Communicable Diseases Surveillance

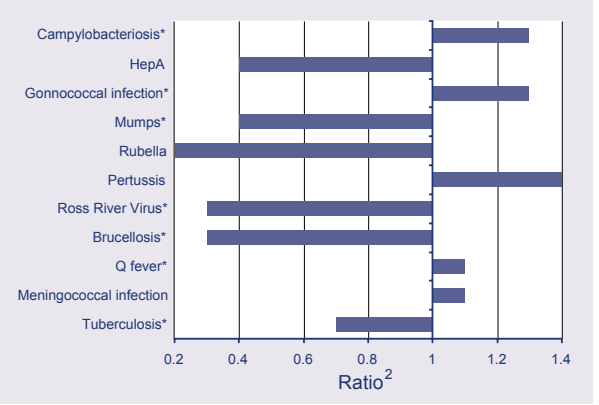
Highlights for 4th quarter, 2001

Communicable Disease Surveillance Highlights report on data from various sources, including the National Notifiable Diseases Surveillance System (NNDSS) and several disease specific surveillance systems that provide regular reports to Communicable Diseases Intelligence. These national data collections are complemented by intelligence provided by State and Territory communicable disease epidemiologists and/or data managers who have formed a Data Management Network. This additional information has enabled the reporting of more informative highlights each month.

The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia, and the CDI Virology and Serology Laboratory Reporting Scheme (LabVISE) is a sentinel surveillance scheme. In this report, data from the NNDSS are referred to as 'notifications' or 'cases', and those from ASPREN are referred to as 'consultations' or 'encounters' while data from the LabVISE scheme are referred to as 'laboratory reports'.

Figure 1 shows the changes in disease notifications with an onset date in the final quarter of 2001, compared with the 5-year final quarter mean. Disease notifications above or below the 5-year mean, plus- or minus- two standard deviations are marked with an asterisk. Diseases where the number of cases reported was two standard deviations above the mean of the same reporting period in the last 5 years include campylobacteriosis, gonococcal infection and Q fever. Diseases where the number of reports were two standard deviations below the 5 year mean include Ross River virus infection, brucellosis, tuberculosis and mumps. It should be noted, however, that these data are provisional and subject to revision. Delayed reporting of chronic or late presenting diseases may occur, and updating of notification data in 2002 may increase the numbers of these diseases in the future. These and other disease trends are discussed below, with additional commentary provided by representatives from State and Territory health authorities.

Figure 1. Selected[1] diseases from the National Notifiable Diseases Surveillance System, comparison of provisional totals for the period 1 October to 31 December 2001 with historical data[2]



1. Selected diseases are chosen each quarter according to current activity
2. Ratio of current quarter total to the mean of the corresponding quarter for the previous five years

* Notifications above or below the 5-year mean for the same period plus - or minus - two standard deviations.

Bloodborne viruses

Carolein Giele from Communicable Disease Control, Health Department of Western Australia reported that the increase of incident hepatitis C cases from Western Australia in this quarter reflected a recent download of anti-HCV results from a large laboratory in Perth. This enabled the search and linkage of previous negative anti-HCV results, used to identify recent seroconversions.

Gastrointestinal diseases

Haemolytic uraemic syndrome

One case of HUS with an onset date in the final quarter of 2001 was reported to the NNDSS. The case was an 11-month-old infant from New South Wales. Robert Menzies from the Communicable Disease Surveillance and Control Unit, NSW Department of Health indicated that an infective cause was not laboratory-confirmed. Consumption of sausage was the suspected source.

Campylobacteriosis

As for the third quarter of 2001, notifications of campylobacter infections were above the mean of the same period for the previous 5 years. There were 4,693 cases reported with an onset date in the final quarter of 2001, giving an overall rate of 146 cases per 100,000 population. Jurisdictions with reporting rates above the Australian rate included South Australia (247 cases per 100,000 population), Tasmania (197 cases per 100,000 population) and Western Australia (169 cases per 100,000 population).

Foodborne illness is notoriously under-reported. In the United Kingdom it has been estimated that only 1 in 8 cases of camplyobacteriosis is reported.[1] Notification rates for camplyobacter infections may be affected by microbiology laboratory screening protocols. This issue is being investigated by OzFoodNet.

Hepatitis A

There were 155 cases of hepatitis A reported with an onset date in the final quarter of 2001, giving a national notification rate of 3.2 cases per 100,000 population. The highest reporting rates were received from the Northern Territory (10.1 cases per 100,000 population), the Australian Capital Territory (7.6 cases per 100,000 population) and New South Wales (4.8 cases per 100,000 population).

Kerry-Ann O'Grady from Communicable Diseases Section, Department of Human Services Victoria, reported that cases from that jurisdiction were predominantly travel related. In New South Wales there was an increase in hepatitis A notifications reported in the last quarter of 2001; 80 cases compared with 57 in the third quarter. The increase was in men living in central and south-eastern Sydney (13 in the third quarter, up to 40 in the fourth quarter). The most commonly reported risk exposures during the quarter were male-to-male sex (16 cases, 20%), eating in a restaurant or gathering (16 cases, 20%), overseas travel (13 cases, 16%) and recreational drug use (8 cases, 10%). Risk exposures were unknown or not available for 23 cases (29%). Robyn Pugh, from the Communicable Diseases Unit, Queensland Department of Health, reported that there were fewer notifications of hepatitis A in 2001 than in the previous 4 years. Of the 99 notifications from Queensland in 2001 where information about injecting drug use was recorded, 7 (7%) of 99 were injecting drug users. In the last quarter of 2001, there were 3 injecting drug users (12%) who acquired hepatitis A in Queensland.

Hepatitis E

In late October the Department of Human Services Victoria received one notification of hepatitis E for a non-pregnant female who had arrived in Australia from India. The woman was well on the plane, but within 2 days of arrival experienced nausea, vomiting, and abdominal pain, developing jaundice 6 days later. She presented to hospital 10 days after onset of illness and was admitted for 3 days. Blood tests were negative for hepatitis A, B and C. Serological testing by Victorian Infectious Diseases Reference Laboratory confirmed the diagnosis with a strongly positive hepatitis E IgG titre. Other family members in India, her travel companions and partner remained well.

Typhoid

Fifteen cases of typhoid were reported with an onset date in the reporting period, including 7 from New South Wales, 3 from Victoria, 3 from Queensland and 1 case from both South Australia and Western Australia. Of the 15 cases, 6 were males and 9 were females, and the age range was 5 to 50 years.

All typhoid infection reported in the period were associated with overseas travel. The Department of Human Services Victoria reported 2 cases which were acquired in Indonesia, and a third acquired in Pakistan. All 3 cases were unrelated and of different strains. Of the 3 cases of typhoid notified in Queensland one was acquired in Papua New Guinea, one in Bangladesh and one in Indonesia. All 7 typhoid cases reported in New South Wales were acquired overseas, and there were no links between the cases.

Gary Dowse, from Communicable Disease Control, Health Department of Western Australia reported that in Western Australia a single case of typhoid was notified during the quarter, in a 31-year-old asylum seeker in detention on Christmas Island. It is most likely that the organism was acquired in Indonesia. Of 14 cases of typhoid notified in Western Australia during 2001, 9 (64%) were in asylum seekers travelling via Indonesia. Other cases reported in 2001 included 2 overseas students returning from Indonesia, a visiting seaman, a refugee from Africa, and a child returning from a visit to Pakistan.

Listeria

There were 14 reports of listeriosis, including 5 cases from Queensland, 3 cases from both New South Wales and Western Australia, 2 cases from Victoria and a single case from South Australia.

Of the 3 cases of listeriosis notified in December in Western Australia, two involved foetal death-in-utero (at 18 and 23 weeks, respectively) in women with febrile illnesses. Both the latter cases were serogroup 4, but no commonalities in food histories were identified.

Salmonellosis

There were 1,825 notifications of salmonellosis infections received nationally in the final quarter of 2001. *Salmonella* reports of note in the final quarter of 2001 included an increase in *Salmonella* Typhimurium phage type 170 in a number of jurisdictions, an outbreak of *Salmonella* Typhimurium phage type 126 in South Australia, and the appearance of a rare serovar in the Northern Territory. OzFoodNet was invited to further investigate these outbreaks, with the assistance of State and Territory health authorities. Further information can be obtained from OzFoodNet. (contact Martyn Kirk, Coordinating Epidemiologist, OzFoodNet, c/o National Public Health Partnership, 589 Collins St, Melbourne 3000, Australia, telephone: +61 3 9616 1522, facsimile: +61 3 9616 1500, E-mail: martyn.kirk@dhs.vic.gov.au).

In previous quarters of 2001 the emergence of *Salmonella* Typhimurium phage type 126 in jurisdictions across Australia has been noted (see OzFoodNet quarterly report, this issue). Cases continue to be reported in the current reporting period. Jane Raupach, from the Communicable Disease Control Branch of the Department of Human Services, South Australia, reported 23 cases of *Salmonella* Typhimurium phage type 126 with dates of onset from 1 October to 31 December 2001. A case control study found an association between cases and the consumption of chicken. The association was supported by descriptive epidemiology and microbiological evidence.

In Queensland other *Salmonella* clusters of note included a small cluster of *Salmonella* Singapore cases predominantly among adult females who reside in Brisbane and surrounding metropolitan areas. There were 12 cases of *S*. Singapore notified during the final quarter of 2001, 8 of whom were female, and seven of the 8 cases were older than 18 years. Six of the cases were notified over a one week period in December. A common link has not yet been identified and investigations are continuing.

Peter Markey, from Centre for Disease Control, Northern Territory Department of Health and Community Services, reported that from October to November there was a cluster of 15 cases of *Salmonella* Mgulani. This serovar is rarely identified in the Northern Territory. In 2000 the National Enteric Pathogen Surveillance System identified 44 cases with this serovar, 31 of whom resided in Queensland, 9 from New South Wales, 3 from Victoria and 1 from the Australian Capital Territory.[2] The majority of cases in Queensland are thought to be sporadic, although in New South Wales clusters have been described.[3]

Cases of *Salmonella* Mgulani reported from the Northern Territory in the current period were dispersed over a wide geographical area in the Top End. Cases ranged in age from 5 months to 52 years, and 13 of the 15 cases were non-Aboriginal people. The outbreak was investigated using telephone interviews and a standard questionnaire; 14 cases were interviewed but no particular source was identified. There have been no further cases since November.

Cryptosporidiosis

David Coleman and colleagues, from the Department of Health and Human Services, Tasmania, investigated a cluster of 45 cases of *Cryptosporidium* infection amongst residents in northern Tasmania in November 2001. Case patients were primarily children aged between 1 and 9 years and adults between 20 and 34 years (range: 1 to 41 years). The distribution of cases was spread over 7 local council districts. Investigations suggest that in the majority of cases farm animals were the likely source of infection. While cases reported various settings where animal contact occurred, the majority had attended an animal nursery at a local agricultural show. Of the first 19 cases, 16 (84%) attended the agricultural show with 14 of the 16 (88%) also reporting visiting the animal nursery. Person-to-person secondary transmission appears to be the likely mode of spread for later cases, with 10 of the 13 cases (77%) in a second peak reporting that at least one member of the household or a close contact had been ill prior to their own illness.

Sexually transmitted infections

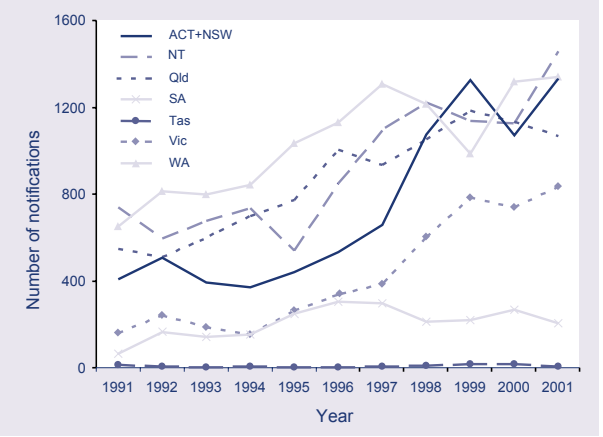
Congenital syphilis

A case of congenital syphilis was reported from the Kimberley region of Western Australia in a baby born in September. The mother had been diagnosed with infectious syphilis late in the third trimester of pregnancy. The last case of congenital syphilis notified in Western Australia was in 1992. The Kimberley region has experienced a resurgence of syphilis over the past several months.

Gonococcal infection

A total of 1,539 cases of gonococcal infection were notified in the final quarter of 2001, giving a notification rate of 32 cases per 100,000 population. This is an increase above the 5 year mean for the same reporting period (Figure 2). The highest notification rates were seen in the Northern Territory (757 cases per 100,000 population) and in Western Australia (79 cases per 100,000 population). There was no increase in case numbers in Tasmania and a decrease compared to 2000 in South Australia and Queensland. The increase seen in the Northern Territory reverses a decreasing trend from 1998 to 2000. Jan Savage from the AIDS/STD program of the Centre for Disease Control, Northern Territory Department of Health and Community Services, reported that the increases observed since 1995 in the Northern Territory are believed to reflect more acceptable (less invasive) methods of specimen collection, improved test sensitivity with the availability of PCR testing, and increased screening as part of 'well persons' health checks'.

Figure 2. Notifications of gonococcal infections, Australia, 1991 to 2001, by jurisdiction

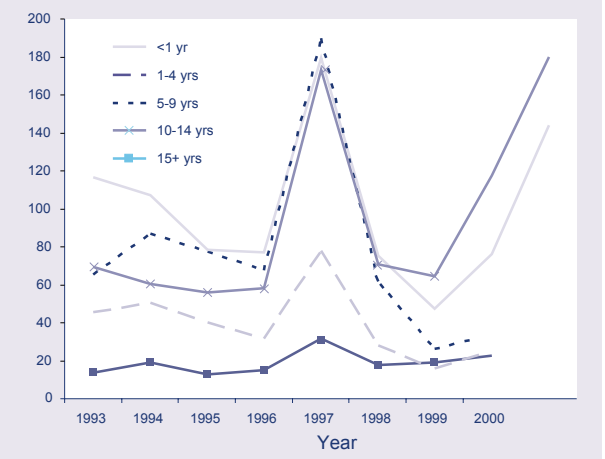


Vaccine preventable diseases

Pertussis

To date, a total of 3,210 cases of pertussis with an onset in the last quarter of 2001 have been reported to NNDSS, giving a national rate of 66 cases per 100,000 population. All jurisdictions showed an increase in pertussis notifications in the second half of 2001, apart from the Australian Capital Territory, where the three-year cyclic peak in notifications was observed in 2000. Highest notification rates for the final quarter of 2001 were received from South Australia (152 cases per 100,000 population), the Northern Territory (142 cases per 100,000 population), New South Wales (82 cases per 100,000 population) and Queensland (77 cases per 100,000 population). At the end of November 2001 the Communicable Diseases Network Australia issued a media release regarding pertussis, in response to the large number of notifications.

Figure 3. Rate of notification for pertussis, Australia, 1993 to 2001, by age group



Previous highlights for 2001 have noted the increase in pertussis notifications from all jurisdictions (apart from the Australian Capital Territory) for the current year. The notification rates by age group, from 1993 to 2001 are shown in Figure 3 (figure and commentary prepared by Heather Gidding, National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases). The three-year cycle of peaks in the notification rate for pertussis is evident, with high reporting rates in 1997 and 2001. As in 1997, all age groups have shown an increase in pertussis notifications in 2001, with the increase most evident in infants less than one year of age, and in the 10-14 year age group. The 1-4 year age group have shown a modest rise since 1999, attributed to

vaccine (DTP) given as part of the infant vaccination schedule. As at 31 December 2001, DTP uptake in Australian children 12-14 months inclusive was 92.2 per cent (3 doses) and 90.3 per cent for children 24-26 months (4 doses).[4] The rate for the 5- 9 year age group has not increased as dramatically in 2001 compared with the rise in 1997. This may be attributed to the introduction of a booster dose for 4-year-olds in 1994.

In Victoria, 852 notifications of pertussis were received in 2001, 85 per cent of which were received in the second half of the year. Notifications began to increase rapidly in September/October. Of the 622 notifications received in this 6 month period, 30 were in infants aged less than 6 months. There was one death in a 6-week-old infant in July.

In Queensland the largest number of pertussis cases for the 4-year period 1998 to 2001 occurred in 2001. There were 3 pertussis related deaths; one in the final quarter of 2001. Of the deaths, two were children under 1 year of age and one was a child in the 1-5 age range.

In the Northern Territory there were 72 cases of pertussis in the final quarter, including one death. This diagnosis was made on microbiological evidence at postmortem in a 5-month-old child for whom diagnosis of SIDS was being considered.

There have been no pertussis related deaths in Western Australia in the current reporting period and New South Wales reported there have been no pertussis related deaths in 2001.

Tetanus

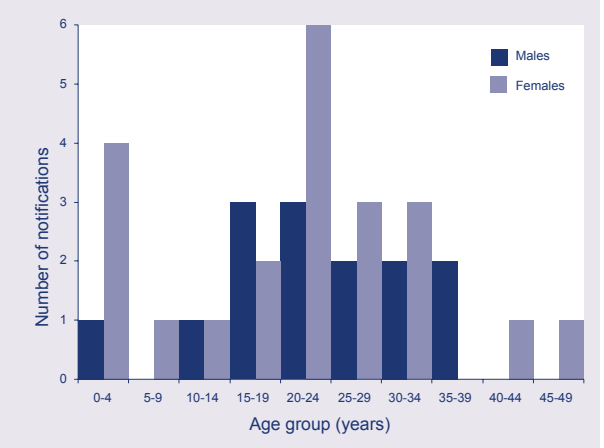
Two cases of tetanus with an onset in the final quarter of 2001 were reported to NNDSS, including an 82-year-old female from South Australia, and a 49-year-old male from Victoria. The vaccination history of both cases was uncertain.

Measles

There were 37 cases of measles reported with an onset of disease in the final quarter of 2001. The age and sex distribution of the 36 cases where the gender was recorded is shown in Figure 4. One additional case (whose gender was unrecorded) was in the 20-24 year age group.

The majority (22 of the 36 cases, 61%) were notified in Victoria. In that jurisdiction between 21 October and 31 December, 18 laboratory-confirmed measles cases were notified, of whom nine (50%) were hospitalised. All but one case (whose infection was acquired overseas) were epidemiologically linked, and were of the same genotype (D5), thus considered to be part of the same outbreak. Of the total number of cases from this jurisdiction, 88 per cent were aged 18 to 34 years, none of whom had a documented history of measles vaccination. A source for the outbreak was not identified.

Figure 4. Notification of measles, Australia 1 October to 31 December 2001, by age and sex



An outbreak of measles occurred in Western Australia after a 25-year-old woman became ill in late November, shortly after returning from a holiday in Bali. This woman infected 4 other individuals, who in turn each infected one other person. Of the 9 cases, 5 were aged 20-25 years, and the remaining 4 were older teenagers who had not been vaccinated. Four of the cases required hospitalisation.

There has been no endemic measles circulation in Western Australia for 3 years. In this period all 41 cases of measles occurring in Western Australia have been either imported by overseas visitors or returning holiday-makers, or transmitted from these imported cases to local residents. There have been 14 separate importations responsible for these cases.

While 2 cases of measles were recorded from New South Wales in the reporting period, they were not epidemiologically linked.

Mumps

There were 13 cases of mumps notified in the final quarter of 2001, including 7 cases from New South Wales, 4 cases from Western Australia and 2 cases from South Australia. Of the 13 cases, nine were males, and four were females. All but one (a 4-year-

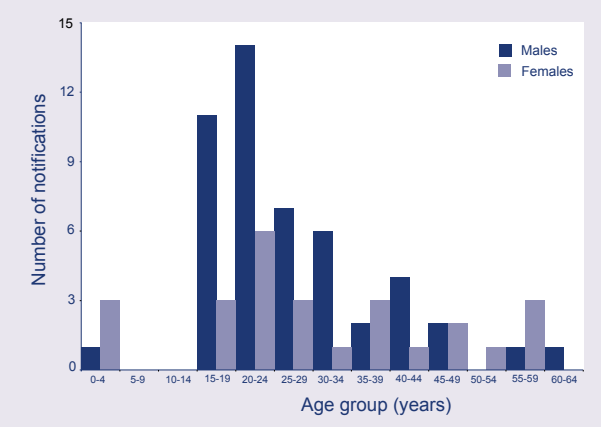
old male case notified in New South Wales) were aged over 20 years. The number of notifications in the current reporting period is lower than the average number of notifications received nationally in the same reporting period for the previous 5 years.

Rubella

There were 75 notifications of rubella with an onset in the final quarter of 2001. The majority of cases (65%) were males. The age/sex distribution of cases is shown in Figure 5. Seventeen cases (23% of all rubella notifications) were females of child bearing age (aged between 15 and 45 years). None of the 4 cases in the 0-4 year age group were congenitally acquired.

The notification rate of rubella for Queensland remains higher than all other jurisdictions, and 44 of the 75 cases (59%) reported during this period were from that jurisdiction. Of the 44 notifications from Queensland, 11 were in the age range 15-19 years and the remaining 33 were over 20 ages of age.

Figure 5. Notification of rubella, Australia 1 October to 31 December 2001, by age and sex



Influenza

Laboratory-confirmed influenza cases are now reported to NNDSS by all jurisdictions. While New South Wales and Victoria have ceased sentinel GP influenza surveillance for the season, national surveillance data consisting of laboratory reports through NNDSS and LabVISE and national and sentinel general practice schemes in the Northern Territory are reported fortnightly on the Communicable Diseases Australia web site http://www.health.gov.au/pubhlth/cdi/ozflu/flucurr.htm

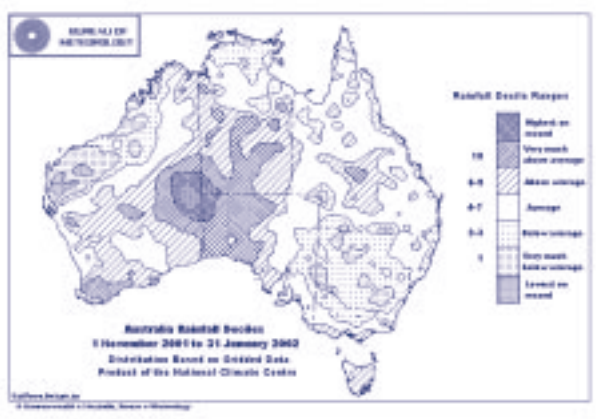
Haemophilus influenzae type b

There were 2 cases of *Haemophilus influenzae* type B infection (Hib) with an onset in the final quarter of 2001. Both cases were from Victoria. Further information was provided on one of these cases. A 5-year-old non-Aboriginal child from rural Victoria had documented evidence of 4 doses of Hib vaccine. The child initially had fever and red cheeks, and presented to a GP 2 days later with sore throat, dyspnoea and drooling. They were transferred to hospital with a provisional diagnosis of epiglottitis. While the child's throat swab was negative, blood cultures were positive for Hib (septicaemia). The child was treated successfully with intravenous ceftriaxone.

Vectorborne diseases

A number of jurisdictions have reported that the expected rise in arbovirus infections did not occur at the end of 2001. This was attributed to the cooler weather conditions and lack of rain in some areas of the country (Figure 6).

Figure 6. Australia rainfall deciles, 1 November 2001 to 31 January 2002



Source: Australian Bureau of Meterology Website: http://www.bom.gov.au

According to the Bureau of Meterology:

'November to January rainfall shows above to well above average over the southern two-thirds of the Northern Territory, the western two-thirds of South Australia, and the southern half of Western Australia. The highest on record rainfall area covering the tri-state border area of Western Australia, the Northern Territory, and South Australia derives mainly from

record rains in December. Victoria's far south and Tasmania were also wetter than average. There were two significant areas of below average falls for the three months. The first covered the northern areas of Western Australia and the far north of the Northern Territory. After a promising start to the monsoon in November, both December and January were generally much drier than average. The second region covers most of New South Wales and northern Victoria, together with some parts of eastern South Australia.'

Figure 7 shows the number of Ross River and Barmah Forest virus disease notifications. Comparisons to the previous 4 years are shown in Figure 8 and 9 for Ross River and Barmah Forrest, respectively. Interestingly, it does appear that notifications of Ross River virus disease are down compared to previous years, but numbers of Barmah Forest virus disease, which peak later in the season compared with Ross River virus cases do not appear unusually low.

No reports of Murray Valley encephalitis virus infection were recorded with an onset in the final quarter of 2001. Information regarding sentinel chicken activity in the reporting period is available in this issue (see page 86).

Figure 7. Notifications of Ross River and Barmah Forrest virus, Australia, 2001, by month

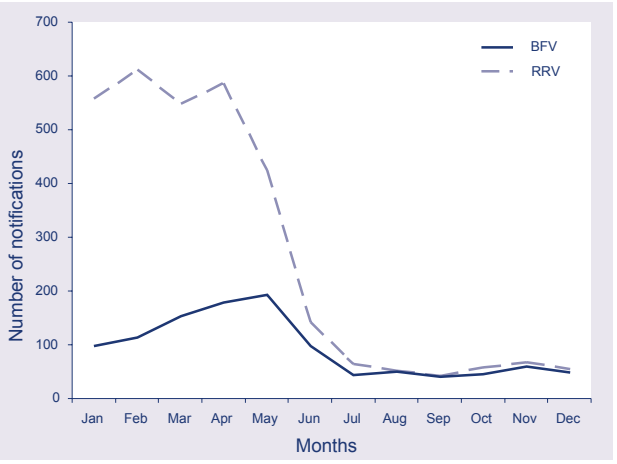


Figure 8. Notifications of Ross River virus, Australia, 1997 to 2001, by month

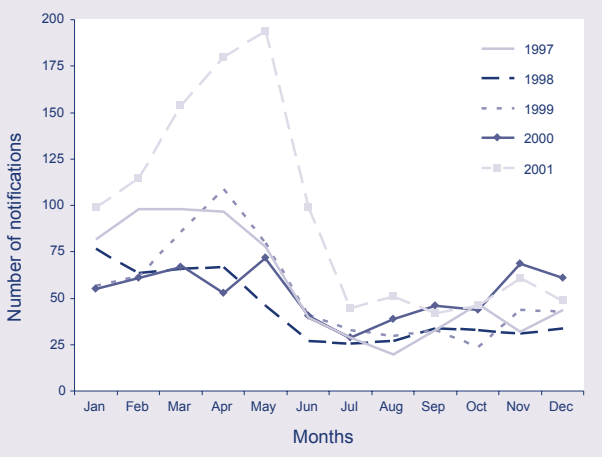
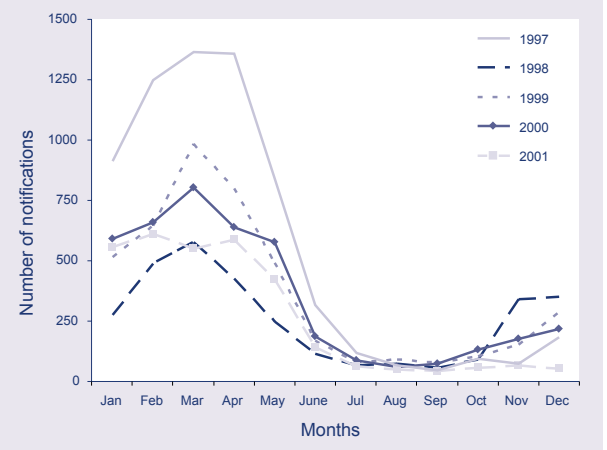


Figure 9. Notifications of Barmah Forrest virus, Australia, 1997 to 2001, by month



Other bacterial infections

Legionellosis

There were 76 cases of legionellosis reported to NNDSS with an onset in the final quarter of 2001, including 22 cases from Victoria. In this jurisdiction an outbreak of 3 cases of *Legionella pneumophila* serogroup 1 (diagnosed by urinary antigen) was detected in October 2001. Two of the cases were confirmed by culture. Despite extensive environmental investigation, no source was identified. Enhanced surveillance was undertaken but no further cases were identified.

In the Northern Territory there was one case of legionellosis in a 66-year-old Aboriginal man. The organism was identified as *L. longbeachae*.

While there were no outbreaks of legionellosis in New South Wales in the last quarter of 2001, there were 16 sporadic cases including 7 cases identified as *L. longbeachae*, 1 *L. pneumophila* type 2, 6 *L. pneumophila* not further specified, and two with typing information unavailable.

Meningococcal infection

The increasing number of meningococcal cases reported nationally continued in the final quarter of 2001, with 148 cases received nationally. Overall, the national reporting rate for this period was 3.1 cases per 100,000 population. Jurisdictions with rates higher than the national rate included Tasmania (7.7 cases per 100,000 population), the Northern Territory (6.1 cases per 100,000 population), South Australia (4.8 cases per 100,000 population), Queensland (3.7 cases per 100,000 population) and Victoria (3.3 cases per 100,000 population).

Queensland reported the highest proportion of cases (27%) in the reporting period. The number of notifications of invasive meningococcal diseases was the highest Queensland has recorded for 4 years. Apart from a small cluster of 2 cases in a boarding school, all were sporadic cases.

In Tasmania during the period 23 September to 15 October 2001 a total of 10 confirmed cases of invasive meningococcal disease were reported from greater Hobart (population 194,000, giving a cumulative incidence of 52 per 100,000 population for this period). Three patients presented with clinical meningitis while the remainder developed septicaemia. Three female patients aged 18, 21 and 60 years subsequently died. The age range was 18 to 60 years with 8 cases aged between 18 and 22 years. Blood cultures from 6 cases were confirmed as serogroup C. All had identical pulse field gel electrophoresis (PFGE) patterns and have been shown to belong to a hyperinvasive strain C (2a:P1.5,2). Two cases were diagnosed on the basis of PCR from cerebrospinal fluid and two using serology alone. Molecular typing of 5 serogroup C isolates from patients earlier in 2001 (also from greater Hobart) showed that these were identical to the outbreak strain. One of these cases (a female aged 25) also died. Group C isolates obtained from cases from elsewhere in Tasmania were different than the Hobart cases. Since October there have been 2 further cases (including one death) of invasive group C meningococcal disease. Molecular typing is in progress on these isolates. In the September/October period a common factor was attendance at nightclubs in Hobart and numerous public warnings were made in relation to the sharing of drinks, cigarettes and other smoking activities.

Other non-notifiable diseases

VRE outbreak, Perth

Western Australia experienced Australia's largest yet recorded outbreak of vancomyin resistant *Enterococcus* (VRE) in the latter part of 2001. In late July, 2001 a vancomycin resistant *Enterococcus* spp was isolated, from a patient in the Intensive Care Unit at Royal Perth Hospital. Screening of the patients' contacts revealed further VRE colonised individuals, leading to the investigation of contacts of VRE colonised patients. A specialised computer system was used to track approximately 4,000 patients who had contact with colonised individuals during the outbreak. In October, contact tracing was broadened to include screening of all hospital patients.

Vancomycin resistant *Enterococcus faecium* (vanB) was isolated among 165 patients (4 infections, 161 colonised), the vast majority of which were detected through an active screening program. No deaths were associated with VRE infection. Cases were originally detected among renal and intensive care patients with later spread to other wards such as the Haematology Unit. Antibiotic usage among this patient population appeared to be high. Patient cohorting, screening and extensive ward cleaning was employed to control the outbreak. A case control study is now in progress to assess the risk factors for VRE acquisition during this outbreak.

The outbreak had been terminated by early January 2002, following implementation of a co-ordinated control program at Royal Perth Hospital and across other Western Australian health-care facilities. VRE was first detected in Western Australia in 1996, and only around 20 isolates, mostly sporadic, had previously been identified.

Restaurant-associated Norwalk-like virus outbreaks in Western Australia

Two separate outbreaks, a week apart, of apparent foodborne illness were reported in December by work groups that had attended the same Perth restaurant. The nature of illness in both groups was similar, with onset of nausea, vomiting and diarrhoea within 12-48 hours of the meal, and relatively short duration of illness of 1-2 days.

Initial microbiological investigations, including PCR for calicivirus genotype 2 in food and faecal specimens, did not reveal a cause. However, several faecal specimens were subsequently re-tested at the Victorian Infectious Disease Reference Laboratory, revealing a genotype 1 Norwalk-like virus was responsible for illness in both outbreaks. Epidemiological investigations did not conclusively indicate a suspect food source.

LabVISE

There were 6,212 reports to LabVISE from 14 laboratories in final quarter of 2001 (Table 4). In this reporting period, there were 4,171 viral infections recorded (67% of all reports) and 2,041 reports of bacteria and other microorganisms (33% of all reports). Rotavirus was the most regularly identified virus in this period, with a total of 531 reports, followed by varicella zoster (524 reports). Among the bacterial isolates the largest numbers of reports were of *Chlamydia* spp (928 reports) and *Treponema pallidum* (347 reports). The reports of *Treponema pallidum* equate well with the number of syphilis notifications (n=342) received by NNDSS during the same period while the number of *Chlamydia* infections reported to NNDSS was approximately 4 times that received via LabVISE. This may be due to the majority of diagnoses of syphilis being undertaken in public health laboratories that report to LabVISE. In comparison, the availability of nucleic acid tests for *Chlamydia* in a large number of public and private laboratories leads to a large proportion of diagnoses being undertaken outside the LabVISE network.

References

1. Wheeler JG. Sethi D. Cowden JM. Wall PG. Rodrigues LC. Tompkins DS. Hudson MJ. Roderick PJ. Study of infectious intestinal disease in England: rates in the community, presenting to general practice, and reported to national surveillance. The Infectious Intestinal Disease Study Executive. BMJ 1999;318:1046-50.

2. National Enteric Pathogen Surveillance Scheme. Human annual report 2000 NEPSS issue 2, 2001 available from Microbiological Diagnostic Unit, University of Melbourne. E-mail joanp@unimelb.edu.au.

3. Lesjak M, Delpech V, Ferson M, Morgan K, Paraskevopoulos P, McAnulty J. A Salmonella Mgulani cluster in New South Wales. Comm Dis Intell 2000;24:304-305.

4. Australian Childhood Immunisation Register statistical tables. Table 4 http://www.hic.gov.au/annualreport/statistics/acir_table4.htm.

Tables

A summary of diseases currently being reported by each jurisdiction is provided in Table 1. There were 24,853 notifications to the National Notifiable Diseases Surveillance System (NNDSS) with a notification date between 1 October and 31 December 2001 (Table 2). The notification rate of diseases per 100,000 population for each State or Territory is presented in Table 3.

There were 5,647 reports received by the Virology and Serology Laboratory Reporting Scheme (LabVISE) in the reporting period, 1 October and 31 December 2001 (Tables 4 and 5).

The Australian Sentinel Practice Research Network (ASPREN) data for weeks 40-43 to 48-52, 2001, ending 30 December 2001, are included in this issue of *Communicable Diseases Intelligence* (Table 6).

Table 1. Reporting of notifiable diseases by jurisdiction (4th quarter 2001)

Disease	Data received from:*
Bloodborne diseases	
Hepatitis B (incident)	All jurisdictions
Hepatitis B (unspecified)	All jurisdiction, except NT
Hepatitis C (incident)	All jurisdictions except Queensland
Hepatitis C (unspecified)	All jurisdictions
Hepatitis D	All jurisdictions
Gastrointestinal diseases	
Botulism	All jurisdictions
Campylobacterosis	All jurisdictions except NSW
Cryptosporidiosis	All jurisdictions
Haemolytic uraemic syndrome	All jurisdictions
Hepatitis A	All jurisdictions
Hepatitis E	All jurisdictions
Listerosis	All jurisdictions
Salmonellosis	All jurisdictions
Shigellosis	All jurisdictions
SLTEC,VTEC	All jurisdictions
Typhoid	All jurisdictions
Quarantinable	
Cholera	All jurisdictions
Plague	All jurisdictions
Rabies	All jurisdictions
Viral haemorrhagic fever	All jurisdictions
Yellow fever	All jurisdictions
Sexually transmissible infections	
Chlamydial infection	All jurisdictions
Donovanosis	All jurisdictions except SA
Gonococcal infection	All jurisdictions
Syphilis	All jurisdictions
Vaccine preventable diseases	
Diphtheria	All jurisdictions
Haemophilus influenzae type b	All jurisdictions
Influenza	All jurisdictions
Measles	All jurisdictions
Mumps	All jurisdictions
Pertussis	All jurisdictions
Pneumoccocal disease	All jurisdictions
Poliomyeltis	All jurisdictions
Rubella	All jurisdictions
Tetanus	All jurisdictions
Vectorborne diseases	
Arbovirus infection NEC	All jurisdictions
Barmah Forest virus infection	All jurisdictions
Dengue	All jurisdictions
Japanese encephalitis	All jurisdictions
Kunjin	All jurisdictions except ACT†
Malaria	All jurisdictions
Murray Valley encephalitis	All jurisdictions†
Ross River virus infection	All jurisdictions
Zoonoses	
Anthrax	All jurisdictions except SA
Australian bat lyssavirus	All jurisdictions
Brucellosis	All jurisdictions
Leptospirosis	All jurisdictions
Ornithosis	All jurisdictions
Other lyssaviruses (NEC)	All jurisdictions
Q fever	All jurisdictions
Other diseases	
Legionellosis	All jurisdictions
Leprosy	All jurisdictions
Meningococcal infection	All jurisdictions
Tuberculosis	All jurisdictions

* Jurisdictions may not yet be reporting a disease either because legislation has not yet made that disease notifiable in that jurisdiction, or because notification data for that disease are not yet being reported to the Commonwealth

† In the Australian Capital territory, infections with Murray Valley encephalitis virus and kunjin virus are combined under Murray Valley encephalitis

Table 2. Notifications of diseases received by State and Territory health authorities in the period 1 October to 31 December 2001, by date of notification*

Disease	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total 4th quarter 2001[1]	Total 3rd quarter 2001[1]	Total 4th quarter 2000[1]	Last five years mean 4th quarter	Year to date 2001	Last 5 years YTD mean	Ratio†
Bloodborne diseases															
Hepatitis B (incident)	0	25	1	7	6	2	23	8	72	116	83	67	402	289	1.1
Hepatitis B (unspecified)	12	1,021	NN	170	60	2	484	86	1,835	2,333	2,003	1,696	8,141	7,137	1.1
Hepatitis C (incident)	2	28	0	NN	15	0	5	41	91	137	99	77	536	266	1.2
Hepatitis C (unspecified)	57	1,177	55	713	139	89	1,297	200	3,727	4,129	4,491	4,267	15,898	17,813	0.9
Hepatitis D	0	0	0	0	0	0	4	0	4	3	12	7	21	18	0.6
Gastrointestinal diseases															
Botulism	0	0	0	0	0	0	0	0	0	0	2	0	2	1	0.0
Campylobacterosis[2]	116	-	63	1,016	928	231	1,532	807	4,693	4,214	3,748	3,693	16,062	12,675	1.3
Cryptosporidiosis‡	0	54	42	151	12	61	76	49	445	243	232	N/A	1,612	N/A	N/A
Haemolytic uraemic syndrome	0	1	0	0	0	0	0	0	1	2	8	4	5	11	0.2
Hepatitis A	6	79	5	24	6	1	25	9	155	150	131	372	530	1,999	0.4
Hepatitis E	0	0	0	0	0	0	1	0	1	1	3	1	10	5	0.7
Listerosis	0	3	0	5	1	0	2	3	14	15	16	15	62	65	0.9
Salmonellosis	22	435	95	628	158	33	275	179	1,825	1,189	1,543	1,632	7,075	6,732	1.1
Shigellosis	1	18	21	25	8	0	17	27	117	132	122	149	564	620	0.8
SLTEC,VTEC[3]	0	0	0	4	5	0	0	2	11	7	6	7	46	23	1.5
Typhoid	0	7	0	3	1	0	3	1	15	20	12	15	79	71	1.0
Quarantinable diseases															
Cholera	0	0	0	0	0	0	0	0	0	2	0	0	3	3	0.0
Plague	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Rabies	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Viral haemorrhagic fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0
Yellow fever	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0

Table 2 continued. Notifications of diseases received by State and Territory health authorities in the period 1 October to 31 December 2001, by date of notification*

Disease	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total 4th quarter 2001[1]	Total 3rd quarter 2001[1]	Total 4th quarter 2000[1]	Last five years mean 4th quarter	Year to date 2001	Last 5 years YTD mean	Ratio†
Sexually transmissible diseases															
Chlamydial infection	80	1,024	314	1,324	347	88	1,053	680	4,910	5,066	4,413	3,042	20,052	11,991	1.6
Donovanosis	0	0	2	2	NN	0	0	2	6	10	2	6	29	31	1.0
Gonococcal infection[4]	3	320	374	226	27	6	207	376	1,539	1,583	1,137	1,191	6,371	5,123	1.3
Syphilis[5]	6	135	120	14	6	7	1	35	324	352	439	384	1,320	1,655	0.8
Vaccine preventable diseases															
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0.0
Haemophilus influenzae type b	0	0	0	0	0	0	2	0	2	4	7	8	25	41	0.2
Influenza‡	3	40	32	34	34	0	10	47	200	1,005	55	N/A	1,317	N/A	N/A
Measles	1	2	0	1	1	0	22	10	37	16	26	116	139	393	0.3
Mumps	0	7	0	0	2	0	0	4	13	19	35	37	112	179	0.4
Pertussis	15	1,336	70	695	570	45	351	128	3,210	3,028	1,846	2,250	9,339	6,281	1.4
Pneumococcal disease‡	3	105	20	79	25	19	94	43	388	651	164	N/A	1,622	N/A	N/A
Rubella[6]	1	13	0	44	3	0	13	1	75	70	142	321	258	1,078	0.2
Tetanus	0	0	0	0	1	0	1	0	2	0	3	2	3	5	1.3
Vectorborne diseases															
Arbovirus infection NEC	0	0	0	0	0	0	0	0	0	8	3	9	37	54	0.0
Barmah Forest virus infection	0	51	0	91	0	0	3	14	159	140	172	124	1,138	674	1.3
Dengue	1	13	3	3	0	0	2	4	26	47	11	70	180	231	0.4
Japanese encephalitis	0	0	0	0	0	0	0	0	0	0	0	N/A	0	N/A	N/A
Kunjin virus infection	-	0	0	0	0	0	0	0	0	0	0	N/A	2	N/A	N/A
Malaria	0	40	11	52	4	1	14	8	130	160	176	146	698	789	0.9
Murray Valley encephalitis	0	0	0	0	0	0	0	0	0	0	0	N/A	3	N/A	N/A
Ross River virus infection	0	35	12	94	14	1	7	21	184	160	514	530	3,223	5,250	0.3

Table 2 continued. Notifications of diseases received by State and Territory health authorities in the period 1 October to 31 December 2001, by date of notification*

Disease	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Total 4th quarter 2001[1]	Total 3rd quarter 2001[1]	Total 4th quarter 2000[1]	Last five years mean 4th quarter	Year to date 2001	Last 5 years YTD mean	Ratio†
Zoonoses															
Anthrax‡	0	0	0	0	NN	0	0	0	0	0	0	N/A	0	N/A	N/A
Australian bat lyssavirus‡	0	0	0	0	0	0	0	0	0	0	0	N/A	0	N/A	N/A
Brucellosis	0	0	0	4	0	0	0	0	4	4	10	13	19	40	0.3
Leptospirosis	0	12	3	9	1	2	14	1	42	41	65	56	240	220	0.7
Other lyssavirus‡	1	9	0	0	6	0	18	3	37	0	0		0	N/A	N/A
Ornithosis	0	0	0	0	0	0	0	0	0	25	40	28	131	74	0.0
Q fever	0	39	0	99	5	0	6	6	155	141	146	139	671	559	1.1
Other bacterial infections															0.0
Legionellosis	0	16	1	6	14	0	22	17	76	60	85	66	292	268	1.1
Leprosy	0	1	0	0	0	0	0	0	1	1	1	1	4	7	0.7
Meningococcal infection	0	30	3	34	18	9	40	14	148	242	168	130	672	509	1.1
Tuberculosis	3	73	4	6	2	2	77	12	179	241	259	252	887	991	0.7
Total	**333**	**6,149**	**1,251**	**5,563**	**2,419**	**599**	**5,701**	**2,838**	**24,853**	**25,767**	**22,430**	**20,927**	**99,833**	**84,170**	**1.2**

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. Not reported for NSW because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
3. Infections with Shiga-like toxin (verotoxin) producing E. coli (SLTEC/VTEC).
4. Northern Territory, Qld, SA , Vic and WA: includes gonococcal neonatal ophthalmia.
5. Includes congenital syphilis.
6. Includes congenital rubella.

* Date of notification = a composite of three dates: (i) the true onset date from a clinician, if available, (ii) the date the laboratory test was ordered, or (iii) the date reported to the public health authority.

† Ratio = ratio of current month total to mean of the same reporting period in last 5 years calculated as described above.

‡ Notifiable from January 2001 only.

NA Not calculated as only notifiable for under 5 years.

NN Not Notifiable

NEC Not elsewhere classified.

\- Elsewhere classified.

Table 3. Notification rates of diseases by State or Territory, 1 October to 31 December 2001. (Rate per 100,000 population)

	State or Territory								
Disease	**ACT**	**NSW**	**NT**	**Qld**	**SA**	**Tas**	**Vic**	**WA**	**Australia**
Bloodborne diseases									
Hepatitis B (incident)	0.0	1.5	2.0	0.8	1.6	1.7	1.9	1.7	1.5
Hepatitis B (unspecified)	15.3	62.5	NN	18.7	16.0	1.7	40.1	18.0	38.3
Hepatitis C (incident)	2.5	1.7	0.0	NN	4.0	0.0	0.4	8.6	2.3
Hepatitis C (unspecified)	72.6	72.1	111.3	78.6	37.0	75.7	107.4	41.9	76.9
Hepatitis D	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Gastrointestinal diseases									
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Campylobacterosis[2]	147.7	-	127.5	112.0	247.1	196.5	126.9	169.0	146.0
Cryptosporidiosis[‡]	0.0	3.3	85.0	16.6	3.2	51.9	6.3	10.3	9.2
Haemolytic uraemic syndrome	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hepatitis A	7.6	4.8	10.1	2.6	1.6	0.9	2.1	1.9	3.2
Hepatitis E	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Listerosis	0.0	0.2	0.0	0.6	0.3	0.0	0.2	0.6	0.3
Salmonellosis	28.0	26.6	192.3	69.2	42.1	28.1	22.8	37.5	37.7
Shigellosis	1.3	1.1	42.5	2.8	2.1	0.0	1.4	5.7	2.4
SLTEC,VTEC[3]	0.0	0.0	0.0	0.4	1.3	0.0	0.0	0.4	0.2
Typhoid	0.0	0.4	0.0	0.3	0.3	0.0	0.2	0.2	0.3
Quarantinable diseases									
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plague	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rabies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Viral haemorrhagic fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow fever	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sexually transmissible diseases									
Chlamydial infection	101.9	62.7	635.7	146.0	92.4	74.9	87.2	142.4	101.3
Donovanosis	0.0	0.0	4.0	0.2	NN	0.0	0.0	0.4	0.1
Gonococcal infection[4]	3.8	19.6	757.1	24.9	7.2	5.1	17.1	78.8	31.8
Syphilis[5]	7.6	8.3	242.9	1.5	1.6	6.0	0.1	7.3	6.7

Table 3 continued. Notification rates of diseases by State or Territory, 1 October to 31 December 2001. (Rate per 100,000 population)

	State or Territory								
Disease[1]	**ACT**	**NSW**	**NT**	**Qld**	**SA**	**Tas**	**Vic**	**WA**	**Australia**
Vaccine preventable diseases									
Diphtheria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemophilus influenzae type b	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0
Influenza‡	3.8	2.4	64.8	3.7	9.1	0.0	0.8	9.8	4.1
Measles	1.3	0.1	0.0	0.1	0.3	0.0	1.8	2.1	0.8
Mumps	0.0	0.4	0.0	0.0	0.5	0.0	0.0	0.8	0.3
Pertussis	19.1	81.8	141.7	76.6	151.8	38.3	29.1	26.8	66.2
Pneumococcal disease‡	3.8	6.4	40.5	8.7	6.7	16.2	7.8	9.0	8.0
Rubella[6]	1.3	0.8	0.0	4.9	0.8	0.0	1.1	0.2	1.5
Tetanus	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0
Vectorborne diseases									
Arbovirus infection NEC	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Barmah Forest virus infection	0.0	3.1	0.0	10.0	0.0	0.0	0.2	2.9	3.3
Dengue	1.3	0.8	6.1	0.3	0.0	0.0	0.2	0.8	0.5
Japanese encephalitis‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kunjin virus infection‡		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Malaria	0.0	2.4	22.3	5.7	1.1	0.9	1.2	1.7	2.7
Murray Valley encephalitis‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ross River virus infection	0.0	2.1	24.3	10.4	3.7	0.9	0.6	4.4	3.8
Zoonoses									
Anthrax‡	0.0	0.0	0.0	0.0	NN	0.0	0.0	0.0	0.0
Australian bat lyssavirus‡	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Brucellosis	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.1
Leptospirosis	0.0	0.7	6.1	1.0	0.3	1.7	1.2	0.2	0.9
Other lyssavirus‡	1.3	0.6	0.0	0.0	1.6	0.0	1.5	0.6	0.8
Ornithosis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q fever	0.0	2.4	0.0	10.9	1.3	0.0	0.5	1.3	3.2
Other bacterial infections									
Legionellosis	0.0	1.0	2.0	0.7	3.7	0.0	1.8	3.6	1.6
Leprosy	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meningococcal infection	0.0	1.8	6.1	3.7	4.8	7.7	3.3	2.9	3.1
Tuberculosis	3.8	4.5	8.1	0.7	0.5	1.7	6.4	2.5	3.7

1. Rates are subject to retrospective revision.
2. Not reported for New South Wales because it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.
3. Infections with Shiga-like toxin (verotoxin) producing E. coli (SLTEC/VTEC).
4. Northern Territory, Queensland, South Australia , Victoria and Western Australia: includes gonococcal neonatal ophthalmia.
5. Includes congenital syphilis.
6. Includes congenital rubella.

NN Not Notifiable

NEC Not Elsewhere Classified.

- Elsewhere Classified

Table 4. Virology and serology laboratory reports by State or Territory for the reporting period of 1 October to 31 December 2001[1], and total reports for the year[2]

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 2001	This period 2000	Year period 2001[3]	Year to date 2000
Measles, mumps, rubella												
Measles virus	2	3	-	-	1	-	-	-	6	25	44	172
Mumps virus	-	-	1	-	-	-	1	7	9	12	49	58
Rubella virus	-	4	-	6	3	-	3	2	18	32	51	145
Hepatitis viruses												
Hepatitis A virus	-	3	2	10	2	-	1	7	25	80	146	375
Hepatitis D virus	-	1	-	-	-	-	2	-	3	3	9	8
Hepatitis E virus	-	-	-	-	-	2	-	-	2	-	4	1
Arboviruses												
Ross River virus	-	3	12	54	81	-	2	17	169	250	1,268	1,423
Barmah Forest virus	-	2	1	31	5	-	-	9	48	46	169	180
Dengue not typed	-	-	2	-	-	-	-	6	8	41	175	85
Murray Valley encephalitis virus	-	-	1	-	-	-	-	-	1	-	20	2
Flavivirus (unspecified)	-	-	-	-	-	-	1	-	1	6	40	27
Adenoviruses												
Adenovirus type 1	-	-	-	-	2	-	-	-	2	6	8	14
Adenovirus type 3	-	-	-	-	1	-	1	-	2	13	18	35
Adenovirus type 4	-	-	-	-	1	-	-	-	1	1	5	15
Adenovirus type 5	-	-	-	-	1	-	-	-	1	2	8	6
Adenovirus type 6	-	-	-	-	3	-	-	-	3	-	3	-
Adenovirus type 7	-	-	-	-	-	1	2	-	3	3	8	7
Adenovirus type 8	-	-	-	-	-	-	2	-	2	-	3	1
Adenovirus type 37	-	-	-	-	-	-	1	-	1	1	11	11
Adenovirus type 40	-	-	-	-	-	-	-	4	4	14	86	74
Adenovirus not typed/pending	4	56	3	9	106	1	42	62	283	354	1,039	1,132
Herpes viruses												
Herpes virus type 6	-	-	-	-	-	-	-	2	2	5	6	16
Cytomegalovirus	2	69	5	88	141	9	87	38	439	380	1,312	1,220
Varicella-zoster virus	5	25	8	170	48	3	76	189	524	489	1,494	1,658
Epstein-Barr virus	-	19	5	113	209	-	39	75	460	669	1,926	2,196
Other DNA viruses												
Papovavirus group	-	-	-	-	-	-	-	1	1	1	7	12
Molluscum contagiosum	-	-	-	-	-	-	-	2	2	2	11	15
Parvovirus	-	2	5	78	18	-	6	32	141	90	389	437
Picornavirus family												
Coxsackievirus A9	-	2	-	-	-	-	-	-	2	2	11	10
Coxsackievirus A16	-	-	-	-	-	-	2	-	2	-	8	15
Coxsackievirus B1	-	-	-	-	1	-	2	-	3	-	4	1
Coxsackievirus B4	-	-	-	-	-	-	10	-	10	3	16	3
Coxsackievirus B5	-	-	-	-	1	-	1	-	2	2	5	7
Coxsackievirus B untyped/pending	-	-	-	-	-	-	1	-	1	-	1	-
Echovirus type 3	-	1	-	-	-	-	-	-	1	2	2	5
Echovirus type 11	-	1	-	-	-	-	-	-	1	33	7	166
Echovirus type 18	-	1	-	-	-	-	-	-	1	-	1	-
Echovirus type 30	-	2	-	-	-	-	5	-	7	9	121	17
Poliovirus type 1 (uncharacterised)	1	10	-	-	-	-	-	-	11	9	22	26
Poliovirus type 2 (uncharacterised)	-	3	-	1	-	-	-	-	4	7	8	16

Table 4 continued. Virology and serology laboratory reports by State or Territory for the reporting period of 1 October to 31 December 2001[1], and total reports for the year[2]

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 2001	This period 2000	Year period 2001[3]	Year to date 2000
Picornavirus family												
Poliovirus type 3 (uncharacterised)	-	3	-	-	-	-	-	-	3	2	8	8
Poliovirus not typed/pending	-	-	-	-	-	-	1	-	1	1	1	1
Rhinovirus (all types)	2	80	2	1	7	-	6	39	137	181	420	501
Enterovirus type 71 (BCR)	1	4	-	-	-	-	-	1	6	7	6	15
Enterovirus not typed/pending	-	4	4	6	1	6	38	89	148	153	815	753
Ortho/paramyxoviruses												
Influenza A virus	10	26	6	12	218	1	28	163	464	199	1,499	1,898
Influenza B virus	4	30	-	8	63	1	15	26	147	34	580	279
Parainfluenza virus type 1	-	1	-	-	9	-	-	-	10	8	230	44
Parainfluenza virus type 2	-	-	-	-	3	-	-	2	5	18	36	114
Parainfluenza virus type 3	-	62	-	19	50	-	29	117	277	306	516	803
Respiratory syncytial virus	-	52	1	11	45	1	19	38	167	394	2,735	3,059
Ortho/paramyxoviruses												
Influenza A virus	10	26	6	12	218	1	28	163	464	199	1,499	1,898
Influenza B virus	4	30	-	8	63	1	15	26	147	34	580	279
Parainfluenza virus type 1	-	1	-	-	9	-	-	-	10	8	230	44
Parainfluenza virus type 2	-	-	-	-	3	-	-	2	5	18	36	114
Parainfluenza virus type 3	-	62	-	19	50	-	29	117	277	306	516	803
Respiratory syncytial virus	-	52	1	11	45	1	19	38	167	394	2,735	3,059
Other RNA viruses												
HTLV-1	-	-	1	-	-	-	-	3	4	3	9	12
Rotavirus	1	191	-	-	192	6	89	52	531	624	1,771	2,246
Norwalk agent	-	-	-	-	7	-	58	-	65	8	82	59
Other												
Chlamydia trachomatis not typed	10	133	35	222	204	4	28	292	928	933	3,154	3,295
Chlamydia psittaci	1	-	-	-	-	2	30	2	35	16	102	78
Mycoplasma pneumoniae	-	17	5	65	56	3	53	37	236	342	686	1,125
Mycoplasma hominis	-	2	-	-	-	-	-	-	2	1	8	5
Coxiella burnetii (Q fever)	-	3	-	21	2	-	10	11	47	54	101	221
Rickettsia prowazeki	-	-	-	-	-	-	1	-	1	-	2	-
Rickettsia australis	-	-	-	-	-	-	1	-	1	-	2	2
Rickettsia tsutsugamushi	-	-	-	-	-	-	-	-	1	-	11	2
Rickettsia - Spotted fever group	-	-	-	-	-	5	-	-	23	-	44	1
Rickettsia spp - other	-	-	-	-	-	-	-	3	3	2	12	13
Streptococcus group A	-	5	10	64	-	-	21	-	100	156	348	368
Yersinia enterocolitica	-	3	-	2	-	-	-	1	6	1	15	10
Bordetella pertussis	-	40	2	21	87	-	80	10	240	290	689	845
Bordetella parapertussis	-	-	-	-	-	-	1	-	1	-	1	-
Legionella pneumophila	-	-	-	-	1	-	8	2	11	1	44	17
Legionella longbeachae	-	-	-	-	9	-	1	6	16	30	59	51
Legionella species	-	-	-	-	-	-	3	-	3	-	5	-
Cryptococcus species	-	1	-	-	6	-	-	-	7	3	18	9
Leptospira species	-	-	1	7	10	-	-	3	21	20	63	55
Treponema pallidum	-	50	75	80	130	-	-	12	347	332	909	774
Entamoeba histolytica	-	-	-	2	-	-	4	-	6	4	17	7
Toxoplasma gondii	-	-	-	-	1	-	3	-	4	4	16	9
Echinococcus granulosus	-	1	-	-	-	-	-	1	2	3	18	4
Total	**43**	**915**	**187**	**1,101**	**1,725**	**45**	**814**	**1,363**	**6,212**	**6,722**	**23,547**	**26,274**

1. State or Territory of postcode, if reported, otherwise State or Territory of reporting laboratory.
2. From January 2000 data presented are for reports with report dates in the current period. Previously reports included all data received in that period.
3. Totals comprise data from all laboratories. 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.

– No data received this period.

Table 5. Virology and serology laboratory reports by laboratories for the reporting period 1 October to 31 December 2001[1]

	Laboratory	October 2001	November 2001	December 2001	Total this period
Australian Capital Territory	The Canberra Hospital	-	54	-	**54**
New South Wales	Institute of Clinical Pathology & Medical Research, Westmead	115	143	91	**349**
	New Children's Hospital, Westmead	102	72	32	**206**
	Royal Prince Alfred Hospital, Camperdown	55	25	8	**88**
	South West Area Pathology Service, Liverpool	131	112	21	**264**
Queensland	Queensland Medical Laboratory, West End	521	244	366	**1,131**
	Townsville General Hospital	-	-	-	**-**
South Australia	Institute of Medical and Veterinary Science, Adelaide	883	744	501	**2128**
Tasmania	Northern Tasmanian Pathology Service, Launceston	14	10	3	**27**
Victoria	Monash Medical Centre, Melbourne	14	-	-	**14**
	Rickettsia Reference Laboratory, Geelong	-	-	-	**-**
	Royal Children's Hospital, Melbourne	54	-	-	**54**
	Victorian Infectious Diseases Reference Laboratory, Fairfield	107	61	112	**280**
Western Australia	PathCentre Virology, Perth	428	205	231	**864**
	Princess Margaret Hospital, Perth	65	37	11	**113**
	Western Diagnostic Pathology	-	39	36	**75**
Total		**2,489**	**1,746**	**1,412**	**5,647**

1. The complete list of laboratories reporting for the 12 months, January to December 2001, will appear in every report regardless of whether reports were received in this reporting period. Reports are not always received from all laboratories.

\- Nil reports

Table 6. Australian Sentinel Practice Research Network reports, weeks 40-43 to 48-52, 2001

week number: / ending on:	40-43 28 October 2001		44-47 25 November 2001		48-52 30 December 2001	
Doctors reporting:	174		193		151	
Total encounters:	20,910		23,493		17677	
Condition	**Reports**	**Rate per 1,000 encounters**	**Reports**	**Rate per 1,000 encounters**	**Reports**	**Rate per 1,000 encounters**
Influenza	61	2.9	59	2.5	23	1.3
Influenza with culture	1	0.0	1	0.0	0	0.0
Chickenpox	40	1.9	46	2.0	41	2.3
Shingles	20	1.0	44	1.9	17	1.0

Additional reports

Australian encephalitis: Sentinel Chicken Surveillance Programme

Sentinel chicken flocks are used to monitor flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVE) and Kunjin. MVE virus causes the disease Murray Valley encephalitis (formerly known as Australian encephalitis), a potentially fatal disease in humans. Encephalitis is less frequent in cases of Kunjin virus infection and these encephalitis cases have a lower rate of severe sequelae. Currently, 30 flocks are maintained in the north of Western Australia, 9 in the Northern Territory, 10 in New South Wales and 10 in Victoria. Two additional flocks will be set up in northern Queensland (at Mt Isa and Normanton) early in 2002. The flocks in Western Australia and the Northern Territory are tested all year round but those in New South Wales, Victoria and Queensland are tested only in the summer months, during the main MVE risk season.

Results are coordinated by the Arbovirus Laboratory in Perth and reported bimonthly. For more information see Commun Dis Intell 2002;26:57.

A Broom,[1] J Azuolas,[2] D Dwyer,[3] L Hueston,[3] JS Mackenzie,[4] L Melville,[5] D W Smith,[6] PI Whelan[7]

1. *Department of Microbiology, The University of Western Australia*
2. *Veterinary Research Institute, Victoria*
3. *Virology Department, Westmead Hospital, New South Wales*
4. *Department of Microbiology, The University of Queensland*
5. *Berrimah Agricultural Research Centre, Northern Territory*
6. *Perth PathCentre, Western Australia*
7. *Department of Health and Community Services, Northern Territory*

November/December 2001

Sentinel chicken serology was carried out for 28 of the 29 flocks in Western Australia in November and December 2001. There were 2 confirmed seroconversions (1 MVE and 1 flavivirus) from Kununurra in the north-east Kimberley. There were also 2 seroconversions (1 MVE and 1 MVE/Kunjin) from Fitzroy Crossing, one MVE from Derby and one MVE from Broome (all sites in the West Kimberley) in December but these have yet to be confirmed.

Serum samples from six of the nine Northern Territory sentinel chicken flocks were tested at the University of Western Australia in November and December 2001. There was one seroconversion to MVE virus in the Katherine chickens in November.

The sentinel chicken programs in New South Wales and Victoria commenced in November 2001. There have been no flavivirus seroconversions reported in November or December 2001.

The State and Territory Health Departments provide funding for the sentinel chicken surveillance programs in Western Australia, the Northern Territory, New South Wales and Victoria.

Editor's note: This is the last Sentinel Chicken Surveillance Programme bi-monthly report to be published in Communicable Diseases Intelligence. From 2002 a Sentinel Chicken Surveillance Programme annual report will be published in Communicable Diseases Intelligence and future bimonthly reports will be published on the Communicable Diseases Australia Website at: http://www.health.gov.au.

Gonococcal surveillance

John Tapsall, The Prince of Wales Hospital, Randwick, NSW, 2031 for the Australian Gonococcal Surveillance Programme.

The Australian Gonococcal Surveillance Programme (AGSP) reference laboratories in the various States and Territories report data on sensitivity to an agreed 'core' group of antimicrobial agents quarterly. The antibiotics currently routinely surveyed are penicillin, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens and currently used in Australia to treat gonorrhoea. When in vitro resistance to a recommended agent is demonstrated in 5 per cent or more of isolates from a general population, it is usual to remove that agent from the list of recommended treatment.[1] Additional data are also provided on other antibiotics from time to time. At present all laboratories also test isolates for the presence of high level (plasmid-mediated) resistance to the tetracyclines, known as TRNG. Tetracyclines are however, not a recommended therapy for gonorrhoea in Australia. Comparability of data is achieved by means of a standardised system of testing and a program-specific quality assurance process. Because of the substantial geographic differences in susceptibility patterns in Australia, regional as well as aggregated data are presented.

Reporting period 1 July to 30 September 2001

The AGSP laboratories examined a total of 913 isolates in this quarter. Another 16 strains were

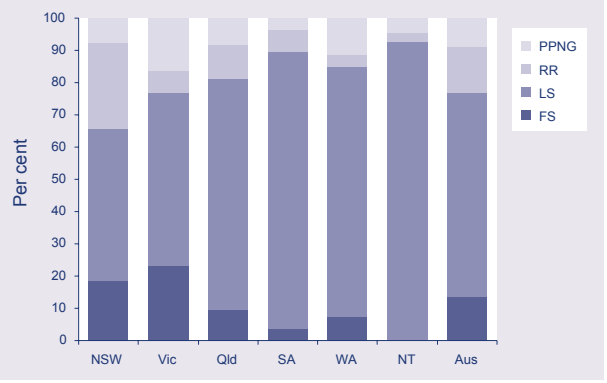
non-viable. This number is a considerable increase over the 794 examined in the same period in 2000. About 40 per cent of this total were from New South Wales, 22 per cent from Victoria, 15 per cent from Queensland, 13 per cent from the Northern Territory, 6 per cent from Western Australia and 2.5 per cent from South Australia. There were few isolates from other centres.

Penicillins

Figure 1 shows the proportions of gonococci fully sensitive (MIC ≤ 0.03 mg/L), less sensitive (MIC 0.06 – 1 mg/L), relatively resistant (MIC ≥ 1 mg/L) or else penicillinase producing (PPNG) aggregated for Australia and by State and Territory. A high proportion those strains classified as PPNG or else resistant by chromosomal mechanisms fail to respond to treatment with penicillins (penicillin, amoxycillin, ampicillin) and early generation cephalosporins.

In this quarter about 26 per cent of all isolates were penicillin resistant by one or more mechanisms – 7 per cent PPNG and 19 per cent by chromosomal mechanisms (CMRNG). The proportion of penicillin resistant strains ranged from 3 per cent in the Northern Territory to 36 per cent in Queensland.

Figure 1. Categorisation of gonococci isolated in Australia by penicillin susceptibility and by region, 1 July to 30 September 2001



FS fully sensitive to penicillin, MIC ≤ 0.03 mg/L
LS less sensitive to penicillin, MIC 0.06 – 0.5 mg/L
RR relatively resistant to penicillin, MIC ≥ 1 mg/L
PPNG penicillinase producing *Neisseria gonorrhoeae*

The number of PPNG isolated across Australia (n=66) was slightly less in this quarter than in the corresponding period in 2000 (n=70). The highest proportion of PPNG was found in isolates from South Australia (14%), Western Australia (13%) and Victoria (12%). PPNG were present in most jurisdictions including 1 (0.8%) in the Northern Territory. South and south-east Asian countries were the main source of external acquisition, but included an isolate acquired in Ireland. Local acquisition was prominent in Victoria.

More isolates were resistant to the penicillins by separate chromosomal mechanisms (n=173). These CMRNG were concentrated in Queensland (30% of isolates there), New South Wales (22%) and Victoria (21%). Three CMRNG were detected in the Northern Territory.

Ceftriaxone

Low numbers of isolates with decreased susceptibility to ceftriaxone were present in Victoria, New South Wales, Queensland and the Northern Territory. The persistence of these isolates in Australia and their presence in nearby countries[2,3] suggests that continued monitoring of this phenomenon is warranted. There is no evidence thus far that these strains with higher ceftriaxone MICs have been associated with treatment failure when third generation cephalosporins are used.

Spectinomycin

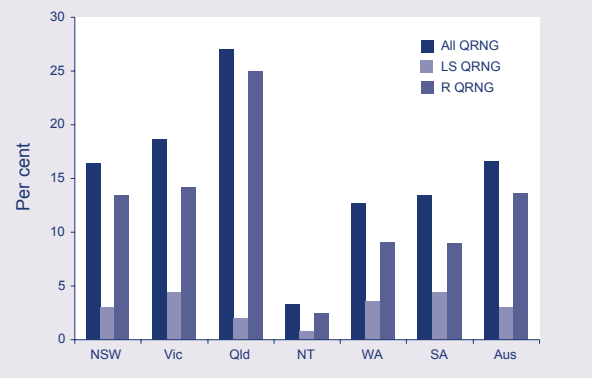
All isolates were susceptible to this injectable agent.

Quinolone antibiotics

Quinolone resistant *N. gonorrhoeae* (QRNG) are defined as those isolates with an MIC to ciprofloxacin equal to or greater than 0.06 mg/L. QRNG are further subdivided into less sensitive (ciprofloxacin MICs 0.06 – 0.5 mg/L) or resistant (MIC ≥ 1 mg/L) groups.

The total number of all QRNG (n=151) was again high and little changed from the previous quarter (n=165) and the September quarter in 2000 (n=142). QRNG were 16.6 per cent of all strains examined and this percentage was slightly lower than preceding periods in 2001 and the corresponding quarter in 2000. QRNG were again widely distributed. High rates were maintained in Queensland (27%), Victoria (18%), New South Wales (16%), South Australia (13%) and Western Australia (13%). Four QRNG were detected in the Northern Territory.

Figure 2. Distribution in Australia of *N. gonorrhoeae* showing quinolone resistance, 1 July to 30 September 2001



LS QRNG = Ciprofloxacin MICs 0.06 – 0.5 mg/L

R QRNG = Ciprofloxacin MICs ≥ 1 mg/L

In this quarter most of the QRNG exhibited higher levels of resistance as measured by MICs (Figure 11) and this is a continuation of a significant shift in the distribution of QRNG on the basis of MICs. In both New South Wales and Victoria in particular there has been a significant decrease in the number of 'less sensitive' QRNG in recent quarters.

Local acquisition was again prominent and MICs ranged up to 16mg/L.

High level tetracycline resistance

The number (n=89) and proportion (9%) of high level tetracycline resistance (TRNG) detected rose in this quarter from 56 (6.5%) in the June quarter. TRNG represented 12 per cent of isolates from Queensland and Victoria, 11 per cent from Western Australia, 9 per cent from New South Wales, and 2 per cent from the Northern Territory.

References

1. World Health Organization. Guidelines for the management of sexually transmitted infections. WHO/HIV_AIDS/(2001).01;WHO/RHR/o1.10:pp 1-5 World Health Organization, Geneva 2001.

2. WHO Western Pacific Region Gonococcal Antimicrobial Surveillance Programme. Surveillance of antibiotic susceptibility of *Neisseria gonorrhoeae* in the WHO Western Pacific Region 2000. *Commun Dis Intell* 2001;25:274-276.

3. Muratani T, Akasaka S, Kobayashi T, et al. Outbreak of cefozopran (penicillin, oral cephems and aztreonam) -- resistant *Neisseria gonorrhoeae* in Japan. *Antimicrob Agent Chemother* 2001:45:3603-3606.

HIV and AIDS surveillance

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 (Australian Capital Territory, 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, and annually in HIV/AIDS and related Diseases in Australia Annual Surveillance Report. The reports are available from the National Centre in HIV Epidemiology and Clinical Research, 376 Victoria Street, Darlinghurst NSW 2010. Internet: http://www.med.unsw.edu.au/nchecr. Telephone: +61 2 9332 4648.
Facsimile: +61 2 9332 1837.

HIV and AIDS diagnoses and deaths following AIDS reported for 1 July to 30 September 2001, as reported to 31 December 2001, are included in this issue of Communicable Diseases Intelligence (Tables 7 and 8).

Table 7. Number of cases of newly diagnosed HIV infection and AIDS and number of deaths following AIDS occurring in the interval 1 July to 30 September 2001, and reported by 31 December 2001 by sex and State/Territory

	Sex	ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Totals for Australia			
										This period 2001	This period 2000	Year to date 2001	Year to date 2000
HIV diagnoses	Female	0	7	0	2	3	0	7	3	22	22	67	**65**
	Male	3	99	1	7	9	0	28	7	154	159	467	**524**
	Not reported	0	0	0	0	0	0	0	0	0	0	2	**0**
	Total[1]	3	106	1	9	12	0	35	10	176	181	537	**591**
AIDS diagnoses	Female	0	2	0	1	1	0	3	0	7	7	12	**20**
	Male	0	14	0	6	4	0	9	0	33	34	89	**15**
	Total[1]	0	16	0	7	5	0	12	0	40	41	102	**174**
AIDS deaths	Female	0	2	0	1	0	0	2	0	5	1	8	**7**
	Male	2	10	0	3	5	0	4	0	24	27	52	**92**
	Total[1]	2	12	0	4	5	0	6	0	29	28	60	**99**

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

Table 8. Number of cases of newly diagnosed HIV infection and AIDS, and number of deaths following AIDS, cumulative to 30 September 2001 and reported by 31 December 2001 by sex and State/Territory

	Sex	State or Territory								
		ACT	NSW	NT	QLD	SA	TAS	VIC	WA	Australia
HIV diagnoses	Female	27	664	10	175	69	5	243	130	**1,323**
	Male	230	11,486	111	2,114	715	80	4,140	967	**19,843**
	Not reported	0	244	0	0	0	0	24	0	**268**
	Total[1]	257	12,415	121	2,296	784	85	4,423	1,103	**21,484**
AIDS diagnoses	Female	9	208	0	51	26	3	76	27	**400**
	Male	88	4,791	37	876	360	45	1,720	363	**8,280**
	Total[1]	97	5,011	37	929	386	48	1,805	392	**8,705**
AIDS deaths	Female	4	118	0	35	16	2	53	17	**245**
	Male	70	3,271	24	587	241	29	1,311	256	**5,789**
	Total[1]	74	3,397	24	624	257	31	1,371	274	**6,052**

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

Childhood immunisation coverage

Tables 9 and 10 provide the latest quarterly report on childhood immunisation coverage from the Australian Childhood Immunisation Register (ACIR).

The data show the percentage of children fully immunised at age 12 months for the cohort born between 1 July to 30 September 2000 and at 24 months of age for the cohort born between 1 July to 30 September 1999 according to the Australian Standard Vaccination Schedule.

A full description of the methodology used can be found in Commun Dis Intell *1998;22:36-37.*

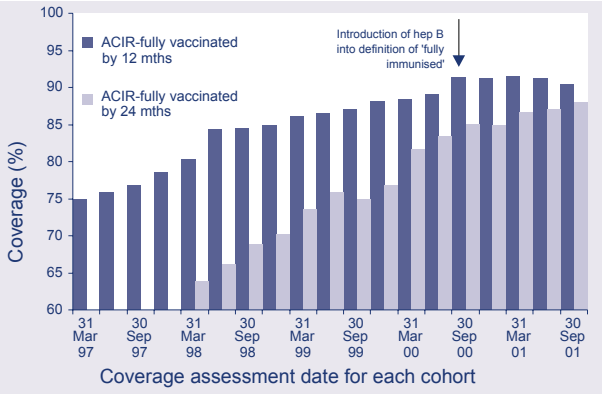
Commentary on the trends in ACIR data are provided by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases. For further information please contact the ACIR at: telephone: +61 2 9845 1255, E-mail: brynleyh@chw.edu.au.

The new National Health and Medical Research Council Australian Standard Vaccination Schedule, including universal hepatitis B vaccination commencing at birth, began for all children born on or after May 2000. This cohort (children born 1 July to the 30 September 2000) are the first eligible to follow the new schedule, which now requires receipt of 2 or 3 hepatitis B vaccines by 12 months of age to qualify for full immunisation.

Vaccination coverage for 'fully immunised' by 12 months for Australia has decreased from the last quarter by 0.8 percentage points but is still above 90 per cent (Table 1). Coverage decreased in all states and territories except in Tasmania where coverage increased by 0.3 percentage points to 91.3 per cent. Coverage is now below 90 per cent in 3 States, New South Wales, the Northern Territory and Western Australia. This decrease should not be a consequence of the introduction of hepatitis B vaccination, as hepatitis B is combined with the Diphtheria, Tetanus, Pertussis (DTP) vaccine or the *Haemophilus Influenzae* type B (Hib) vaccine in all jurisdictions. Unpublished analysis of the same 1 year olds by the Health Insurance Commission (HIC), has revealed no differences in 'fully immunised' coverage estimates when calculated with or without hepatitis B. This suggests that the decrease in 'fully immunised' coverage is not directly related to the introduction of hepatitis B vaccination. Nevertheless, as coverage for all individual vaccines for 12-month coverage is above 90 per cent in all jurisdictions, there must either be some parents who are selectively failing to immunise with some vaccines or a data problem with either notifications or data processing to the ACIR or both. In their regular parent surveys, the HIC have found that some parents have an objection to particular vaccines. It must also be remembered that the cohort reported on here is the first full 3-month cohort eligible to follow the new schedule. So, whilst the introduction of hepatitis B vaccination appears to have had little effect on 'fully immunised' coverage estimates, it is possible that changes in the administration and timing of the Hib and DTP vaccines in the new schedule may have had some effect on parents decisions to immunise or providers understanding of the new schedule.

In contrast, estimates of 'fully immunised' by 24 months for Australia (for which the requirements have not changed) has increased from the last quarter by one percentage point and is now 88 per cent (Table 2). Coverage increased in all States and Territories except for Western Australia with the largest increase occurring in the Northern Territory from 79.8 per cent to 83.5 per cent.

Figure 1. Trends in vaccination coverage, Australia, 31 March 1997 to 30 September 2001, by age cohorts



Source: Australian Childhood Immunisation Register

Table 9. Percentage of children immunised at 1 year of age, preliminary results by disease and State for the birth cohort 1 July to 30 September 2000; assessment date 31 December 2001

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
Number of children	1,049	21,750	792	12,373	4,362	1,477	15,190	6,256	63,249
Vaccine									
Diphtheria, Tetanus and Pertussis (%)	92.4	91.8	88.8	92.7	92.5	92.6	93.1	90.7	92.2
Poliomyelitis (%)	92.2	91.7	89.1	92.6	92.4	92.4	93.1	90.6	92.1
Haemophilus influenzae type b (%)	93.7	93.8	93.1	94.7	94.5	95.5	94.8	93.9	94.3
Hepatitis B (%)	90.9	89.9	87.3	91.5	90.5	91.3	91.0	89.1	90.4
Fully Immunised (%)	93.7	93.8	93.1	94.7	94.5	95.5	94.8	93.9	94.3
Change in fully immunised since last quarter (%)	+1.8	-0.8	-2.1	-0.3	-1.1	+0.3	-1.0	-0.4	-0.8

Table 10. Percentage of children immunised at 2 years of age, preliminary results by disease and State for the birth cohort 1 July to 30 September 1999; assessment date 31 December 2001[1]

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	AUSTRALIA
Number of children	1,065	22,173	786	12,660	4,578	1,534	15,838	6,245	64,879
Vaccine									
Diphtheria, Tetanus and Pertussis (%)	92.0	89.1	85.8	91.9	91.7	92.6	91.0	88.3	90.3
Poliomyelitis (%)	95.3	93.7	93.9	94.4	95.4	96.0	95.3	93.1	94.3
Haemophilus influenzae type b (%)	96.4	95.0	91.9	95.0	96.2	96.6	96.2	94.0	95.3
Measles, Mumps & Rubella (%)	93.3	92.3	93.2	93.3	95.1	93.9	93.5	92.8	93.1
Fully Immunised (%)[2]	90.1	86.4	83.5	90.2	89.9	90.1	88.8	85.5	88.0
Change in fully immunised since last quarter (%)	+3.5	+0.7	+3.7	+1.6	+0.8	+1.4	+1.3	-0.5	+1.0

1. The 12 months age data for this cohort was published in *Commun Dis Intell* 2001;25:30
2. These data relating to 2 year old children should be considered as preliminary. The proportions shown as 'fully immunised' appear low when compared with the proportions for individual vaccines. This is at least partly due to poor identification of children on immunisation encounter forms.

Acknowledgment: These figures were provided by the Health Insurance Commission (HIC), to specifications provided by the Commonwealth Department of Health and Ageing. For further information on these figures or data on the Australian Childhood Immunisation Register please contact the Immunisation Section of HIC on telephone 02 6124 6607.