Communicable Diseases Surveillance

Presentation of NNDSS data

With the move to a quarterly reporting system in *Communicable Diseases Intelligence*, the summary tables have changed to fall in line with a quarterly report. Table 2 presents 'date of notification' data, which is 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 unit. Table 3 presents the notification rate of Diseases by State or Territory for the current reporting quarter.

Table 2 now includes the following summary columns: current quarter totals, totals for the previous quarter; total for the same quarter in the previous year; a 5-year mean for the same quarter, the year to date total for each disease, the mean of the last 5 years year to date totals and the ratio of the current quarter to the mean of to the mean of the second quarter for the last 5 years.

Notifiable diseases 2001

The Communicable Diseases Network Australia has revised the list of diseases that are reportable to the NNDSS. All jurisdictions are working towards reporting against the new national list. Transmission of a dataset consistent with the new list will depend upon changes to public health legislation and IT system development. The following new diseases have been added to the NNDSS database: anthrax, Murray Valley encephalitis, Kunjin virus infection, cryptosporidiosis, influenza (laboratory-confirmed), Australian bat lyssavirus infection and invasive pneumococcal disease (laboratory-confirmed). Data on the following diseases will no longer be collected: chancroid, hydatid disease, lymphogranuloma venereum, non-TB mycobacterial infections, and yersiniosis.

Highlights for 3rd 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 compared with the 5-year third quarter mean. Disease notifications above or below the 5-year mean, plus- or minus- two standard deviations are marked with an asterisk. These and other disease trends are commented on below.

As this report comments on notifications in winter and spring, the focus is on those diseases with a winter/spring peak, namely: influenza; pertussis; meningococcal disease; and rotavirus infections.

Gastrointestinal diseases

Campylobacteriosis

Notifications of gastrointestinal disease caused by *Campylobacter* species continued to increase in this quarter. Four thousand one hundred and fifteen notifications were reported nationally which is significantly above the range of 5-years' data.

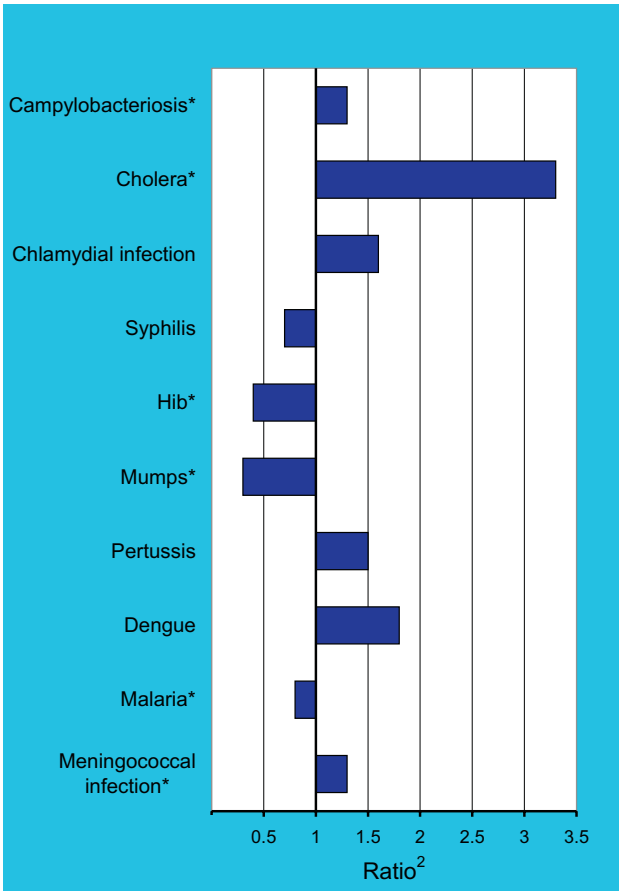
Cryptosporidiosis

Notifications were received in this quarter from all jurisdictions except Tasmania. There were 858 notifications in 2001 to the end of the third quarter. These numbers indicate that cryptosporidiosis may become the third most common gastrointestinal illness reported to the NNDSS after infections with *Campylobacter* and *Salmonella*. In the previous quarter, we commented on several outbreaks in the summer months associated with swimming pools. In this quarter, 5 linked cases associated with consumption of unpasteurised milk were reported from Queensland. Of the 5 cases, 3 were hospitalised. Cryptosporidiosis infection associated with consumption of unpasteurised products has been previously described. These products are probably contaminated with cow manure.[1]

Hepatitis A

National notifications of hepatitis A continued to fall in this quarter. Dr Jeffrey Hanna from Queensland Health

Figure 1. Selected[1] diseases from the National Notifiable Diseases Surveillance System, comparison of provisional totals for the period 1 July to 30 September 2001 with historical data[2]



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

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

reported: 'There has been a marked decline in notifications of hepatitis A throughout north Queensland since hepatitis A vaccination was introduced for indigenous children in the region in early 1999. There were 231 notifications of hepatitis A in north Queensland in 1999, 34 in 2000, and 11 cases in the first 9 months of this year. The last case in an indigenous person was in June 2000. The majority of cases in 2000 and 2001 have been acquired abroad, particularly in Papua New Guinea, emphasising the importance of vaccination prior to either travel or work abroad.'

Hepatitis A in Australia has declined significantly over the past 30 years although levels in indigenous communities have remained high. In Australia, 3 patterns of hepatitis A epidemiology are recognised.[2] These are large, slowly evolving community-wide outbreaks, occurring at intervals of 5 years or more. They affect susceptible individuals exposed to intense levels of transmission within their groups and are a potential source for infection for the wider community. Settings for community-wide outbreaks include child care centres and pre-schools, schools and residential facilities for the intellectually disabled, networks of men who have sex with men and networks of injecting drug users. Secondly, sporadic cases of hepatitis A may occur in people without obvious risk factors although some may be associated with overseas travel or travel to indigenous communities. Thirdly, point-source outbreaks of hepatitis A may occur from exposure to contaminated food or water and/or infected food-handler. These are relatively rare in Australia. The last major point-source outbreak of hepatitis A arose from contaminated oysters in New South Wales in 1997.[3]

Vaccination against hepatitis A in Australia is recommended for travellers to endemic areas, visitors to remote indigenous communities, child-care and pre-school personnel, the intellectually disabled and their carers, health care workers, sewerage workers, men who have sex with men, injecting drug users, patients with chronic liver disease, haemophiliacs who may have received pooled plasma concentrates and food handlers.[2]

Salmonellosis

Twenty-two cases of *Salmonella* Typhimurium 99 were detected in a large outbreak of gastroenteritis at a Melbourne restaurant in July. Illness was associated with the consumption of a meal consisting of eye fillet of beef, onions and potatoes with 2 sauces. All food samples were negative and the specific source of contamination remains unknown. (Information supplied by Kerry-Ann O'Grady, Department of Human Services, Victoria.)

Increased notifications of infection with *Salmonella* Stanley were reported from all States and Territories in Australia in the third quarter 2001. Seventy cases were reported up to the end of September, of whom 20 appeared to have acquired the infection outside Australia. Of cases acquired within Australia, about half reported consuming a brand of peanuts imported from China. A product recall was initiated and case reports have waned. Outbreaks of *Salmonella* Stanley associated with the same brand of peanuts were recently reported from Canada and the United Kingdom. Pulsed field gel electrophoresis indicated that isolates from peanuts and human cases shared the same distinctive profile across the 3 countries. *Salmonella* Newport was also isolated from the peanuts in Australia but a link to human cases has not yet been established. In Canada the peanuts also were contaminated with *Salmonella* Lexington. (Information supplied by Martyn Kirk, OzFoodNet.)

Quarantinable diseases

Cholera

Two cases of cholera were reported in the third quarter 2001; one each from South Australia and Victoria. A third case with an onset in the second quarter and reported in the third quarter, was reported from New South Wales. Because of our analysis of data by date of onset, this case does not appear in this quarters' reporting in Table 2. All cases were acquired overseas: the 2 cases reported in the third quarter were associated with travel to Bali and in both cases ice used in drinks is suspected as the source of the infection. Since January 2001, 6 travellers to Bali have contracted cholera: 2 from Japan; 1 each from France and New Zealand, and the 2 Australian cases. All 6 were *V. cholerae* serogroup 01, serotype Ogawa.

The case from New South Wales appears to have acquired cholera in Hong Kong (serogroup 01 El Tor, serotype Inaba).

Yellow fever

A single suspect case of yellow fever was reported from Victoria, but the notification was subsequently withdrawn as the clinical and laboratory evidence for yellow fever was not conclusive. There have been no cases of yellow fever reported in Australia since the inception of the NNDSS in 1991. A summary of the case from Dr Priscilla Robinson, Department of Human Services, Victoria follows.

'A 53-year-old woman was notified to the Victorian Department of Human Services in September with a provisional diagnosis of yellow fever. She had recently returned from Peru and Chile. She had been vaccinated against hepatitis A and B and typhoid, and boosted for tetanus, and although she had asked about yellow fever vaccination had been told that it was unnecessary. While away she drank only bottled water, wore loose clothing and used insect repellent. Despite these precautions, she recalled being bitten by mosquitoes. On arrival at Melbourne, she was identified by the Australian Quarantine Inspection Service as a person who had been in a yellow fever area who was not protected by vaccination and given a screening letter. She became unwell during the journey home with an acute febrile illness consisting of headaches, shivers and epistaxis (unusual for her), consistent with possible early symptoms of yellow fever. She felt worse during the evening and presented to the local hospital for assessment and treatment, presenting the screening letter to the on-call medical officer. She developed upper respiratory symptoms (sore throat and loss of voice), with minimal sputum. Management of her illness was transferred to an infectious disease specialist, in conjunction with her GP. The diagnosis was not laboratory confirmed. Serological screening for flaviviruses was PCR and antigen negative. Acute phase sera was equivocal for yellow fever total antibody, however there were no changes in titres in serology taken 8 days later. The preliminary diagnosis of yellow fever was rejected by the physician and reference laboratory. The cause of her illness remains unknown.'

Sexually transmitted infections

Notifications of chlamydial infections and gonococcal infections increased in the third quarter 2001. An increase in the number of notifications of donovanosis was also noted; this is probably related to more active case detection as part of the Donovanosis Eradication Plan described in the last issue of *CDI*.

An apparent decline in notifications of syphilis should be interpreted with caution as syphilis notifications from Queensland are still undergoing a process of validation.

Vaccine preventable diseases

Notifications of *Haemophilus influenzae* type b and mumps were significantly below the range of 5-years' data for the third quarter 2001.

Influenza

National surveillance data consisting of laboratory reports through LabVISE and national and State-based sentinel general practice schemes have been reported weekly on the *Communicable Diseases Australia* Website (http://www.health.gov.au/pubhlth/cdi/ozflu/flucurr.htm). The peak of the influenza season in temperate regions of Australia appears to have passed and surveillance in New South Wales, Victoria and Western Australia has ceased.

Nationally, the 2001 influenza season was mild and numbers of laboratory-diagnosed cases as well as presentations of influenza-like illness to general practices were lower than in the 2000 season (Figure 2). Circulating strains were well matched by those included in the 2001 influenza vaccine.

The Northern Territory was a notable exception to this picture. The Northern Territory reported large increases in notifications of influenza-like illness from August 2001. In tropical regions of Australia, bimodal peaks of influenza activity in March/April and September/October are the usual pattern, however 21 geographically diverse cases were recorded in 2 weeks largely in indigenous people, which inflated the rate of influenza to record levels (Figure 3).

Measles

Sixteen sporadic cases of measles were reported during the third quarter 2001. At least 4 of the 16 cases were acquired overseas.

Figure 2. National consultation rates of influenza-like illness in ASPREN and sentinel GP practices, 2000 and 2001, by week

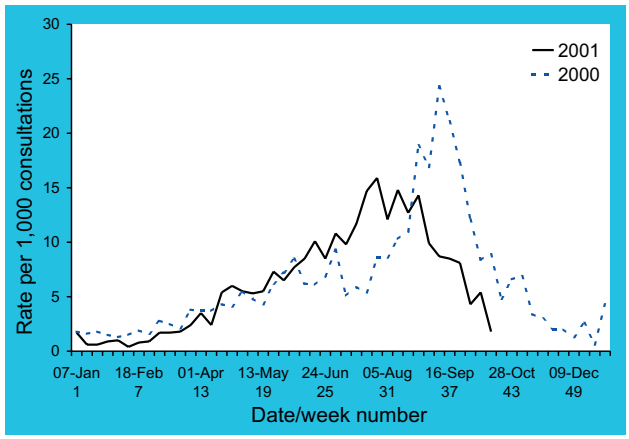
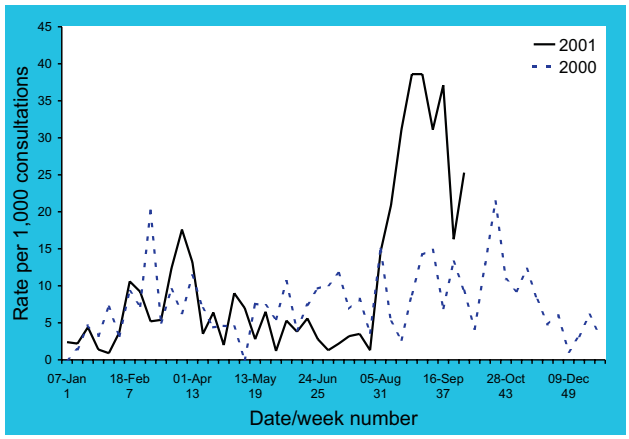


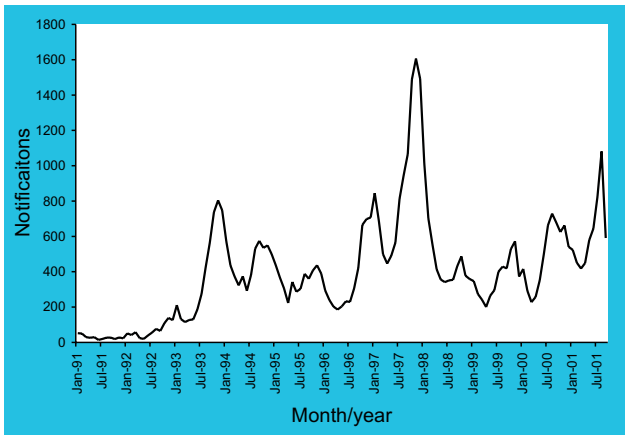
Figure 3. Consultation rates of influenza-like illness in sentinel GP practices, Northern Territory, 2000 and 2001, by week



Pertussis

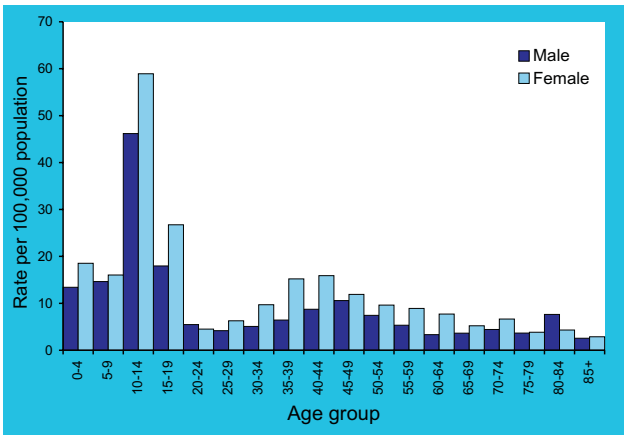
In keeping with the seasonal peaks of disease activity seen in spring, notifications of pertussis increased in this quarter. Monthly notifications in May, June and August were the highest recorded on the NNDSS for those months (Figure 4). Should this notification rate continue 2001 is tracking towards a peak in the 3 to 5 year cycle of pertussis, which is a recognised feature of pertussis epidemiology.[4]

Figure 4. Notification of pertussis, Australia, 1991 to 2001, by month of onset



Immunisation against pertussis in Australia consists of 5 doses given at 2, 4, 6 and 18 months and 4 years of age. Currently 88.3 per cent of 2 year-olds in Australia are age-appropriately immunised (ACIR data, see Tables this issue). As a consequence the peak notification rate for pertussis is now found among young adolescents (aged 10–14). In the third quarter 2001, 696 (28%) of all notifications of pertussis were from this age group (Figure 5). In addition 2,069 cases (83%) were aged 10 years or more and only 109 (4%) were in infants aged less than one year. However, it is of some concern that 13 per cent of cases are aged 1–9 years, confirming the importance of the 5th dose at 4–5 years and the need to raise coverage rates further. The need for an adolescent and adult vaccination program is being considered by the Australian Technical Advisory Group on Immunisation.

Figure 5. Notification rate of pertussis, Australia, 1 July to 30 September 2001, by age group and sex



Despite high levels of vaccination, pertussis has increased in a number of countries since 1997. This has prompted investigations into the evolution of variants of *Bordetella pertussis*. Mooi and colleagues have observed antigenic divergence between vaccine strains and clinical isolates of *Bordetella pertussis*, specifically in the surface-associated protein pertactin and the pertussis toxin.[5] Replacement of vaccine with non-vaccine strains as a result of herd immunity has not yet had any measurable effect on pertussis vaccine efficacy, but surveillance of variant strains of the bacteria may be important for the control of pertussis in the future.

Several recent studies have examined the importance of pertussis as a cause of prolonged coughing in adults and adolescents. A recent study in Canada suggests that up to 20 per cent of prolonged coughing is associated with laboratory evidence of pertussis infection. The nature of that evidence is controversial: in this study only 2.3 per cent of symptomatic cases were laboratory confirmed pertussis (by culture, PCR or a four-fold increase in pertussis antibody), while the remainder were diagnosed on the basis of a single high pertussis antibody titre.[6]

Since it is well established that adolescents and adults are frequently the source of pertussis infection for infants and children, and adolescents now have the highest rates of disease, vaccination of adolescents with acellular pertussis vaccines has been instituted in France, Germany and Canada. It remains to be seen how this will impact on the epidemiology of pertussis.

Vectorborne diseases

Dengue

An increase in the number of notifications of dengue was noted in this quarter. A number of these were imported cases from Samoa. A large outbreak of dengue strain 1 has been continuing through most of 2001, involving the Pacific Island nations of French Polynesia, Samoa and American Samoa, New Caledonia and Tokelau. In French Polynesia 33,000 cases have been reported with 1200 hospitalisations, 500 cases of dengue haemorrhagic fever and 8 deaths.

Other bacterial infections

Meningococcal infection

A series of small outbreaks of meningococcal disease affected several jurisdictions in the third quarter of 2001. National notifications of meningococcal disease in August (93 cases) was the highest monthly total ever recorded in the NNDSS. Notifications for meningococcal disease increase in spring; however the number of notifications has been increasing since the inception of the NNDSS in 1991 (Figure 6). This quarter's total was above the range of the last 5-years' data for the third quarter. The notification rates of cases in the third quarter show the highest rates in the 0–4 and 15–19 year age groups (Figure 7). The increase in case numbers is partly due to the wider availability of non-culture based diagnostic techniques including serology (meningococcal IgM) and nucleic acid tests. Some jurisdictions also now report probable cases of meningococcal disease.

Figure 6. Notifications of meningococcal disease, Australia, 1991 to 2001, by month of onset

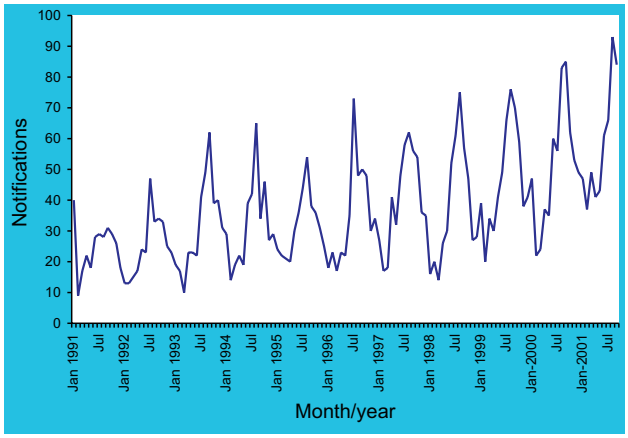
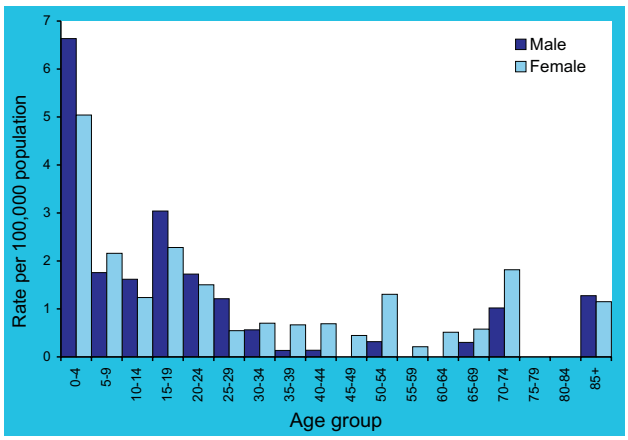


Figure 7. Notification rate of meningococcal disease, Australia, 1 July to 30 September 2001, by age group and sex



Non-culture based techniques currently account for approximately 27 per cent of all diagnoses of invasive meningococcal disease.[7]

Further information on meningococcal disease in this quarter in Queensland and Victoria were provided by Dr Linda Selvey and Dr Patricia Robinson respectively.

In Queensland there were 49 cases of invasive meningococcal disease in the third quarter (including 2 probable cases) compared to 48 cases for the first 2 quarters (including 4 probable cases). This is consistent with the expected seasonal increase. Of the cases in the third quarter, 24 were serogroup B infections (49%), 15 serogroup C infections (31%) and 2 serogroup Y infections (5%). This compares to 54 per cent serogroup B, 10 per cent serogroup C and 4 per cent serogroup Y in the first 2 quarters of the year. There were 5 deaths in the period, giving a crude case fatality rate of 10 per cent. Four deaths were caused by group C infection, the other being by group B. The peak incidence was in August, with only 8 cases being notified in September. In August there was a cluster of 2 cases in a boarding school, both of whom died. All of the students and many staff at this school were vaccinated in response to this cluster. There were no other clusters in the period.

In Victoria there were 114 cases of meningococcal disease notified to the Victorian Department of Human Services between the beginning of January and the end of September 2001. Of these, 35 were confirmed as serogroup B (22 by culture and 13 by PCR) and 45 as serogroup C (30 by culture and 15 by PCR). Of the remaining 34 cases, one was confirmed as serogroup Y. It was not possible to group 2 cases, and 31 were clinically diagnosed. The age distribution of serogroup B and C disease shows notable differences, with 54 per cent of serogroup B cases being under 15 compared to 33 per cent of serogroup C cases. Of the 25 cases who were aged 30 years or more, only 4 were confirmed as serogroup B disease compared to 15 serogroup C, and in this age group the case fatality rate was 20 per cent compared with 3-5 per cent in younger cases. In this quarter, the case fatality rate was 6 per cent for serogroup B, and almost double that rate (11%) for serogroup C cases, while the overall case fatality rate was 7 per cent.

Other non-notifiable diseases

Mycobacterium ulcerans

Kerry-Ann O'Grady supplied the following information on *Mycobacterium ulcerans* cases in Victoria. Eleven PCR-confirmed cases of cutaneous *Mycobacterium ulcerans* infection (Bairnsdale /Daintree/ Buruli Ulcer) were detected in residents or frequent visitors of a Victorian coastal town. Environmental sampling revealed one PCR-positive site in the area, an irrigation dam at the local golf course, although its relationship to the cases is unknown. A Victorian research team has been funded to investigate possible sources of infection and modes of transmission.

This is the latest of several outbreaks of *Mycobacterium ulcerans* infection near Melbourne in the past decade. This environmental mycobacterium causes chronic progressive skin ulcers and occurs in soil and in swamp waters; cases of human infection occur by the contamination of small cuts or abrasions of the skin.[8] The outbreaks of disease in Australia appear to be associated with disturbance of swamp waters or contamination of dams or irrigation systems with swamp water.[9] Environmental studies using PCR have recently supported this hypothesis.[10]

Mycobacterium ulcerans infections are an increasingly significant public health problem in at least 31 countries in Africa, the Western Pacific, Asia and South America. In January 1998 the World Health Organization launched the Global Buruli Ulcer Initiative to coordinate global research and control efforts into this disease. Further information can be accessed at: http://www.who.int/m/topics/buruli_ulcer/en/index.html.

LabVISE

There were 6256 reports to LabVISE from 13 laboratories in the third quarter of 2001. Data are included from PathCentre, Western Australia, which have been excluded from previous reports due to technical problems. Previously unpublished PathCentre data for the period October 2000 to June 2001 are shown in Table 6.

In the third quarter 2001, there were reports of viral infection and 1,775 reports of bacteria and other microorganisms. The largest number of reports among viruses were for respiratory syncytial virus (1,146 reports), the influenza

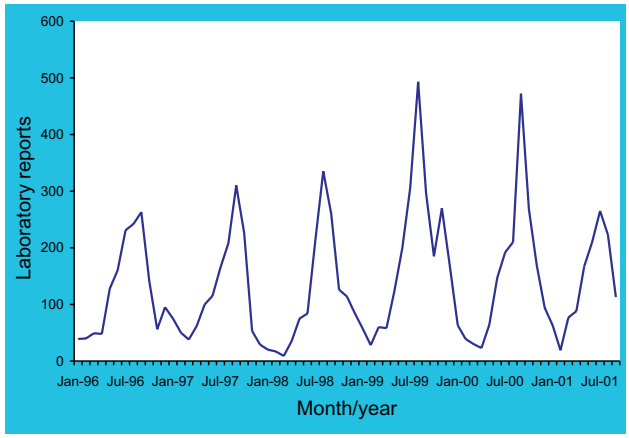
viruses (total 540 reports), and rotavirus (601 reports). Among the bacterial isolates the largest numbers of reports were of *Chlamydia* spp (639 reports) and *Bordetella pertussis* (439 reports).

Rotavirus

Rotavirus is a major cause of diarrhoea in children and may also be important as a cause of viral diarrhoea in the elderly. Rotavirus infections are typically increased in winter months (May to September in Australia). LabVISE rotavirus data (1996 to 2001) by month of laboratory report are shown in Figure 8. The Australian Rotavirus Surveillance Program collects important information on circulating rotavirus serotypes in Australia.[11]

During 2001 the Northern Territory experienced a large outbreak of rotavirus disease; the largest since surveillance for the disease was commenced in 1994.The outbreak commenced in April 2001 in Alice Springs and spread rapidly across the Northern Territory and into western Queensland. Children under 5 years of age made up 95 per cent of cases and notification rates were approximately 5 times higher in indigenous persons compared with non-indigenous people. The predominant strain isolated was G9, which has only been identified in the Northern Territory since 1999.[12]

Figure 8. Laboratory reports of rotavirus, Australia, 1995 to September 2001, by month of report



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