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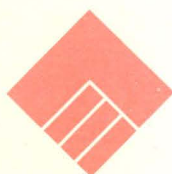

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COMMUNICABLE DISEASES NETWORK-AUSTRALIA
A National Network for Communicable Diseases Surveillance

THE EPIDEMIOLOGY OF HEPATITIS A IN SOUTH AUSTRALIA 1983 TO 1993 AND IMPLICATIONS FOR NATIONAL SURVEILLANCE

Sue Selden[1,2], Scott Cameron[1], Carolyn Walker[1]

Introduction

A recent report to the Commonwealth Minister of Health recommended that strong consideration be given to developing a better intelligence system and suggested that a Health Intelligence Group be established. One role of the Group would be the synthesis, analysis, and interpretation of data in the Australian context, in turn enabling the development of rational health plans and policies[1]. Whilst this is both timely and essential, it is important that the epidemiology of infectious agents be sorted out at the local level as far as possible, if important messages for disease control are not to be overlooked.

Hepatitis A (HAV) exemplifies an infection that requires considerable local and State public health involvement to elicit or describe the current dynamics of the virus. The epidemiology of HAV infection in South Australia during the past decade is presented as an example of a disease whose epidemiology cannot be understood if one refers only to the current national data collection.

Epidemiology of hepatitis A

Worldwide, three epidemiological patterns of hepatitis A are described[2].

Pattern 1. Where environmental sanitation is poor, infection occurs early so that by the age of 10 years almost the entire population is immune. Infections in the young are either silent or very mild and hepatitis A is not usually a clinical problem.

Pattern 2. As environmental sanitation improves, the incidence of infection declines. The population is exposed to the virus at a later age when it is more likely to cause disease and the incidence of clinical disease may thus be seen to rise.

Pattern 3. This is an uncommon situation seen in closed or semi-closed communities where transmission eventually ceases. If the virus is re-introduced, only those born since the previous outbreak will be affected.

This half century has seen much of Australia follow the trend from a pattern 1 to a pattern 2 country along with other developed nations. This has been accompanied by profound changes in the hepatitis A notification rate. From 1969-70 to 1990 there was a 21-fold decrease in hepatitis A notifications, from 63.7 per 100,000 to 3.1 per 100,000[3]. HAV is now principally a disease of older children, adolescents and young adults, affecting both sexes equally, with community wide outbreaks accounting for most disease transmission. Such epidemics often evolve slowly, involve wide geographical areas and last many months with a concomitant lowering of the average age of infection. The potential for common source outbreaks related to infected food handlers, contaminated produce and water persists[2,4]. However the major impact of HAV infection now can be said to be in certain population groups whose habits or lifestyles place them at increased risk of enteric infection. Groups such as travellers, homosexually active men, staff and residents of day-care centres and certain residential institutions and communities with lower socio-economic levels are at particular risk; transmission of HAV, once introduced into these groups, can be swift.

South Australia

Hepatitis A notifications in South Australia have been recorded in the State Notifiable Disease Register. Their interpretation relies upon case investigation reports compiled by the Communicable Disease Control Unit (CDCU) of the South Australian Health Commission. A number of epidemiological phenomena are discernable in these data. These include the overall secular decline of the disease, the occurrence of classical epidemics against a background of endemicity, and epidemics occurring in particular groups.

Time Trend

The annual notification rate was 41.2 per 100,000 in 1970, roughly equal to the non-epidemic years prior to that year (Figure 1). Epidemics have been recorded every five to six years, when the notification rate was two to three times above normal. Since 1980 the rate has fluctuated between 7 and 11 per 100,000, with the exception of an epidemic year in 1986 (rate 37 per 100,000). Whilst the rate in 1991 (8 per 100,000) was not different from recent years, 61% of infections were in males aged 20 to 49 years compared with an overall 21% (range 20 to 35%) in all years from 1983 (Figure 2).

For the past 10 years, 64% (range 41 to 72%) of notified infections have been from metropolitan Adelaide, where 72% of the State population resides. Outside Adelaide, cases either occurred as isolated cases widely scattered throughout the State or as clusters. Where the cluster involved either children, adolescents or young

1. Communicable Disease Control Unit, South Australian Health Commission.
2. National Centre for Epidemiology and Population Health, Canberra.

Figure 1. Hepatitis A notifications per 100,000 population per year, South Australia, 1955 to 1993, by year

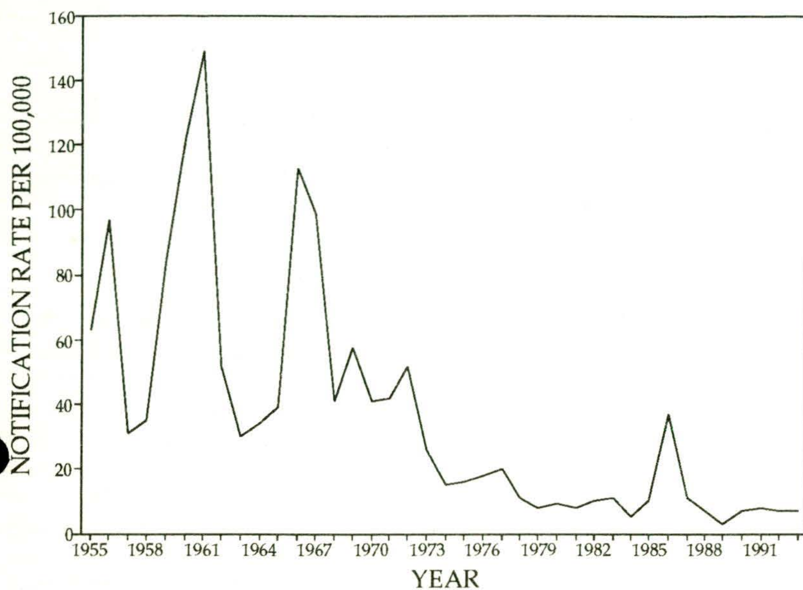
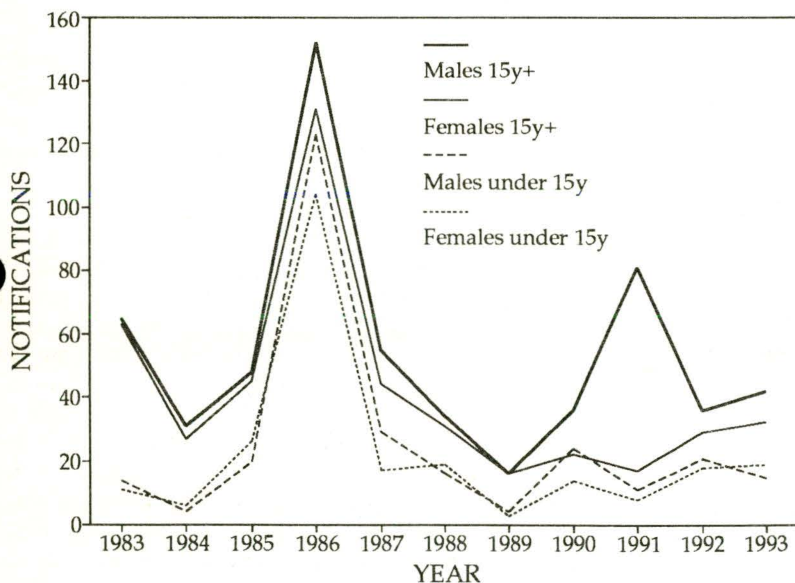


Figure 2. Hepatitis A notifications, South Australia, 1983 to 1993, by age group and sex



adults, the onsets of illness were usually within one incubation period, with some secondary cases occurring in siblings and/or parents. Where the cluster involved all age groups, dates of onset ranged over several incubation periods. Within the Adelaide area, the same clustering pattern was observed with the majority of cases being confined to lower socio-economic areas with high unemployment and a high single parent rate. Other cases were scattered throughout the metropolitan area.

Since 1983 (but excluding 1991) the male to female ratio through all 10 year age groups and adjusted for population size was 1.18:1 (range 0.97 to 1.68). In 1991, however, the ratio was 3.7:1.

The proporation of notifications by age group, for each year 1983 to 1993, reflected the epidemiology of HAV in that year. Overall, 40% of notifications were in the under 20 year olds (range 22 to 50%), 45% in the age group 20 to 39 years (range 29 to 61%) and 14% (range 7 to 30%) in those 40 years and older.

Sero-prevalence trends

The change in the notification rate is reflected in changes in the age-related HAV IgG sero-prevalence pattern. In 1975 Gust[5] found HAV IgG prevalence of 11% in children 6 months to 5 years of age, 60% in the 31 to 40 years age group and 97% in those over 60 years of age in a sample of 1500 sera from Victoria. These findings were echoed in South Australia in 1982 with a 23% prevalence in the 0 to 4 years age group, 62% in the 30 to 39 years age group and 96% in those over 60 years when the results of 1500 sera presented for hepatitis serology were analysed[6]. A recent survey of 259 intending overseas travellers in Adelaide[7] demonstrated lower prevalences of HAV IgG, but a similar increase in seropositivity (for all 10 year age groups) from the age of 20 years: from 13.3% for those aged 20 to 29 years, 22.6% for those aged 30 to 39 years to 59.5% for those over 60 years of age. (The number of sera tested for those under 20 years of age was considered too small to give a reliable result.)

Classical epidemics

The epidemic of 1986 was a classical epidemic. Notifications rates rose to some six times that expected and cases were reported from throughout South Australia. All age groups (to 49 years) were affected, with the highest proportion of cases being school aged children and adolescents (35%). The sex ratio of cases was equal. The epidemic occurred at the same time as an epidemic in Western Australia[8].

An epidemic in a defined group

In 1991 there was a fourfold increase in Australian notifications, to 12.7 per 100,000, due mainly to an epidemic among homosexual males. This was observed in South Australia also, with a crude annual notification rate of 8 per 100,000. Whilst this rate was similar to previous non-epidemic years, 61% of the

notifications were of males aged 20 to 49 years resident in metropolitan Adelaide.

Focal epidemics

Whilst the overall number of notifications in 1993 (108) was similar to 1992 (104), the number of notifications in the first half of the year was twice that seen during the same period in 1992. Sixty-five per cent of cases were in the under 20 years age group and only 30% of the cases were in metropolitan Adelaide. The clusters in rural South Australia highlighted the current epidemiology of hepatitis A in this State. Against a backdrop of isolated cases over a wide geographic area, cases have occurred in communities where habits and lifestyles place them at increased risk of enteric infection.

The first cluster occurred in a town with a population of approximately 12,800. It occurred over a 10 week period and seven adults and two children (brothers) were ill. In a nearby, small, rural, insular community, cases began within two weeks of those in the town. Over a five week period a four year old child and her parents and another couple (first and last cases) were notified. The 1993 notification rate for this population was about 93 per 100,000. In the previous five years there had only been a single notification from the area.

A second outbreak involved eight children (aged five to eight years) who attended the same school and the father of two of the children. They all fell ill during a five week period. A 26 year old female transient was notified with acute HAV infection with date of onset of illness 35 days before the first child became ill but a link between this case and the cluster was not established. The notification rate for this small community was 214 per 100,000. There had been no notifications from this area in the previous few years.

The third cluster was in an alternative lifestyle community where hygiene was described by local health personnel as being basic. Over a six week period there were 10 cases, with two groups of three persons (aged 19 to 65) known to have had links with each other. The notification rate was about 668 per 100,000. There had been one notification from the area in the previous five years.

In all three outbreaks, and indeed for all notified cases, local health personnel were involved, where possible, in health education for those affected and their contacts. Following laboratory notification of a case, clinical confirmation is sought from the attending doctor and further demographic data and information on risk factors, associated cases and prophylaxis is sought. Counselling of cases with regard to sexual contacts, social responsibility, hygiene practices and interpretation of results is given either by the attending practitioner or a nurse epidemiologist of the CDCU.

In summary, HAV notifications in South Australia reflect the changing epidemiology of the disease. The proportion of cases by age group varied during the epidemics with a high proportion in children in 1986 and a high proportion in young men in 1991. Likewise the numbers of identified clusters have varied from year to year, probably reflecting intense local transmission more than changing ascertainment. These clusters have mainly affected children, adolescents and young adults of both sexes equally. They are common when school-aged children are affected and when infection is introduced into alternative life-style communities. There have been occasional cases in travellers returning from overseas, residents of various institutions and workers in child-care centres. There have also been many infections notified with source of infection unknown.

Implications for national surveillance

Relatively consistent surveillance of hepatitis A in South Australia over the last decade has revealed a range of epidemiological patterns. Superimposed on the long-term decline is the classic epidemic, with numerous, apparently non-related cases, as well as outbreaks that occurred in certain groups with members more likely to be sharing enteric pathogens than the general population. These insights are not obvious from the national data collection and highlight the need for continued active local investigation of notified cases and compilation of intelligence summaries.

Without this footwork, a national Health Intelligence Group would be both hampered and restrained in its ability to make sense of data coming to it.

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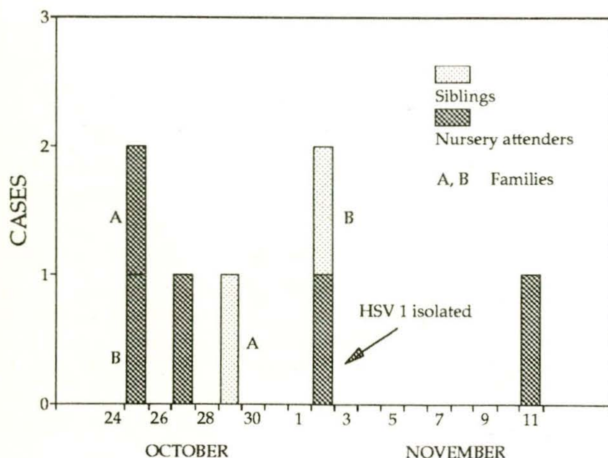
OUTBREAK OF PRIMARY HERPES STOMATITIS IN A CHILD-CARE CENTRE

Mark J Ferson, Public Health Unit, Eastern Sydney Area Health Service

The director of a nearby long day child-care centre telephoned the Eastern Sydney Area Public Health Unit on 27 October 1993 to seek advice for the management of an outbreak in the nursery class of an illness marked by fever and mouth ulcers. The director felt that the illness was likely to be herpes simplex infection, but was experiencing difficulties in obtaining a consistent diagnosis from the several doctors seeing the children, and in convincing parents of the need for affected children to be excluded from care. The director was questioned regarding recent illness among children or staff, and it was stated that neither children nor staff had complained of cold sores in the previous month.

Of the 19 children in the nursery class (caring for children under two years of age at the beginning of the year), three children had developed a febrile illness with painful mouth ulcers by the time of the first report. Because of the concerns previously expressed by the child-care director, the fourth child was referred to The Prince of Wales Hopsital for assessment, where a mouth swab was collected by casuality staff and sent for viral culture to the Virology Laboratory, The Prince Henry Hospital. Four days later, the Virology Laboratory reported the growth of herpes simplex virus type 1 from the swab. Children in the nursery were closely observed by staff, including a nurse, for signs of this pattern of illness, and excluded if either mouth ulcers or unexplained fever were noted. The importance of close attention to hygiene for children and carers was stressed. Previous contact with the centre had determined that infection control practices were adequate. By the end of the outbreak in mid-November, five cases (26% of the class) had occurred in the nursery and two additional cases among older siblings (one in an older class and one at school). The timing of cases as defined by the date of appearance of mouth ulcers was from 25 October to 11 November 1993 (Figure).

Figure 1. Herpes stomatitis cases, by day of onset and patient type



Comment

Two previous studies have prospectively examined the incidence of primary herpes simplex virus infection among children attending child-care centres. A Japanese study found that seroconversion occurred in 76% of 72 susceptible children over a mean observation period of about two years[1]. Ninety-three per cent of children with primary infections had illness characterised by fever and oral ulcers. The infections occurred in four annual clusters as well as sporadically; during clusters, 73-100% of susceptible children showed serological evidence of infection[1]. In contrast, a study from the United States reported that 23% of 115 children experienced primary infection with herpes simplex virus type 1 during a mean observation period of four years[2]. Four clusters occurred, each involving between three and six primary infections, the remaining ten cases being sporadic. Fever was apparent in 63% of the children with culture positive primary infections, and mouth ulcers in 26%[2]. In both studies, attack rates were highest in the second year of life.

Herpes simplex virus is mainly spread by direct contact and in the child-care setting, particularly among toddlers, primary infection spreads readily from child to child. The authors of the United States study do not advocate exclusion, on the basis of the small size of clusters when exclusion was **not** practised and the low proportion of cases identified as having stomatitis (identifiable clinically as a primary infection)[2]. In the present study, family clusters defined incubation periods of four and eight days, whilst the last two nursery cases occurred six and nine days after previous cases, despite a firm exclusion policy being in place. This supports the contention that exclusion is ineffective, due either to cases being infectious prior to recognition of mouth ulcers, prolonged viral excretion of virus after recovery, especially from primary infections, and/or the presence of infectious children without ulcers.

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TRANSMISSION OF CHICKENPOX IN A MATERNITY UNIT

J Hanna, Centre for Disease Control, Tropical Public Health Unit, Cairns

A 27 year old woman in the second trimester of pregnancy was admitted for management of influenza-like symptoms to a district hospital in north Queensland. She gave a history of household exposure to chickenpox in the previous 24 hours, but there was no documentation as to whether she had a past history of chickenpox or not. She was not tested for varicella antibody, and no consideration was given to the administration of zoster immune globulin (ZIG). She was discharged after two days.

Five weeks later she was referred back to the hospital (at 29 weeks' gestation) by a local general practitioner. She had developed chickenpox several days before, presumably following a later exposure, and had persistent vomiting. She was admitted to a two-bed room in the 14-bed maternity unit in the hospital; the admitting doctor noted the chickenpox but did not request isolation or any special precautions.

A 26 year old woman who had had a normal delivery two days previously was in the adjacent two-bed room. The two rooms had separate access to a bathroom shared by both rooms. The two rooms, and indeed the whole maternity unit, shared a common air conditioning system. Neither room had exhaust ventilation.

The index chickenpox case was discharged after two days, the other patient after five days. The two women had been in the maternity unit at the same time for about 48 hours. Fourteen days after their contact, the second woman developed chickenpox. She had painful lesions over her breasts and had to cease breastfeeding; her infant remained well and did not develop chickenpox. However, the woman's two year old son developed chickenpox a fortnight after his mother.

As far as is known, no other patients (or staff) in the maternity unit subsequently developed chickenpox.

Comment

Chickenpox during pregnancy 'can have devastating effects on the mother, the fetus and the newborns'[1]. Although chickenpox in adults is generally a more severe disease than in children, it seems to be particularly severe in pregnancy[1,2]. Consequently most authorities recommend that pregnant women who are susceptible and who have had significant (for example household) exposure to chickenpox should be given ZIG within four days of the exposure[1,2,3]. Susceptibility should be determined 'on the basis of history, and preferably, assay of serum antibodies'[2]. If the antibody studies cannot be done within a few days of the exposure, and the history suggests susceptibility, then ZIG should probably be given regardless[3].

If a woman develops chickenpox around the time of delivery, her baby can develop very severe infection, with a mortality of up to 30%; these babies should be given ZIG as soon as possible[1,2,3]. Those babies exposed to chickenpox after the perinatal period, but within the first month of life, can occasionally develop severe disease. Therefore it is often recommended that any infant exposed to chickenpox in the first month of life should be given ZIG, particularly if it is considered that the mother is susceptible[1,3].

The severity of chickenpox during pregnancy, and the risk of severe disease in babies whose mothers develop chickenpox within a few days before or after delivery, mean that a woman with chickenpox should not be admitted to a maternity unit. Transmission of chickenpox can occur via airborne respiratory droplets[4], and therefore the shared factilities and the lack of exhaust ventilation probably faciltiated the transmission in the maternity unit.

In conclusion, the index case should not have been admitted to the maternity unit, but rather, should have been isolated in a 'low-risk' ward elsewhere in the hospital. The index case should have been offered ZIG soon after the household exposure to chickenpox, and the infant of the secondary case should have been offered ZIG as soon as it was recognised that this mother had chickenpox.

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CDI editorial comment

The National Health and Medical Research Council recommends the use of ZIG in persons in whom varicella may be life-treatening and who have had significant exposure to varicella or zoster[1]. Significant exposure is defined as a household contact, play contact of longer than one hour indoors, classroom contact or other close prolonged exposure. The patients for whom ZIG is recommended include immunosuppressed persons, susceptible pregnant women, neonates whose mothers are susceptible and premature infants (born at <28 weeks' gestation or <1000g) regardless of maternal history, when a significant exposure to varicella or zoster has occured. Also

included are neonates born seven or fewer days after the onset of material varicella, and neonates whose mothers develop chickenpox. It is recommended that ZIG be given as soon as possible after the contact and preferably within 96 hours.

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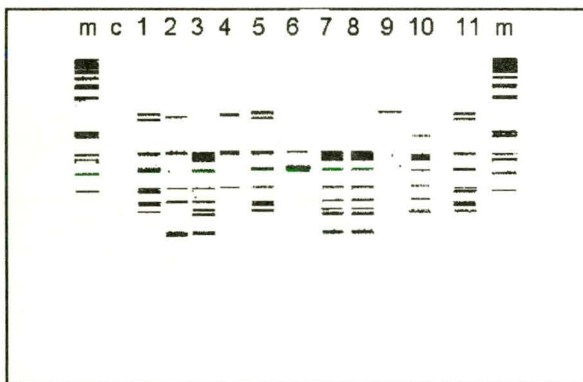
RELATIONSHIP BETWEEN *LISTERIA* ISOLATES IN EASTERN AUSTRALIA

Edward Russell, Department of Microbiology and Martin Tymms, Centre for Early Human Development, Monash Medical Centre, Clayton, Victoria

As participants in a World Health Organization sponsored multi-centre trial of typing methods for *Listeria monocytogenes*, we have been using the random amplified polymorphic DNA (RAPD) assay. When applied to local strains received in our laboratory from around Australia, it has revealed interesting relationships between isolates from various centres.

RAPD is a novel typing technique, first described in 1990[1,2], which generates markers by the amplification of random DNA segments with single primers of arbitrary nucleotide sequence. It had been used to type several organisms including *L. monocytogenes*[3,4]. The usefulness of RAPD typing for listerias is under evaluation in this trial, and it appears to have advantages over other methods, including serotyping, bacteriophage typing, pulsed field gel electrophoresis, multilocus enzyme electrophoresis and restriction fragment length polymorphism typing methods. Identity between isolates is likely if a single RAPD primer gives identical band patterns and more certain if this can be shown for several different primers.

Figure. 1.5% agarose gel of RAPD assays of 11 *Listeria monocytogenes* isolates[1]



1. Lane m contains molecular weight markers.
   Lane c is a negative control.

Lane 1	Gosford, New South Wales	June 1993
Lane 2	Pearcedale, Victoria	February 1993
Lane 3	Campbell, Australian Capital Territory	July 1993
Lane 4	Westmead, New South Wales	July 1993
Lane 5	Burwood, Victoria	June 1993
Lane 6	Ballarat, Victoria	June 1993
Lane 7	Pascoe Vale, Victoria	June 1993
Lane 8	Prahran, Victoria	July 1993
Lane 9	Yarraville, Victoria	August 1993
Lane 10	Nunawading, Victoria	September 1993
Lane 11	Lalor, Victoria	October 1993

We have performed RAPD assays on 11 *L. monocytogenes* isolates (Figure). Automated comparison of the bands using a gel densitometer or laser scanner has been found to be of some use when processing large numbers of samples but does not add to the visual interpretation of this particular series.

Visual comparison shows that isolates 2, 4, 6, 9 and 10 are unique patterns. However, there is a very strong resemblance between isolates 1 and 5, identity between isolates 1 and 11 and identity between patterns 3, 7 and 8. The travel histories of these patients have not been investigated and it is possible that they are geographically related. However, another, more likely hypothesis is that they are related by the consumption of a nationally distributed food. It is noteworthy that the ethnic background of the patients of isolates 5 and 11 was Vietnamese.

Although listeriosis is a disease of low prevalence, it has a high mortality and efforts to control its spread through food are worthwhile. We would be interested to receive isolates from food, veterinary and human sources from around Australia with the aim of publishing a more extensive linkage survey at the end of 1994.

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CHOLERA CASE FROM BALI

Kath Taylor, Public Health Officer, Health and Community Services Victoria

The Department of Health and Community Services, Victoria was notified of a possible case of cholera by a microbiologist on the morning of 13 March 1994. This diagnosis was confirmed by the Microbiological Diagnostic Unit at the University of Melbourne the following day. The male, aged 63 years, had been infected with *Vibrio cholerae* O1 biotype El Tor, serotype Ogawa, in Bali.

Four cases of cholera had previously been notified in Victoria, between 1979 and 1985. In 1985 a 15 year old male from the Philippines had biotype El Tor. In 1983 a 62 year old male returned to Australia via Singapore with an El Tor infection, and in 1980 a 63 year old male had acquired biotype El Tor from food eaten in either Karachi or Kuala Lumpur. No details are available for the case acquired in 1979.

The present case visited Bali from 28 February to 5 March. He and his wife stayed at a Kuta Beach motel which housed about 50 residents, one of many similar motels at Kuta Beach. The couple ate only cooked food at the motel. They drank boiled water, tea, coffee or bottled drinks, as well as fruit drinks with milk, 'similar to milk-shakes'. They used bottled water to clean their teeth. On one occasion ice was added to the fruit-milk drink although the couple had not requested it. They visited shops in the area but did not eat any food. They noted that there were smelly drains in front of many of these shops.

The couple booked a boat trip on 3 March. There were about 175 people on board and a buffet lunch was served. The male selected and ate about 10 prawns. His wife did not eat the prawns.

They left Bali late in the evening on 5 March, arriving in Sydney at 7.30 am on 6 March. The man suffered one bout of diarrhoea during the plane trip and another at Sydney airport. They arrived in Melbourne on another flight at 10 am on 6 March. The man had further bouts of mild diarrhoea on 7 and 8 March and consulted his doctor on 8 March when he was prescribed Flagyl.

On 9 March he awoke at 2 am with cramps followed by severe watery diarrhoea and vomiting which continued for several hours. He collapsed and was taken by ambulance to hospital with dehydration and renal failure. Following no response to IV fluids and IV Amoxil he was transferred to another hospital the following morning. He remained seriously ill during the next few days, but then responded to treatment with IV sodium bicarbonate, potassium and ciprofloxacin. Dialysis was not required.

Faecal samples were collected from his wife and other close contacts. The staff at the two hospitals and the ambulance workers were placed under surveillance. Quarantine Medical Officers in Victoria, New South Wales and the Commonwealth were notified, and passenger lists from the two flights Bali-Sydney-Melbourne were sought. There have been no reported secondary cases.

Assuming that the infection was acquired on 3 March, serious symptoms did not develop until 9 March when the patient suffered circulatory collapse and anuria. The diagnosis was made from a culture from a specimen of vomitus rather than faeces.

The source of the infection is a matter for speculation. Prior to the visit to Bail the man was concerned that he might contract an infection and was determined to take every precaution. However, he did have a drink to which ice had been added, and he consumed seafood. Even if the prawns were cooked they may have been kept cool in ice since the weather was extremely hot.

A previous report of cholera cases from Bali appeared in *CDI* 1993;**17**:34-35. It is noted that these infections were also acquired at Kuta Beach in Bali.

CDI editorial comment

Three notifications of cholera were reported to the National Notifiable Diseases Surveillance System in 1992, one each from Queensland, South Australia and Western Australia. In 1993, a provisional total of six notifications was reported, four from Queensland and one each from New South Wales and Western Australia. This case reported from Victoria is the first for Australia for 1994.

Details of countries reporting recent cholera cases and of changes to the World Health Organization list of cholera infected areas of the world are published each fortnight in the Overseas Briefs section of *CDI*.

OVERSEAS BRIEFS

In the last two weeks, the following information has been supplied by the World Health Organization (WHO), the Institut Pasteur, Paris, the Department of Public Health and Social Services in the Territory of Guam and the Communicable Diseases Surveillance Centre, London.

Plague in Zaire

An outbreak of plague has been reported from Zaire. Two hundred and fifty-nine cases and 62 deaths were reported to 31 December 1993. Ituri Sub-Region of Haut-Zaire Province has been declared infected.

Influenza in the Northern Hemisphere

The Russian Federation was the only country in Europe reporting increasing influenza activity at the end of February. Epidemic levels were reached in 20 of 35 cities. Seven cities registered between 1.5% and 2.0% of the population affected by influenza-like illness in the week ending 27 February, however, 19 cities reported signs of decreasing activity. Other countries still reporting activity at the end of February and beginning of March were the Czech Republic, Hungary, Lithuania (where activity was at epidemic levels in all main cities at the beginning of March), Poland and Romania.

In the United States, activity is still declining; widespread or regional activity was reported from only 15 States by the end of February but pneumonia and influenza deaths were still above expected levels. A total of 99% of isolates have been influenza A H_3N_2.

Measles in Guam

An outbreak of measles has been reported from Guam[1]. It began in October 1993 when measles was imported by a visitor from Japan and by a Guam resident who had visited Palau where measles cases had been occurring. Eighteen additional cases were identified, resulting from exposures in the hospital's emergency room, in private doctors' offices and among family and neighbourhood contacts. No cases occurred as a result of spread within schools. This was reported as due to the strict vaccination requirements enforced for entrance to Guam public schools.

Hepatitis C virus associated with Irish anti-D immunoglobulin

Hepatitis C virus infection has been associated with administration of an intravenous preparation of anti-D immunoglobulin in Eire in 1977[2]. The association was identified when a disproportionate number of Rh-negative female blood donors was found to have antibodies to hepatitis C.

The intramuscular anti-D preparations used in Australia have been prepared by Cohn fractionation, a method that eliminates viruses such as HIV, hepatitis B and hepatitis C in end products. Intravenous preparations of anti-D immunoglobulin have not been used in Australia. Women who have received anti-D immunoglobulin in Australia are not at risk of having acquired hepatitis C through this treatment.

Cholera update

Somalia has reported 70 cases and 10 deaths for the period 1 to 14 February and the Bossaro District, North-East Region has been declared infected. Other newly infected areas are the Western Region of Ghana and the Ancuabe and Chiure Districts, Cabo Delgado Province, Mozambique. Zambezia Province in Mozambique has been removed from the infected areas list.

Cases of cholera have been reported for December, January and February from Argentina, Belize, Benin, Bolivia, Brazil, Burundi, China, Costa Rica, Djibouti, Ecuador, El Salvador, Ghana, Guatemala, India, Hong Kong, Mexico, Mozambique, Nicaragua and Somalia.

References

1. Measles outbreaks on Guam. *Guam Weekly Morbidity Report* 1994;(6).
2. Hepatitis C virus associated with Irish anti-D immunoglobulin. *Communicable Disease Report* 1994;8:39.

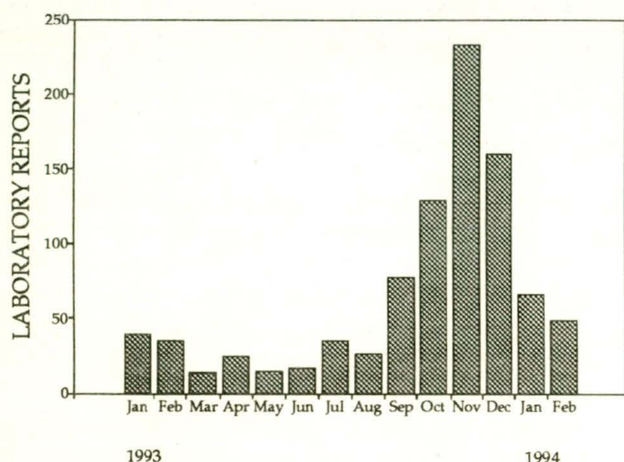
COMMUNICABLE DISEASES SURVEILLANCE

Virology and Serology Reporting Scheme

There were 2008 reports received in the *CDI* Virology and Serology Reporting Scheme this fortnight (Tables 9, 10 and 11), including a number of reports from Queensland with specimen collection dates in late 1993.

- There were 40 reports of **measles** this fortnight. The number of measles reports received by this scheme has declined since the beginning of the year (Figure 1). Thirty-six diagnoses were by measles specific IgM detection and 4 by single high titre.
- **Rubella** was reported for 13 patients this fortnight, 6 from Queensland and 7 from South Australia. Included were 4 females in the 15 to 44 year age

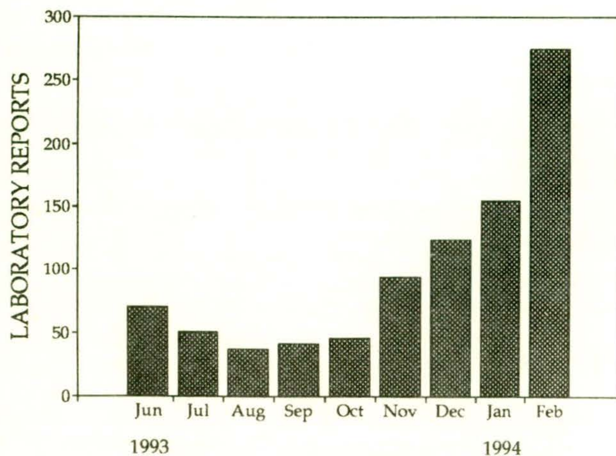
Figure 1. Measles laboratory reports, 1993 to 1994, by month of specimen collection



group. Diagnosis was by viral IgM detection in all cases.

- Thirteen reports of **hepatitis A** were received this fortnight, 7 from Queensland, 4 from Western Australia and one each from Victoria and New South Wales.
- A 20 year old female, the index case in a needlestick injury was reported positive for **hepatitis B** surface antigen.
- Two hundred and eight reports of positive **hepatitis C** serology were received this fortnight. Included was a 38 year old male who died, and a 5 year old haemophiliac.
- Positive **hepatitis E** serology was reported for a 56 year old male from Queensland who had a history of overseas travel.

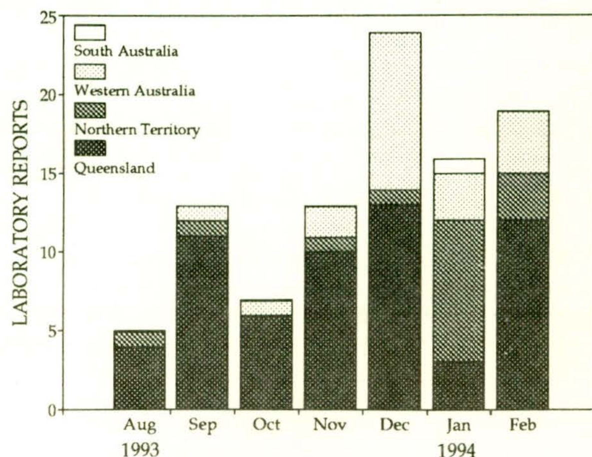
Figure 2. Ross River virus Laboratory reports, June 1993 to February 1994, by month of specimen collection



- **Ross River virus** infection was reported for 200 patients this period. Four diagnoses were confirmed (fourfold change in titre) with specimen collection dates from late January to mid February. Of the confirmed cases one was from Broome, one from Kununurra, and 2 from the Northern Territory (precise location not available). An increased number of reports has been received from Queensland, Western Australia and the Northern Territory since the beginning of the year (Figure 2). This fortnight, muscle/joint disease was reported for 67 patients and skin disease for 24.
- There were 20 cases of **Barmah Forest virus** infection reported this fortnight, 13 from Queensland, 3 from the Northern Territory, 3 from Western Australia and one from South Australia. The number of reports received has increased in recent months (Figure 3). A confirmed diagnosis (fourfold change in titre) was made in one instance, a 28 year old male from the Northern Territory.
- **Dengue** was reported for 4 patients this fortnight. A confirmed case (fourfold change in titre) in a 45 year old male from Victoria had a history of overseas travel. Of the remaining 3 cases (all presumptive) two were from Western Australia (one with a history of overseas travel) and one from the Northern Territory.
- **Japanese B encephalitis** was reported in a 4 year old Western Australian child with encephalitis and fever who had returned from Bali. Diagnosis was by fourfold change in titre and IgM detection.

  This is the first case of Japanese B encephalitis reported to this scheme with the newly assigned code. There have been two previous reports (using the untyped flavivirus code), one in 1982 in a patient recently returned from Bali, and one in 1992, a probable case of Japanese B encephalitis in a patient who had recently returned from South-east Asia.

Figure 3. Barmah Forest virus laboratory reports, August 1993 to February 1994, by month of specimen collection



- Ninety-six reports of **adenovirus** were received this fortnight, including an untyped faeces isolate from a 3 day old male with gastroenteritis. Thirty-four patients reported respiratory symptoms, 22 gastrointestinal disease and 7 (4 adenovirus type 8) eye disease.
- **Herpes simplex virus type 1** was isolated from the CSF of 76 and 30 year old males with CNS disease. Eye disease was reported for 13 patients.
- **Herpes simplex virus type 2** was isolated from the eye of a 28 year old female.
- Untyped **herpes simplex virus** was detected by serology in a 65 year old Western Australian male with encephalitis (positive IgM and fourfold rise in titre). An untyped herpes simplex virus was also isolated from an oesophageal biopsy from a 39 year old male with gastroenteritis.
- There were 92 reports of **cytomegalovirus (CMV)** infection this fortnight. Included was virus isolation from the heart and lung of a one year old male who died of SIDS, and isolation from the urine of a one day old congenitally infected female who died. A 31 year old female with foetal hydrops was positive for CMV IgM by enzyme immunoassay. Sixty-three other reports were of virus isolation, and 26 of viral IgM detection.
- Forty-two reports of **varicella-zoster virus** were received this fortnight. Included was a 24 year old female who gave birth at 26 weeks gestation and developed a varicella-like rash one day later (diagnosis by direct immunofluorescence and IgM detection). The child was given zoster immunoglobulin. Varicella-zoster virus was also detected in the eye of a 70 year old female with eye disease. A total of 16 cases was diagnosed by virus isolation, 17 by antigen detection and 9 by IgM detection.
- **Epstein Barr** virus was reported for a febrile 49 year old female liver transplant recipient.
- **Enteroviruses** were reported for 85 patients this fortnight, 75 virus isolations and 10 nucleic acid detections. **Echovirus type 6** was isolated from the faeces of a 5 month old male, and **echovirus type 21** from the nasopharynx of a female. Two cases of **echovirus type 30**, a 38 year old female (isolation from CSF) and a 23 year old female (isolation from faeces) were reported with meningitis. An **untyped enterovirus** was reported isolated from the nasopharynx and faeces of a one month old female with fever.
- Eighteen reports of **influenza A** virus were received this fortnight including 2 for patients over 65 years of age. There have been more reports recieved for the early months of this year than in previous years. Three diagnoses were by virus isolation, 2 by fourfold rise in titre and the remaining 13 by single high titre.
- **Influenza B** was reported for 9 patients this period, two over 65 years of age. One diagnosis was by fourfold rise in titre, and 8 by single high titre.
- **Parainfluenza virus** was reported for 17 patients this fortnight, 7 **parainfluenza type 1**, 2 **parainfluenza type 2**, and 8 **parainfluenza type 3**. One diagnosis was by virus isolation, four by antigen detection, and 12 by single high titre.
- Twenty seven reports of **respiratory syncytial virus (RSV)** were received this fortnight. Diagnosis was by virus isolation (10) and antigen detection (17).
- **Norwalk virus** was visualised by electron microscopy in the faeces of a 91 year old from Victoria with gastroenteritis. This patient was part of the outbreak reported in *CDI* 1994;**18**:92.
- Two hundred and seven cases of ***Chlamydia trachomatis*** were reported this fortnight. One hundred and thirty-six patients reported genital disease (including a 14, a 15 and two 16 year olds), and 6 reported eye disease.
- Fifteen cases of **Q fever** were reported this fortnight including a 19 year old Brisbane meat worker.
- There were 45 ***Bordetella*** reports this reporting period (33 *Bordetella pertussis* and 12 *Bordetella* species). Diagnosis was by antigen detection (5), IgM detection (8) and IgA detection (32).

Australian Sentinel Practice Research Network 1994

There are currently 102 recorders (71 located in major urban areas and 31 in rural/urban or rural/remote areas) (Table 1) in the Australian Sentinel Practice Research Network (ASPREN), monitoring between 6,000 and 10,000 patients each week.

Twelve conditions are being monitored for 1994 including influenza, sexually transmissible diseases (STDs), measles, pertussis, diabetes, genital herpes and gastroenteritis, continued from last year. New conditions for national surveillance in 1994 are chickenpox, herpes zoster, accident, claimed work caused accident, and not claimed work caused accident. Monitoring of rubella, treatment with hormone replacement therapy (HRT), solar keratoses, naevi, and asthma has been discontinued.

The case definitions for the conditions are as follows:

Influenza

(a) Viral culture or serological evidence of influenza virus infection, or

(b) influenza epidemic, plus four of the criteria in (c), or

(c) six of the following:

(i) sudden onset (within 12 hours)
(ii) cough
(iii) rigors or chills

(iv) fever
(v) prostration and weakness
(vi) myalgia, widespread aches and pains
(vii) no significant respiratory physical signs other than redness of nasal mucous membrane and throat
(viii) influenza in close contacts.

STDs

Each attendance for any of the following conditions is recorded:

(a) male urethral discharge

(b) genital ulcer

(c) vaginal discharge which could be an STD

(d) gential warts

(e) anxiety about STDs.

Measles

One recording only for :

(a) serological or virological evidence of acute measles, or

(b) two of the following:

(i) prodrome including infected conjunctivae, fever and cough
(ii)white specks on a red base in the mucous membranes of the cheek (Koplik's spots)
(iii) confluent maculopapular eruption spreading over the face and body, or

(c) an atypical exanthem in a partially immune person during an epidemic of measles.

Chickenpox

An acute, generalised viral disease with a sudden onset of slight fever, mild constitutional symptoms and a skin eruption which is maculopapular for a few hours, vesicular for 3 to 4 days, and leaves a granular scab.

Table 1. Geographical locations of ASPREN recorders, March 1994

State or Territory	Recorders in major urban areas	Recorders in rural areas	Total
Australian Capital Territory	2	0	2
New South Wales	17	4	21
Northern Territory	0	3	3
Queensland	7	6	13
South Australia	34	9	43
Tasmania	3	1	4
Victoria	6	5	11
Western Australia	2	3	5
Total	71	31	102

Table 2. Australian Sentinel Practice Research Network, weeks 1 to 6[1], 1994

	Week 1, to 9 January 1994		Week 2, to 16 January 1994		Week 3, to 23 January 1994	
Condition	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	21	4.2	13	2.2	14	2.1
Measles	1	0.2	2	0.3	0	0
Chickenpox	11	2.2	9	1.5	13	2.0
Pertussis	3	0.6	1	0.2	5	0.8
Gastroenteritis	83	16.4	74	12.5	69	10.5
	Week 4, to 30 January 1994		Week 5, to 6 February 1994		Week 6, to 13 February 1994	
Condition	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters	Reports	Rate per 1000 encounters
Influenza	13	2.3	9	1.2	18	2.8
Measles	2	0.4	1	0.1	0	0
Chickenpox	10	1.8	3	0.4	7	1.1
Pertussis	2	0.4	6	0.8	1	0.2
Gastroenteritis	98	17.5	107	14.7	70	11.0

1. Numbering of weeks has restarted with the new conditions being monitored.

Pertussis

One recording only for:

(a) Respiratory infection with a characteristic staccato paroxysmal cough ending with a high-pitched inspiratory whoop, or

(b) respiratory infection with persistent cough (3 weeks) in a contact with known pertussis, or

(c) demonstration of *Bordetella petussis*.

Herpes zoster

Recurrence, recrudescence or reactivation of chickenpox infection. Vesicles with an erythematous base restricted to skin areas supplied by sensory nerves of a single or associated group of dorsal root ganglia. Lesion may appear in crops in irregular fashion along nerve pathways, are usually unilateral, deeper seated and more closely aggregated than those of chickenpox.

Diabetes

Each attendence for patients with diabetes mellitus is recorded.

Accident

The initial consultation for any accident that cannot be claimed under a workers compensation insurance organisation is recorded. This condition includes all accidents in patients who are not working (for example, children).

Claimed work caused accident

One recording only for a consultation for injury occuring at work in which a claim is lodged with the appropiate insurance organisation.

Not claimed work caused accident

One recording only for consultation for injury occurring at work in which no claim is lodged with the appropiate insurance organisation.

Genital herpes

Each attendence is recorded for any consultation for genital herpes (including diagnosis, treatment, counselling, managment of partner, pregnancy).

Gastroenteritis

Intestinal disease, presumed or proven to be infective in origin, recorded once only.

ASPREN invites general practitioners to become recorders in the Network. Futher information and application forms are available from the Research and Health Promotion Unit of the Royal Australian College of General Practitioners, 215 Payneham Raod, St Peters, South Australia 5069, phone (08) 362 9954 and fax (08) 362 0320.

CDI will publish weekly counts for influenza, measles, chickenpox, pertussis and gastroenteritis in 1994.

Data for the first 6 weeks of 1994 are presented in this issue of *CDI* (Table 2). There were 5052 patient encounters in week 1, 5922 in week 2, 6551 in week 3, 5589 in week 4, 7263 in week 5 and 6352 in week 6. Chickenpox was reported at a rate of 1.4 per 1000 encounters overall during this period. Measles was reported at a lower average rate (0.2 per 1000 encounters) than for the last 6 weeks of 1993 (0.7 per 1000 encounters).

Melioidosis in the Northern Territory

Disease Control Centre, Northern Territory Department of Health and Community Services, Darwin

Since late December 1993, there have been 23 cases of melioidosis in the Top End of the Northern Territory, associated with the heavy monsoon. Except for an 11 year old male, all the cases have been adults and, as in the past, diabetes and heavy alcohol intake have been the major risk factors for disease and mortality. Four patients have died, 2 diabetic and 2 with heavy alcohol intake. All 4 fatal cases had septicaemia and pneumonia.

Japanese encephalitis case in Western Australia

David Smith, Combined Clinical Microbiology Service, Queen Elizabeth II Medical Centre, Nedlands, Perth, Western Australia

A 3 year old girl living in the Balinese jungle developed fever and malaise on Christmas Eve 1993. She quickly deteriorated with depression of conscious state and seizures. The parents were residents of Perth who had been living in Bali for 2 years, and arranged early transfer of the child to Perth. In Perth she was found to be comatosed and was convulsing. She had an erythematous rash on her trunk. CT scan showed general oedema and a CSF examination was normal. She required mechanical respiratory support.

A serum sample collected on December 30 was negative for flaviviruses by haemagglutination inhibition (HI), but had a positive IgM for Japanese encephalitis (JE) virus by indirect immunofluorescence (IF) and a JE IgG of 1:10 by indirect IF. There was no IgM to Murray Valley encephalitis virus (MVE) or Kunjin virus (KUN). Later sera on 7 January and 25 January showed a rise in flavivirus HI to 1:320 and JE IgG to 1:80 (reported in this issue of *CDI* page 146). Competitive EIA performed by the Department of Microbiology, The University of Western Australia, confirmed a rising titre to flavivirus, and excluded MVE and KUN.

The child's course was one of gradual recovery over several weeks. At review in mid-March she was walking and talking with apparent full recovery of cognitive function. The only residual problem is a mild tremor. The family plan to return to Indonesia in late March.

This represents the second case of JE seen in Perth which appeared to have been acquired in Bali. The other was in 1991 and occurred in an adult male who survived with serious neurological residua. Persons travelling to Bali should be aware of this potential risk and take precautions to avoid mosquito exposure.

Australian Encephalitis Sentinel Chicken Surveillance Programme: Serological Results - January and February, 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 20 of the 26 flocks in the Kimberley, Pilbara and Gascoyne regions of Western Australia. In January 1994, there were 5 seroconversions to Murray Valley encephalitis virus (MVE) at Wyndam, 1 at Kununurra, 3 at Fitzroy Crossing and 2 at Roebuck Station in Broome. In February there was a further 3 seroconversions at Wyndam, 7 at Kununurra, 4 at Kalumburu and 15 out of 22 chickens seroconverted to MVE at Derby.

Health warnings informing the public of increased MVE activity in the Kimberley region were issued by the Health Department of Western Australia in January and February.

There was no evidence of flavivirus activity in the sentinel chicken flocks from the Northern Territory, northern Queensland, New South Wales or Victoria in January and February 1994.

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.

Sentinel surveillance for sexually transmissible diseases

Jill Rowbottom, National Centre for HIV Epidemiology and Clinical Research, Sydney and National Centre for Epidemiology and Population Health, Australian National University, Canberra

During the 3 month period 1 July to 30 September 1993 there were 16,684 patient attendances at participating sexual health centres (Table 3).

A total of 45 persons was diagnosed with gonorrhoea (38 males and 7 females). Gonorrhoea in males was predominantly acquired through homosexual contact, and of these 19 cases, 5 (22%) were HIV positive. None of the 3 male sex workers was HIV positive. Among the 7 females who had gonorrhoea, 4 were sex workers born overseas, and from clinics in different capital cities. None of these 4 sex workers was HIV positive. The mean age of males with gonorrhoea was 30 years and the mean age of females with gonorrhoea was 34 years.

Early syphilis (defined as primary, secondary or early latent infection and representing infection acquired in the recent past) was diagnosed in 17 persons (12 males and 5 females). None was HIV positive. Fourteen persons with early syphilis were heterosexual.

The following clinics contributed data for this first quarterly report on prospective data: Gilmore Clinic, Canberra, ACT; Brisbane Sexual Health Clinic, Queensland; Gold Coast Clinic, Queensland; Kirketon Road Centre, Sydney, New South Wales; Livingstone Clinic, Marrickville, New South Wales; Murray Street Clinic, Perth, Western Australia; Sexual Health Service, Newcastle, New South Wales; Sexual Health Clinic,

Table 3. Surveillance for gonorrhea and early syphillis in sentinel sexual health centres for the period 1 July 1993 to 30 September 1993

Characteristics of cases	Gonorrhoea		Early syphillis	
	Male	Female	Male	Female
Exposure category[1]				
Male homosexual/bisexual contact	17	-	1	-
Male homosexual/bisexual contact and ID[2] use	2	-	0	-
Male homosexual/bisexual contact and sex work	1	-	2	-
Sex work	3	4	0	0
Sex work and ID use	0	1	0	0
Heterosexual contact and ID use	2	1	0	0
Overseas sex	9	0	3	3
Other heterosexual contact[3]	4	1	6	2
Total	38	7	12	5
HIV antibody status				
Positive	5	0	0	0
Negative	23	6	6	4
Unknown	10	1	6	1
Total	38	7	12	5

1. For most centres, exposure categorys applies to the year prior to diagnosis.
2. ID injecting drug.
3. No other exposure category specified.

Parramatta, New South Wales; and Sydney Sexual Health Centre, New South Wales.

Further details on this surveillance system were published in *CDI* 1994;**18**:45-46.

Sterile Sites Surveillance (LabDOSS)

Data for this fortnight have been provided by 8 laboratories. *CDI* welcomes Greenslopes Repatriation Hospital Queensland to the LabDOSS scheme. There were 136 reports of recent sepsis: Greenslopes Repatriation Hospital, Queensland 12, Alice Springs Hospital, Northern Territory, 23, Institute of Medical and Veterinary Science, South Australia 51, Ipswich General Hospital, Queensland 10, Sullivan Nicolaides, Queensland 13, Northern Tasmanian Pathology Service 3, Nambour Hospital, Queensland 4, Toowoomba Pathology Laboratory, Queensland 20.

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 *Bacillus cereus*, 2 *Streptococcus* Group A, 1 *Streptococcus* Group B, 1 *Streptococcus* Group G, 1 *Streptococcus sanguis*, 1 *Streptococcus* 'milleri', 1 *Streptococcus constellatus*, 1 *Streptococcus* species.

Gram negative: 1 *Salmonella* Paratyphi B biovar Java (1 year, Northern Territory), 1 *Salmonella* species (80 years, Queensland), 2 *Haemophilus influenzae* (2 year old, not typed; 11 month old, not type b), 1 *Weeksella zoohelcum*, 1 *Hafnia alvei*, 3 *Acinetobacter lwoffi*, 1 *Citrobacter freundii*, 2 *Enterobacter cloacae*, 2 *Morganella morganii*, 1 *Pasteurella* species, 1 *Proteus mirabilis*, 1 *Proteus vulgaris*, 2 *Serratia* species.

Anaerobes: 1 *Clostridium cadaveris*, 2 *Bacteroides fragilis*, 1 *Peptostreptococcus* species, 1 *Fusobacterium necrophorum*.

Fungi: 1 *Candida albicans*.

Other: 1 *Mycoplasma hominis*.

Most reports were for patients over the age of 34 years (Figure 4).

CSF isolates and/or meningitis reports

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

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

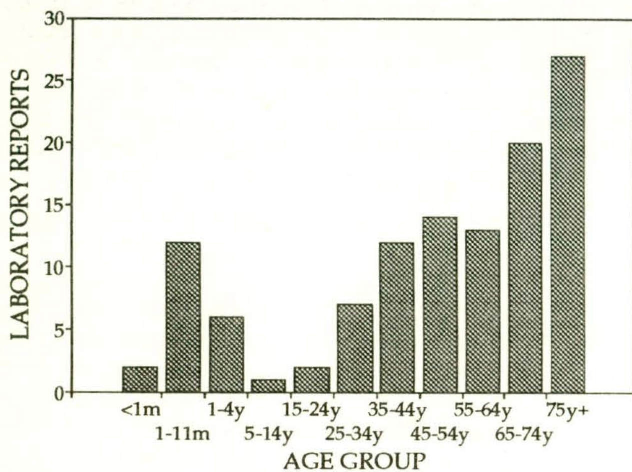
	Clinical Information						Risk Factors					
Organism	Bone/Joint	Lower respiratory	Endocarditis	Gastrointestinal	Urinary Tract	Skin	Surgery	Immunosuppressed	IV line	Hospital acquired	Neonatal	Total[1]
Staphylococcus aureus	2	2	1	1	1	5	4	2	3	2		27[2]
Staphylococcus coagulase negative												9[3]
Enterococcus species		1	2		1			1	1			6[4]
Streptcoccus pneumoniae		2		3						1		7
Escherichia coli		1		3	9							23
Klebsiella species				3		1	3			1		5[5]
Pseudomonas aeruginosa				1				1				5
Candida albicans									1			1

1. Only organisms with 5 or more reports are included in this table.
2. MRSA 1.
3. *Stapylococcus epidermidis* 1.
4. *Enterococcus faecalis* 5.
5. Klebsiella pneumoniae 4.

Table 5. LabDOSS meningitis reports, by organism and age group

	1-4 years	5-14 years	15-24 years	25-34 years	35-54 years	55-64 years	Total
Streptocoous pneumoniae	1	1					2
Bacillus cereus				1			1
Acinetobacter baumanii						1	1
Haemophilus influenzae type b	1						1

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



Isolates from sites other than blood or CSF

Peritoneal dialysate: 2 *Escherichia coli*, 1 *Streptococcus morbillorum.*

Joint fluid: 7 *Staphylococcus aureus*, 1 *Xanthomonas maltophilia.*

Other: 1 *Enterobacter cloacae*, 2 MRSA, 1 *Pseudomonas aeruginosa.*

- More reports of invasive ***Streptococcus pneumoniae*** infection have been received for the months of December 1993 and January and February 1994 (48) than for equivalent periods in previous years. To allow for an effect of the increase in participating laboratories since the beginning of LabDOSS, reports have been standardised by calculating the number of reports per 10 contributing laboratory months. (One contributing laboratory month is defined as one laboratory providing reports for one month.) When standardised, pneumococcal reports per 10 contributing laboratory months for December 1993 and January 1994 remain higher than for the December 1992 and for January 1992 and 1993, respectively (Figure 5). (Data for February and March this year are incomplete.) A winter seasonal peak has been well documented from LabDOSS and other sources, so this summer increase in unusual.

  The ages reported for the recent pneumococcal sepsis reports have been predominantly the young and the elderly, similar to previous periods (Figure 6). The sexes have been equally represented with a male:female ratio of 0.9:1.0. There was no pattern of risk factors for the recent reports.

National Notifiable Diseases Surveillance System, 20 February to 5 March 1994

There were 2002 reports received for this period (Tables 6, 7 and 8 and Figure 9). No reports were received from Victoria due to a computing problem, however, this should be resolved by the next reporting period.

- There were 383 notifications of **Ross River virus infection** this period, 189 males and 192 females (Figure7). The sex of one case was unrecorded. The cases ranged in age from the 0-4 to the 80-84 years age group with a mean age of 40 years. Age was unrecorded for one case. Onset dates were December (one), January (27), February (335), and March (20).
- Eighty-three notifications of **gonococcal infection** were received in the period. There were 50 males and 32 females. Sex was not recorded for one case. Cases ranged in age between the 15-19 and 85-89 years age groups. Age was unrecorded for one case.

Figure 5. *Streptococcus pneumoniae* LabDOSS reports per 10 contributing laboratories, January 1992 to February 1993, by month of specimen collection

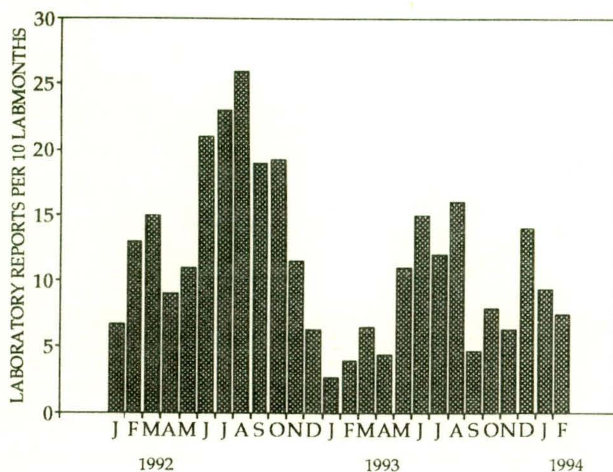
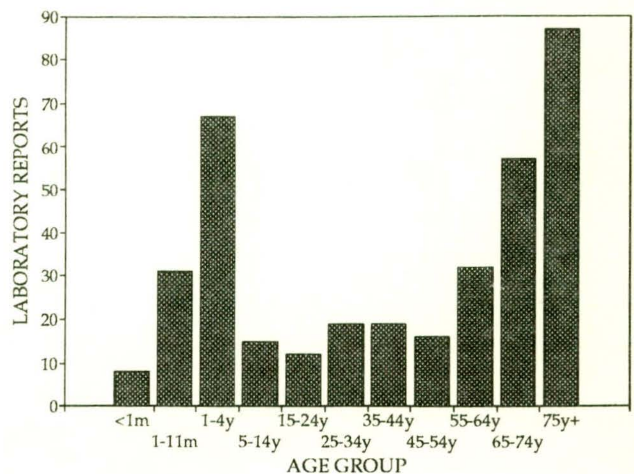


Figure 6. *Streptococcus pneumoniae* LabDOSS reports, January 1992 to February 1993, by age group



- Four cases of ***Haemophilus influenzae* type b infection** were notified (Figure 8). All cases were males. One was less than a year old, two cases were in the 0-4 years age group and one case was in the 35-39 year age group. The four cases had recorded onset dates in February. There were no apparent clusters.
- There were 63 notifications of **hepatitis A** received in the period. Forty cases were male and 23 were female. Recorded ages ranged between the 0-4 and 90-94 years age groups. Age was unrecorded for 4 cases.
- **Hepatitis B** was notified for 66 cases; 4 of these notifications were from States that only report incident cases (representing new infections). Recorded ages for the incident cases ranged between the 15-19 and 60-64 years age groups. Age was unrecorded for one case.
- Four notifications of **hydatid infection** were received in the period. One case was male and three were female. Recorded ages ranged from the 25-29 to the 50-54 years age group. Age was unrecorded for one case. The cases were from the Northern Territory and the Statistical Divisions of Canberra, Australian Capital Territory; Moreton, Queensland and Sydney, New South Wales.
- There were four notifications of **legionellosis** received. All cases were males and recorded ages were between the 45-49 and the 60-64 years age groups. Age was unrecorded for one case. There were no apparent clusters.
- Two cases of **leptospirosis** were notified in the period. Both cases were males and recorded ages were in the 35-39 and 50-54 years age groups. They were resident in rural areas of New South Wales and Tasmania.
- A single cases of **listeriosis** was notified for a male in the 54-59 years age group resident in the Statistical Division of Far North Queensland.
- There were 29 notifications of **malaria** received. Twenty cases were male and 8 cases were female. The sex for one case was unrecorded. Recorded ages ranged from the 5-9 to the 60-69 years age groups. Age was unrecorded for 2 cases. Five cases were resident in the 'malaria receptive zone'. Onset dates were recorded for 27 cases: October (one), November (2), December (3), January (9), February (9), and March (3).
- Eighty-nine cases of **measles** were notified for the period, 41 males and 48 females. Cases ranged in age from the 0-4 to the to the 90-94 years age group with a mean age of 13.7 years. Three cases were aged less than one year. There were 11 apparent clusters with two or more cases each in separate postcode areas. Apparent clusters were in New South Wales (3), Queensland (7), and Western Australia (one).
- Five notifications of **meningococcal infection** were reported, one male and 4 females. Cases ranged in age from the 0-4 to the 90-94 years age groups with 2 of the cases in the 0-4 years age group. There were no apparent clusters.
- There were 157 notifications of **pertussis** received in the period. Seventy-two cases were male and 85 were female. Cases ranged in age from the 0-4 to the 90-94 years age groups with a mean age of 33.6 years. Four case were less than one year of age and 22 were less than 5 years of age. There were 24 apparent clusters with 2 to 7 cases each in separate postcode areas. Apparent clusters were in New South Wales (10), Queensland (8), South Australia (2) and Western Australia (4).

Figure 7. Ross River virus infection notifications, January 1992 to March 1994, by month of onset

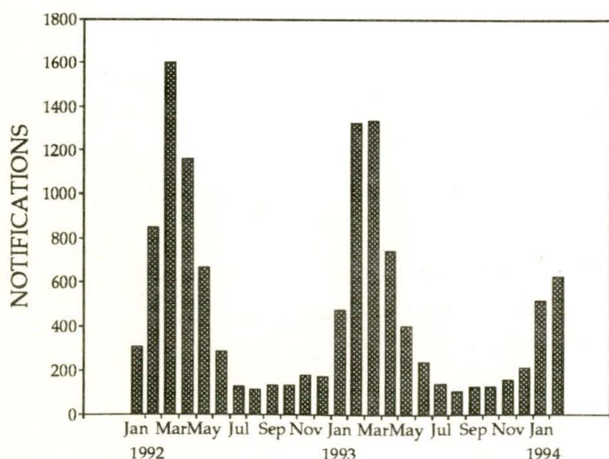
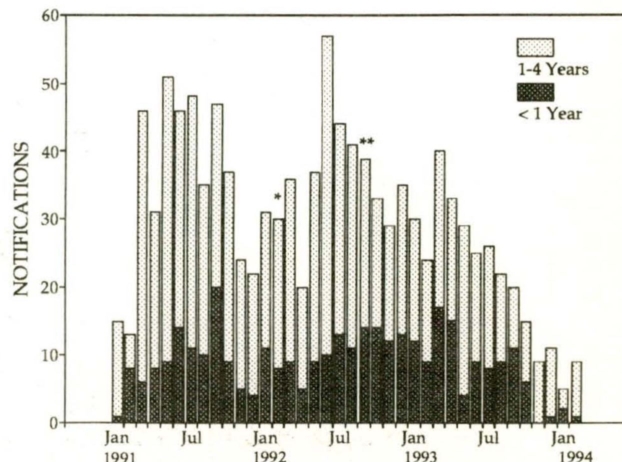


Figure 8. *Haemophilus influenzae* type b notifications infection, January 1991 to February 1994, by month of onset and age

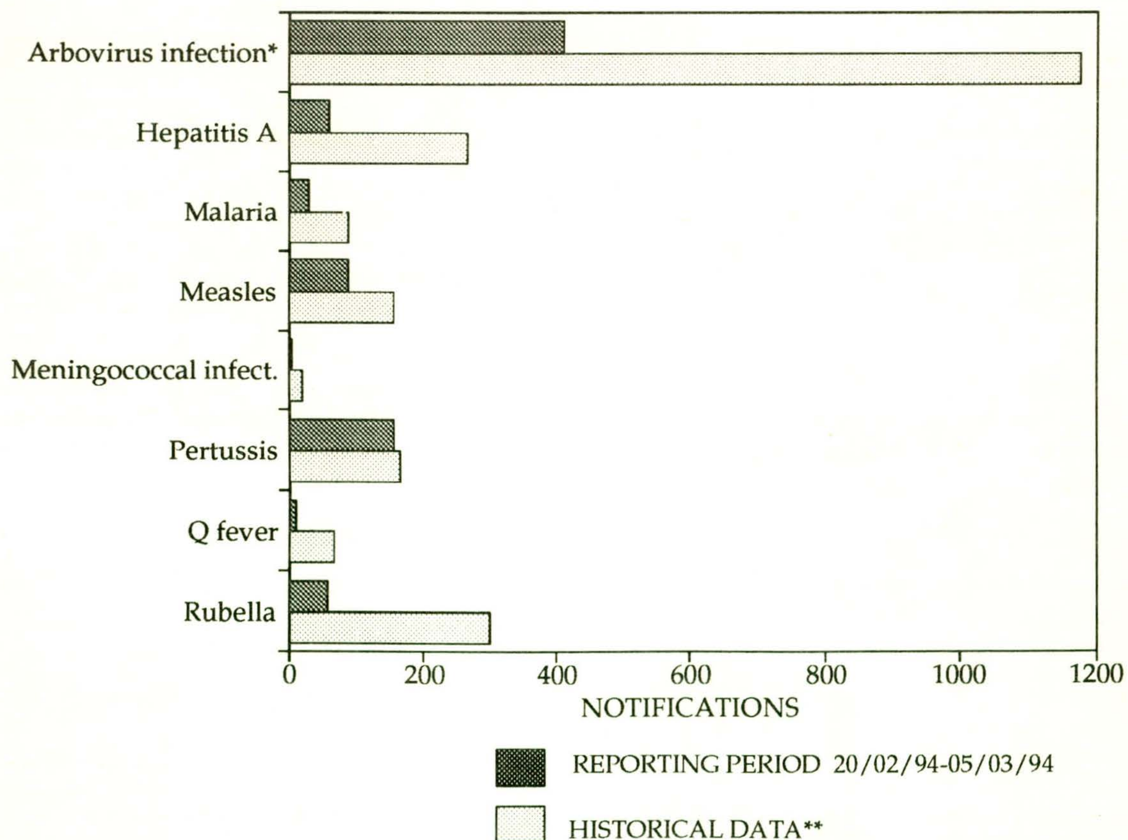


*PRP-D licensed in February 1992.

** Infant vaccine licensed in September 1992.

- Fourteen cases of **Q fever** were notified for the period; 13 males and one female. Cases ranged in age between the 15-19 and the 65-69 years age groups. Eleven cases were resident in rural Statistical Divisions of Queensland, one case resident in the Brisbane Statistical Division, and one case resident in the Richmond-Tweed statistical division in New South Wales.
- Fifty-seven notifications of **rubella** were received in the period. Forty case were males and 17 were females. Mean age of cases was 35.6 years and six cases were females in the 15-44 years age group.
- There were 45 notifications of **syphilis** received; 26 cases were males and 17 were females. Sex was unrecorded for 2 cases. Recorded ages ranged between the 15-19 and 85-89 years age groups. Age was unrecorded for one case.
- A single case of **tetanus** was notified for a female in the 70-74 years age group resident in Adelaide.
- There were 17 notifications of **tuberculosis** received; 8 cases were male and 9 cases were female. Cases ranged in age between the 0-4 and the 70-74 years age groups. Onset dates were recorded for 15 of the cases;:November (one), January (4), February (9), and March (one).
- Two notifications of **typhoid** were received. One case was male and one case was female. The recorded ages were in the 60-64 and 75-79 years age groups. The cases were residents in separate postcode areas in the Statistical Division of Perth, Western Australia.
- Twenty three cases of **yersiniosis** were notified, 12 males and 11 females. Cases ranged in age between the 0-4 and 80-84 years age groups. There were 3 apparent clusters.

Figure9. 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.

* Included Ross River virus infection and dengue.

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 20 February to 5 March 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	1	0
Haemophilus influenzae b infection	0	1	0	2	0	1		0	4	64	30	118
Measles	6	25	2	51	2	0		3	89	238	628	447
Mumps	1	0	NN	NN	0	NN		0	1	0	2	0
Pertussis	0	51	0	66	20	0		20	157	307	845	573
Poliomyelitis	0	0	0	0	0	0		0	0	0	0	0
Rubella[2]	3	1	5	17	14	0		17	57	644	335	1339
Tetanus	0	0	0	NN	0	0		0	0	3	1	6

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

NN Not Notifiable.

Table 7. Notifications of other diseases[1] received by State and Territory health authorities in the period 20 February to 5 March 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	16	69	288	1	NN		9	383	1350	1354	1989
Dengue	0	-	0	0	-	NN		NN	0	20	2	37
NEC[3]	0	4	7	17	0	0		0	28	90	100	155
Campylobacteriosis[4]	17	-	6	78	77	26		31	235	1402	1077	2672
Chlamydial infection (NEC)[5]	10	NN	5	95	0	10		39	159	1043	826	2023
Donovanosis	0	NN	0	0	NN	NN		2	2	8	13	14
Gonococcal infection[6]	2	12	10	27	1	0		13	83	483	403	910
Hepatitis A	1	19	2	27	1	0		13	63	361	295	661
Hepatitis B[7]	9	1	0	53	1	0		2	66	343	312	654
Hepatitis C	28	0	2	181	0	13		60	284	612	1043	1167
Hepatitis (NEC)	0	0	0	1	0	0		NN	1	11	7	19
Legionellosis	0	1	1	0	1	0		1	4	19	17	31
Leptospirosis	0	1	0	0	0	1		0	2	31	19	58
Listeriosis	0	0	NN	1	0	0		0	1	12	6	21
Malaria	2	1	4	11	4	6		1	29	116	71	211
Meningococcal infection	0	1	0	2	0	0		2	5	38	44	75
Ornithosis	0	NN	0	0	0	0		2	2	17	6	37
Q fever	0	1	0	13	0	0		0	14	95	89	176
Salmonellosis (NEC)	2	52	32	95	13	5		27	226	963	939	1790
Shigellosis[4]	0	-	1	4	4	0		7	16	171	93	318
Syphilis	2	26	7	6	0	0		4	45	337	284	611
Tuberculosis	0	7	2	3	3	2		0	17	118	81	227
Typhoid[8]	0	0	0	0	0	0		2	2	11	7	21
Yersiniosis (NEC)[4]	0	-	0	21	2	0		0	23	77	98	146

1. For HIV and AIDS, see Tables 1 and 2, *CDI* 1994;18:125. 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 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 20 February to 5 March 1994

DISEASES	Total this period	Reporting States or Territories	Year to date 1994
Botulism	0		0
Brucellosis	0		1
Chancroid	0		0
Cholera	0		0
Hydatid infection	4	Qld, ACT, NSW, NT	6
Leprosy	0		0
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 9. Laboratory reports by State or Territory[1] for the reporting period 24 February to 9 March 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		2		36	1			1	40	9.7	435
Mumps virus		1		1			1		3	2.2	24
Rubella virus				6	7				13	19.8	225
HEPATITIS VIRUSES											
Hepatitis A virus		1		7			1	4	13	25.5	79
Hepatitis B virus	5	22		55	3		21	17	123	91.5	580
Hepatitis C virus	6	20		37	39	9	7	90	208	107.5	1,283
Hepatitis D virus				1			2		3	.8	9
Hepatitis E virus				1					1	.0	3
ARBOVIRUSES											
Ross River virus		4	27	156				13	200	94.5	690
Barmah Forest virus			3	13	1			3	20	7.7	81
Dengue not typed			1				1	2	4	.8	6
Japanese encephalitis virus								1	1	.0	1
Flavivirus (unspecified)							1		1	1.8	3
ADENOVIRUSES											
Adenovirus type 1							1		1	3.3	25
Adenovirus type 2		3					1		4	2.5	26
Adenovirus type 4	1	2							3	1.5	6
Adenovirus type 5							1		1	1.0	4
Adenovirus type 8							4		4	1.0	35
Adenovirus not typed/pending		7		50	15		4	7	83	34.8	397
HERPES VIRUSES											
Herpes simplex virus type 1	2	16	1	128	26	3	43	32	251	161.7	1,266
Herpes simplex virus type 2	1	14		126	27	1	25	36	230	171.0	1,416
Herpes simplex not typed/pending	5	9	1	4	1		1	3	24	30.8	170
Cytomegalovirus	1	5	1	49	1		28	7	92	56.8	389
Varicella-zoster virus		6		16	2		10	8	42	26.7	280
Epstein-Barr virus	1			20	8		10	7	46	69.3	411

Table 9. Laboratory reports by State or Territory[1] for the reporting period 24 February 1994 to 9 March 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			
Herpes virus group - not typed					1			1	2	1.7	7
OTHER DNA VIRUSES											
Parvovirus				1			1	1	3	2.5	23
PICORNA VIRUS FAMILY											
Echovirus type 6		1						1	2	.2	4
Echovirus type 21		1							1	.0	1
Echovirus type 30		2					2	1	5	.0	134
Poliovirus type 2 (uncharacterised)							1		1	.8	7
Rhinovirus (all types)				12	2		17	1	32	23.8	248
Enterovirus not typed/pending		3		49		1	15	8	76	21.3	378
ORTHO/PARAMYXOVIRUSES											
Influenza A virus			1	7	7		2	1	18	4.2	125
Influenza B virus				5	4				9	2.3	81
Parainfluenza virus type 1				5				2	7	8.3	25
Parainfluenza virus type 2				1				1	2	2.7	8
Parainfluenza virus type 3				6			2		8	12.8	68
Respiratory syncytial virus			1	7	1		7	11	27	14.5	172
OTHER RNA VIRUSES											
HIV-1								2	2	1.8	19
Rotavirus	7	7				1	3	15	33	24.2	229
Norwalk agent							1		1	.5	5
OTHER											
Chlamydia trachomatis not typed	5	41		108	27	1	4	21	207	114.8	724
Chlamydia psittaci							3		3	3.0	23
Mycoplasma pneumoniae	1	2		37	1		10	2	53	54.8	321
Mycoplasma hominis					1				1	.0	1
Coxiella burnetii (Q fever)		1		13			1		15	12.7	122
Rickettsia species - other				2					2	.0	7
Streptococcus group A		1		10					11	5.5	73
Streptococcus species							1		1	.0	1
Campylobacter species				1					1	.0	1
Bordetella pertussis				2			17	14	33	3.3	164
Bordetella species				12					12	3.7	156
Legionella species				1					1	.0	2
Cryptococcus species				2					2	.0	5
Leptospira canicola				1					1	.0	1
Leptospira pomona				1					1	.0	2
Leptospira hardjo				3					3	.0	12
Leptospira species				2					2	.3	7
Treponema pallidum		11		8					19	10.3	93
TOTAL	35	182	36	1002	175	16	249	313	2,008	1,252.5	11,093

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

Table 10. Laboratory reports by clinical information for the reporting period 24 February to 9 March 1994

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
MEASLES, MUMPS, RUBELLA													
Measles virus					2			19				19	40
Mumps virus												3	3
Rubella virus								2		2		9	13
HEPATITIS VIRUSES													
Hepatitis A virus							6					7	13
Hepatitis B virus					1		41					81	123
Hepatitis C virus							14				1	193	208
Hepatitis D virus							3						3
Hepatitis E virus					1								1
ARBOVIRUSES													
Ross River virus					2	1		24		67		106	200
Barmah Forest virus								1		6		13	20
Dengue not typed								1				3	4
Japanese encephalitis virus	1												1
Flavivirus (unspecified)												1	1
ADENOVIRUSES													
Adenovirus type 1					1								1
Adenovirus type 2					3							1	4
Adenovirus type 4					1				1			1	3
Adenovirus type 5			1										1
Adenovirus type 8									4				4
Adenovirus not typed/pending	1	1	2		29	22		5	2			21	83
HERPES VIRUSES													
Herpes simplex virus type 1		1	2		7		1	134	13		69	24	251
Herpes simplex virus type 2					1			65	1		137	26	230
Herpes simplex not typed/pending	1				1	1	1	10			1	9	24
Cytomegalovirus			2	3	27	3	5		1	1		50	92
Varicella-zoster virus								28	1		1	12	42
Epstein-Barr virus					5	1	3	1		2		34	46
Herpes virus group - not typed								1			1		2
OTHER DNA VIRUSES													
Parvovirus								2				1	3
PICORNA VIRUS FAMILY													
Echovirus type 6												2	2
Echovirus type 21												1	1
Echovirus type 30		2										3	5
Poliovirus type 2 (uncharacterised)					1								1
Rhinovirus (all types)		1			26			1				4	32
Enterovirus not typed/pending		11	3		30	10		8				14	76
ORTHO/PARAMYXOVIRUSES													
Influenza A virus					6		1					11	18
Influenza B virus					3	1				1		4	9
Parainfluenza virus type 1					6							1	7
Parainfluenza virus type 2					1							1	2

Table 10. Laboratory reports by clinical information for the reporting period 24 February 1994 to 9 March 1994, continued

	Encephalitis	Meningitis	Other CNS	Congenital	Respiratory	Gastrointestinal	Hepatic	Skin	Eye	Muscle/joint	Genital	Other/unknown	Total
Parainfluenza virus type 3					4							4	8
Respiratory syncytial virus					26							1	27
OTHER RNA VIRUSES													
HIV-1												2	2
Rotavirus						33							33
Norwalk agent						1							1
OTHER													
Chlamydia trachomatis not typed									6		136	65	207
Chlamydia psittaci					1							2	3
Mycoplasma pneumoniae					26	1		2				24	53
Mycoplasma hominis					1								1
Coxiella burnetii (Q fever)					2					1		12	15
Rickettsia species - other												2	2
Streptococcus group A								3		3		5	11
Streptococcus species												1	1
Campylobacter species						1							1
Bordetella pertussis					33								33
Bordetella species					7							5	12
Legionella species					1								1
Cryptococcus species												2	2
Leptospira canicola												1	1
Leptospira pomona												1	1
Leptospira hardjo												3	3
Leptospira species												2	2
Treponema pallidum			1								1	17	19
TOTAL	3	16	11	3	255	75	75	307	29	83	347	804	2008

Table 11. Laboratory reports by contributing laboratories for the reporting period 24 February to 9 March 1994

STATE OR TERRITORY	LABORATORY	REPORTS
Australian Capital Territory	Woden Valley Hospital, Canberra	34
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	71
	Prince Henry/Prince of Wales Hospitals, Sydney	12
	Royal Alexandra Hospital for Children, Camperdown	10
	South West Area Pathology Service, Liverpool	60
Queensland	Queensland Medical Laboratory, West End	429
	State Health Laboratory, Brisbane	599
South Australia	Institute of Medical and Veterinary Science, Adelaide	176
Tasmania	Northern Tasmanian Pathology Service, Launceston	9
	Royal Hobart Hospital	8
Victoria	Microbiological Diagnostic Unit, University of Melbourne	3
	Monash Medical Centre, Melbourne	17
	Royal Children's Hospital, Melbourne	81
	Victorian Infectious Diseases Reference Laboratory, Fairfield Hospital	150
Western Australia	Princess Margaret Hospital, Perth	53
	State Health Laboratory Services, Perth	296
TOTAL		2008