	1	4	1				7	9.5	259
HEPATITIS VIRUSES											
Hepatitis A virus		4		5	2		1	2	14	11.8	126
Hepatitis B virus		22		26	8	1	42	11	110	84.0	934
Hepatitis C virus		83		19	71	6	9	39	227	96.0	2,033
Hepatitis D virus							1		1	5.2	10
ARBOVIRUSES											
Ross River virus		8		83	7		1	15	114	134.3	1,140
Barmah Forest virus				13					13	18.7	121
ADENOVIRUSES											
Adenovirus type 1						1			1	2.0	31
Adenovirus type 2							2		2	5.5	32
Adenovirus type 3					4		1		5	6.0	18
Adenovirus type 8							5		5	1.0	55
Adenovirus not typed/pending		9			2		8	9	28	38.8	524
HERPES VIRUSES											
Herpes simplex virus type 1		15		18	29	1	27	45	135	126.0	1,845
Herpes simplex virus type 2		24	1	19	24		27	44	139	160.0	2,038
Herpes simplex not typed/pending	1	30						3	34	24.5	265
Cytomegalovirus		12		12	4		18	12	58	59.0	595
Varicella-zoster virus		3		3	5		5	10	26	28.3	398
Epstein-Barr virus		3		9	30		8	4	54	45.0	627
Herpes virus group - not typed						1			1	.8	8
OTHER DNA VIRUSES											
Molluscum contagiosum							1		1	.5	1
Parvovirus				1			1	1	3	4.3	32
PICORNA VIRUS FAMILY											
Coxsackievirus A16							7		7	.2	26
Coxsackievirus B2		2							2	.0	12
Coxsackievirus B5							2		2	.8	9
Echovirus type 6		9							9	5.0	20
Echovirus type 11		2					1		3	2.2	30
Echovirus type 30		6					2		8	1.0	194
Poliovirus type 1 (uncharacterised)							1		1	1.7	9
Poliovirus type 3 (uncharacterised)		1							1	1.3	7
Rhinovirus (all types)		5					16	2	23	23.0	357
Enterovirus not typed/pending	1	13					10	20	44	31.0	573

Table 8. Virology and serology laboratory reports by State or Territory[1] for the reporting period 21 April to 4 May 1994, 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			
ORTHO/PARAMYXOVIRUSES											
Influenza A virus		1		1			2	1	5	19.7	141
Influenza B virus		2							2	2.8	89
Parainfluenza virus type 1		1		2	1		31	2	37	16.3	142
Parainfluenza virus type 2							9	5	14	6.0	27
Parainfluenza virus type 3							4		4	18.7	92
Parainfluenza virus typing pending							2		2	4.3	14
Respiratory syncytial virus		15	1	2			10	25	53	75.5	310
OTHER RNA VIRUSES											
HIV-1				3				7	10	2.0	38
Rotavirus		4			3		8	39	54	28.8	345
OTHER											
Chlamydia trachomatis not typed		12		6	20	1	27	35	101	89.8	1,053
Chlamydia psittaci					1				1	3.2	32
Mycoplasma pneumoniae		2		10	3	1	7		23	42.5	428
Coxiella burnetii (Q fever)		2			1		2	1	6	14.8	144
Rickettsia species - other		1							1	.3	8
Streptococcus group A		1		8					9	4.5	103
Streptococcus species							4		4	.0	5
Bordetella pertussis		1					5	4	10	2.7	232
Leptospira species				1					1	.0	10
Treponema pallidum		13							13	5.8	128
Entamoeba histolytica		1							1	.0	3
Toxoplasma gondii		3							3	1.0	11
Schistosoma species		1							1	.0	2
Strongyloides stercoralis		1							1	.0	2
TOTAL	2	313	3	249	217	12	311	340	1,447	1,272.3	16,190

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 9. Virology and serology laboratory reports by clinical information for the reporting period 21 April to 4 May 1994

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus								3				10	13
Rubella virus								1				6	7
HEPATITIS VIRUSES													
Hepatitis A virus					1		8					5	14
Hepatitis B virus							13			1		96	110
Hepatitis C virus						1	26				1	199	227
Hepatitis D virus							1						1
ARBOVIRUSES													
Ross River virus								10		51		53	114
Barmah Forest virus										1		12	13
ADENOVIRUSES													
Adenovirus type 1					1								1
Adenovirus type 2					2								2
Adenovirus type 3					1				3			1	5
Adenovirus type 8									5				5
Adenovirus not typed/pending					10	8			1			9	28
HERPES VIRUSES													
Herpes simplex virus type 1					4			56	9		37	29	135
Herpes simplex virus type 2								42			76	21	139
Herpes simplex not typed/pending					2			14	2			16	34
Cytomegalovirus			1	6	12		1					38	58
Varicella-zoster virus			1					17				8	26
Epstein-Barr virus			1		1		1					51	54
Herpes virus group - not typed								1					1
OTHER DNA VIRUSES													
Molluscum contagiosum								1					1
Parvovirus								2				1	3
PICORNA VIRUS FAMILY													
Coxsackievirus A16								7					7
Coxsackievirus B2		1				1							2
Coxsackievirus B5		2											2
Echovirus type 6		1				1						7	9
Echovirus type 11		3											3
Echovirus type 30	1	2	1		1	2						1	8
Poliovirus type 1 (uncharacterised)												1	1
Poliovirus type 3 (uncharacterised)												1	1
Rhinovirus (all types)					19							4	23
Enterovirus not typed/pending		6			5	2		1				30	44

Table 9. Virology and serology laboratory reports by clinical information for the reporting period 21 April to 4 May 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					2							3	5
Influenza B virus												2	2
Parainfluenza virus type 1					34			1				2	37
Parainfluenza virus type 2					13							1	14
Parainfluenza virus type 3					3							1	4
Parainfluenza virus typing pending					2								2
Respiratory syncytial virus					39					1		13	53
OTHER RNA VIRUSES													
HIV-1												10	10
Rotavirus						49						5	54
OTHER													
Chlamydia trachomatis not typed					1	1			5		72	22	101
Chlamydia psittaci					1								1
Mycoplasma pneumoniae					17							6	23
Coxiella burnetii (Q fever)												6	6
Rickettsia species - other												1	1
Streptococcus group A										1		8	9
Streptococcus species												4	4
Bordetella pertussis					8							2	10
Leptospira species												1	1
Treponema pallidum												13	13
Entamoeba histolytica												1	1
Toxoplasma gondii												3	3
Schistosoma species												1	1
Strongyloides stercoralis												1	1
TOTAL	1	15	4	6	179	65	50	156	25	55	186	705	1447

Table 10. Virology and serology laboratory reports by contributing laboratories for the reporting period 21 April to 4 May 1994

STATE OR TERRITORY	LABORATORY	REPORTS
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	97
	Prince Henry/Prince of Wales Hospitals, Sydney	152
	Royal Alexandra Hospital for Children, Camperdown	20
	South West Area Pathology Service, Liverpool	32
Queensland	Queensland Medical Laboratory, West End	251
	State Health Laboratory, Brisbane	13
South Australia	Institute of Medical and Veterinary Science, Adelaide	217
Tasmania	Northern Tasmanian Pathology Service, Launceston	5
	Royal Hobart Hospital	6
Victoria	Microbiological Diagnostic Unit, University of Melbourne	24
	Monash Medical Centre, Melbourne	41
	Royal Children's Hospital, Melbourne	104
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	142
Western Australia	Princess Margaret Hospital, Perth	90
	State Health Laboratory Services, Perth	253
TOTAL		1447