Communicable diseases surveillance

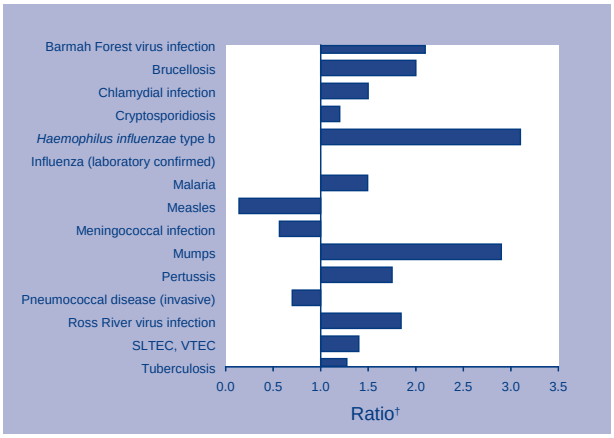
Highlights for 3rd quarter, 2006

Communicable diseases 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 data managers. This additional information has enabled the reporting of more informative highlights each quarter.

The NNDSS is conducted under the auspices of the Communicable Diseases Network Australia. NNDSS collates data on notifiable communicable diseases from state or territory health departments. The Virology and Serology Laboratory Reporting Scheme (LabVISE) is a sentinel surveillance scheme which collates information on laboratory diagnosis of communicable diseases. 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 selected disease notifications with an onset in the third quarter of 2006, compared with the five-year mean for the same period. The following diseases were above the five-year mean: cryptosporidiosis, SLTEC/VTEC, chlamydial infection, gonococcal infection, *Haemophilus influenzae* type b infection, mumps, pertussis, Barmah Forest virus infection, malaria, Ross River virus infection, brucellosis, legionellosis and tuberculosis. Diseases for which the number of notifications was below the five-year mean for the same period include measles, meningococcal infection and invasive pneumococcal disease.

Figure 1. Selected* diseases from the National Notifiable Diseases Surveillance System, comparison of provisional totals for the period 1 July to 30 September 2006 with historical data*



* Selected diseases are chosen each quarter according to current activity. Five year averages and the ratios of notifications in the reporting period in the five year mean should be interpreted with caution. Changes in surveillance practice, diagnostic techniques and reporting, may contribute to increases or decreases in the total notifications received over a five year period. Ratios are to be taken as a crude measure of current disease activity and may reflect changes in reporting rather than changes in disease activity.

† Ratio of current quarter total to mean of corresponding quarter for the previous five years.

‡ Some Victorian data for this period may be incomplete.

Gastrointestinal diseases

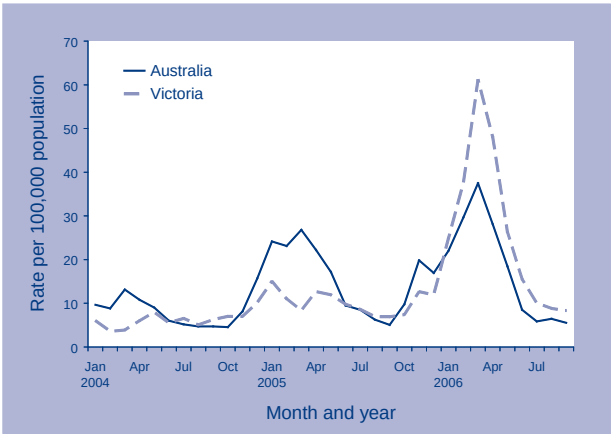
Cryptosporidiosis

There were 300 notifications of cryptosporidiosis between 1 July and 30 September 2006, which was 1.2 times the five-year mean for the third quarter. Nearly half of all cases were reported in Victoria (114 cases). This was a higher proportion than in the third quarter of 2005, when Victorian cases of cryptosporidiosis accounted for 94 of 336 notifications (28%).

There was a large decrease in the number of cryptosporidiosis notifications between the second and third quarters of 2006 (from 933 to 300); however, this is in line with the usual seasonal pattern (for example in 2005, notifications were 828 and 336 for the second and third quarters respectively) (Figure 2).

Three-quarters of the notifications had information on the infecting species, and all 224 of these were identified as *Cryptosporidium parvum,* which is the most important species in human disease (both the human and bovine genotypes).[1] Infection can be transmitted through contaminated food or water, through person-to-person or animal-to-person contact, or contact with contaminated environmental sources.

Figure 2. Cryptosporidiosis notification rates, January 2004 to September 2006, Australia and Victoria



Shiga-like toxin producing *Escherichia colil* verotoxin producing *E. coli*

There were 16 notifications of SLTEC/VTEC in the third quarter of 2006, which was 1.4 times the five-year mean. Half of the cases were from South Australia. Three cases from Queensland had serotype information, and these were all *E. coli* O111.

Sexually transmissible infections

Chlamydial infection

There were 11,343 notifications of chlamydial infection between 1 July and 30 September 2006, which was 1.5 times the five-year mean. More cases were reported in males (59%) than females. Over one-third (37%) of all chlamydial infections were in people aged 20–24 years.

The number of reported infections was less than in the previous quarter (down from 11,567) however, this was substantially higher than in the corresponding quarter of 2005 (a 12% increase from 10,146).

Vaccine preventable diseases

Haemophilus influenzae type b infection

There were 15 notifications of *Haemophilus influenzae* type b (Hib) infection between 1 July and 30 September 2006, which was 3.1 times the five-year mean. Nearly half of these cases (7) were from New South Wales and two-thirds of cases were in females. Three cases were in infants aged less than one year, with an additional four cases in children aged 1–5 years.

Indigenous status was recorded for 14 of the 15 cases; six notifications were in Indigenous people, including the three infants aged less than one year.

Routine vaccination against Hib became available in Australia in 1993. Vaccination status was available for all of the nine cases who were eligible for Hib immunisation; six cases were fully vaccinated for age (three Indigenous and three non-Indigenous cases).

Mumps

There were 90 notifications of mumps in the period 1 July to 30 September 2006, which was 2.9 times the five-year mean. Of these cases, 65 occurred in New South Wales. Half of all cases (46) occurred in people aged 25–34 years, and the median age of onset was 28 years. There were more cases among females (56%) than males.

Mumps rates were equivalent to 1.8 cases per 100,000 population per annum (ranging from no cases in Victoria or Tasmania to 5.8 cases per 100,000 population in the Northern Territory).

Vaccination status was known for 71 of the 90 notifications (79%); 12 cases were fully vaccinated for age and six partially vaccinated. Only two cases had received two doses of vaccine. Overall, 53 cases (59%) were not vaccinated.

The highest notification rate was 7.2 cases per 100,000 population in people aged 25–29 years. Mumps vaccine became available in Australia in 1980 for children aged 12–15 months, and was combined with the measles vaccine in 1982. As a result, few people in the 25–29 years age group would have received childhood vaccination against the mumps virus.

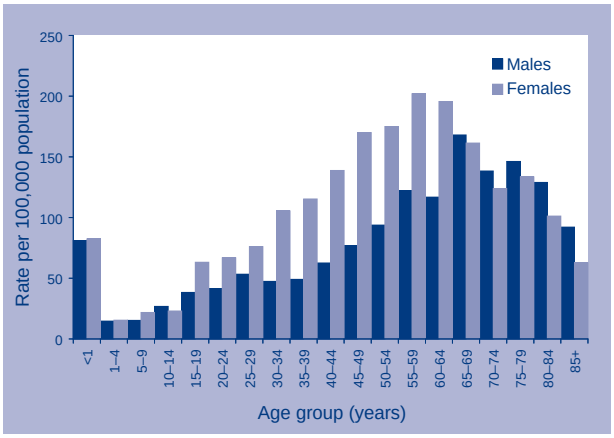
In the last few years, both the United States of America (USA) and the United Kingdom (UK) have reported increased mumps activity. In both regions, the majority of cases have occurred in college and university aged persons. In the USA for the period 1 January to 7 October 2006, the highest age-specific rate was among those aged 18–24 years.[2] Interestingly, in clusters occurring in August, a majority of cases had received two doses of the MMR vaccine. In the UK in 2004–2005, 79 per cent of confirmed cases of mumps were among those aged 15–24 years, a cohort which generally had not been eligible for routine mumps vaccination.[3]

Pertussis

There were 4,536 notifications of pertussis for the third quarter of 2006, which was 1.8 times the five-year mean. Of these, 53 cases (1.2%) were among infants aged less than one year, nearly half (49%)

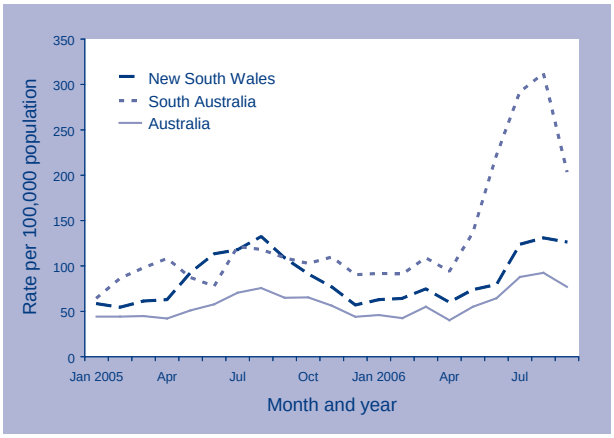
of whom were fully vaccinated for age. The average age at onset was 47 years, with the greatest number of notifications in people aged 55–59 years. The highest notification rate, however, was seen in those aged 65–69 years (165 cases per 100,000 population, annualised) (Figure 3).

Figure 3. Pertussis notification rates, 1 July to 30 September 2006, Australia, by age and sex



The overall rate of pertussis notifications was 88 cases per 100,000 population, ranging from 265 in South Australia to nine in Tasmania. The majority of pertussis notifications came from New South Wales (48%) and South Australia (23%) (Figure 4). Nearly two-thirds (62%) of notifications were for females.

Figure 4. Pertussis notification rates, January 2005 to September 2006, Australia, New South Wales and South Australia



Data from the NNDSS show that the age distribution of pertussis notifications changed between 2000 and 2006. In 2001, 41.5 per cent of notifications occurred in children aged less than 15 years, compared to 6.2 per cent in 2006 (The National Pertussis Report to CDNA, 12 August 2006). This observation is consistent with recent publications indicating that the epidemiology of pertussis is changing. Within Australia, the Hunter New England Area in New South Wales has reported a change in the age distribution of pertussis notifications over the period 1998 to 2005.[4] An increasing incidence of pertussis in adults has also been reported in other countries, including the USA and Germany.[5,6]

Part of the increase in notifications of pertussis may be due to false positive serology test results. In late September 2006, batches of PanBio Bordetella Pertussis IgA Elisa test kits were recalled because the cut-off determination point was set too low resulting in false positive results.[7]

Varicella

This report includes notifications of varicella infection for the first time. Varicella infection has become or is in the process of becoming notifiable in all jurisdictions except New South Wales. The primary purpose of surveillance of varicella infection is to monitor the impact of varicella immunisation, which was funded from November 2005 for all infants at 18 months of age and children 10 to 13 years who have not had chickenpox infection. These notifications include clinical reports from general practitioners which may or may not have been laboratory confirmed, and laboratory notifications with and without clinical information.

There were 1,752 notifications of varicella infection across Australia for the third quarter of 2006. These comprised 161 cases of chickenpox, 168 cases of zoster and 834 cases of laboratory-confirmed varicella zoster virus infection of unknown clinical diagnosis. These notifications are a small proportion of cases as surveillance in reporting jurisdictions is not yet fully implemented. No notifications were received from Victoria or the Australian Capital Territory.

Vectorborne diseases

Barmah Forest virus and Ross River virus infections

There were 353 notifications of Barmah Forest virus (BFV) infection and 338 notifications of Ross River virus (RRV) infection in the third quarter of 2006, which was 2.1 times the five-year mean for each disease. The majority of notifications came from Queensland (45% BFV and 42% RRV) and New South Wales (32% BFV and 23% RRV). While only 28 BFV notifications and 34 RRV notifications came from the Northern Territory, the annualised rates were substantially higher than in other jurisdictions at 54.4 cases per 100,000 population for BFV (com-

pared to 15.8 in Queensland and 6.6 in New South Wales) and 66.1 cases per 100,000 population for RRV (compared to 16.2 in Queensland and 5.2 in New South Wales).

Barmah Forest virus infection was reported more often for females than males (189 notifications versus 154). For both males and females, notification rates peaked for those aged 40–49 years (9.9 and 12.2 cases per 100,000 population respectively).

A similar number of notifications of RRV infection were reported for both males and females (191 and 197 notifications respectively). Notification rates peaked in women aged 40–49 years and also showed a lesser peak for those aged 70–79 years (12.7 and 10.1 cases per 100,000 population, respectively). Similarly, rates for males peaked in those aged 50–59 years and 70–79 years (11.6 and 9.3 cases per 100,000 population respectively).

Figures 5 and 6 show infection rates for BFV and RRV from 2004. Infection rates for both viruses are highest in the Northern Territory, and rates in Queensland are consistently above the national rate. Ross River virus infection rates peak in summer; in the Northern Territory the peak is seen around December while in Queensland the peak is seen around February. Barmah Forest virus infection rates tend to peak later (around March). Trend data indicate that current BFV infection rates in the Northern Territory are much higher than usually seen in September: 53.3 cases per 100,000 population in 2006 compared to 11.8 and 18.0 for 2005 and 2004 respectively. Similarly, Ross River virus infection rates in the Northern Territory appeared to increase earlier in 2006 than in previous years (100.6 cases per 100,000 population in September 2006 compared with 59.2 and 6.0 for 2005 and 2004 respectively).

The number of cases of RRV infection reported by NSW Health doubled from 582 in 2005 to 1,199 in 2006.[8] Cases of Barmah Forest virus infection also increased from 448 in 2005 to 634 in 2006 (an increase of 42%).[9] Notifications for both diseases peaked in March of 2006, with 299 cases of RRV and 110 cases of BFV. Notifications decreased over winter, as is the usual pattern.

Malaria

There were 208 notifications of malaria in the period 1 July to 30 September 2006, which was 1.5 times the five-year mean. Notifications peaked for people in the 20–24 year age group (7.7 cases per 100,000 population, annualised), and overall more males than females acquired the disease (148 cases versus 59).

Figure 5. Barmah Forest virus infection notification rates, January 2004 to September 2006, Australia, New South Wales, the Northern Territory and Queensland

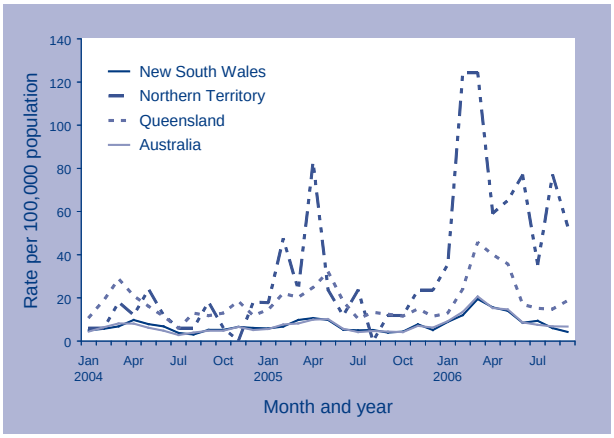
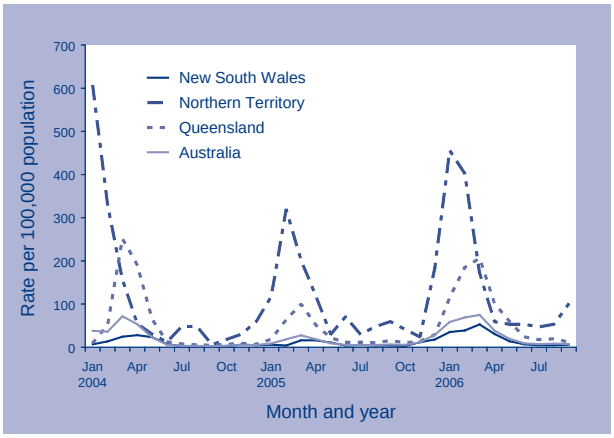


Figure 6. Ross River virus infection notification rates, January 2004 to September 2006, Australia, New South Wales, the Northern Territory and Queensland



Detailed place of acquisition information was available for 45 of the 61 cases notified in Queensland. Of these, 26 cases were acquired in Papua New Guinea.

Just over one-third of malaria notifications had the infecting organism identified; 45 were *Plasmodium falciparum*, 24 *P. vivax*, 2 *P. ovale*, 1 *P. malariae* and 7 mixed.

Zoonoses

Brucellosis

There were 14 notifications for cases of brucellosis between 1 July and 30 September 2006, which was 2.0 times the five-year mean. Ten of these cases were from Queensland.

Six cases had information on the infecting organism; three were due to *Brucella suis* and three due to *B. melitensis*.

Other bacterial infections

Legionellosis

There were 79 notifications of legionellosis for the third quarter of 2006, which was 1.2 times the five-year mean. Two-thirds of these cases were in males, and the median age at diagnosis was 65 years.

The infecting organisms responsible for these cases were *Legionella longbeachae* (42 cases), *L. pneumophila* (30 cases), *L. bozemanii* (1 case), 1 *L. micdadei* (1 case) and unspecified *Legionella* (5 cases).

There were three deaths due to legionellosis during this reporting period, all in Western Australia and attributed to *L. longbeachae*, in a 63-year-old male, a 75-year-old male and a 76-year-old female. While Western Australia reported an increased number of cases in September, all of these were sporadic.

Meningococcal infection

There were 111 notifications for cases of meningococcal infection in the third quarter of 2006—equivalent to 2.2 cases per 100,000 population per year—which was 0.6 times the five-year mean. Just over two-thirds of meningococcal infections were serogroup type B (76 cases, 68%), 8 cases (7%) were type C and 15 (14%) were of unknown type.

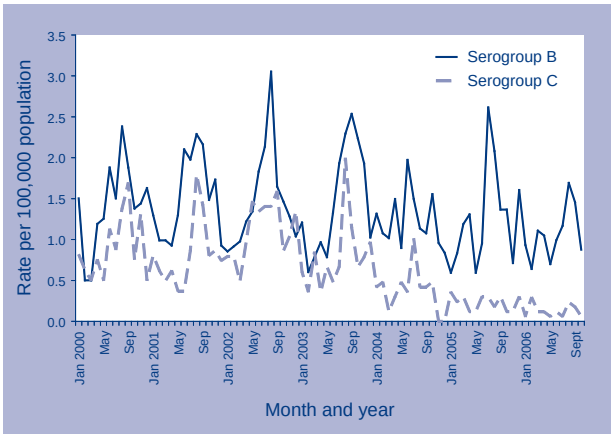
Nearly one-third of all cases (32%) were in children aged less than 5 years, and overall almost three-quarters of cases (72%) were in people aged less than 25 years.

There were three deaths all due to meningococcal type B infection during this period: in a 4-month-old female in New South Wales, a 2-year-old male in Queensland and a 19-year-old male in Victoria.

Serogroups B and C are the most common types of meningococcal infection in Australia.[10] It is important to note that vaccination against meningococcal type C – but not type B – is currently available in Australia (one type of the vaccine also protects against serogroups A, W135 and Y, however it not used for routine vaccination).

Cases of meningococcal type C have been decreasing over the last few years; there were 72 notifications in the third quarter of 2002, decreasing to eight for the current quarter. Routine vaccination against meningococcal type C for those aged 12 months or 15 years was introduced in 2003; catch-up vaccinations were available in 2003 to those aged 16–17 years. Figure 7 shows that since the introduction of the vaccination program, rates of meningococcal type C have declined, while the fluctuating pattern meningococcal type B infection rates has not shown much change.

Figure 7. Meningococcal infection rates for serogroups B and C, 2000 to 2006



Tuberculosis

There were 333 notifications of tuberculosis in the third quarter of 2006, equivalent to 6.5 cases per 100,000 population per annum, which was 1.3 times the five-year third-quarter mean.

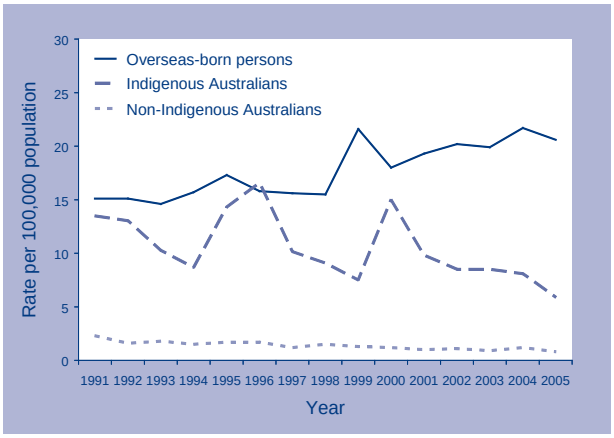
The average age at onset was 44 years, and the greatest number of notifications was for people aged 25–29 years (49 cases). Notification rates peaked in those aged 70–79 years (18.7 cases per 100,000 population). A total of 11 cases were among Indigenous people (3.3%) and 300 in non-Indigenous people (90%); Indigenous status was unknown for 22 cases (6.6%).

The majority of cases came from New South Wales (36%) and Victoria (34%). In 2005, 86 per cent of tuberculosis cases were in people who were overseas born (Paul Roche, personal communication). In Victoria, an increasing number of tuberculosis cases were in recently arrived refugees. While a number of cases were found through screening, a considerable number were found through clinical presentation, often soon after arrival in Australia. These were mostly new cases, rather than relapse (Lynne Brown, personal communication).

There were two deaths due to tuberculosis in this reporting period: a 49-year-old female in Victoria and a 79-year-old male in Tasmania.

Figure 8 shows tuberculosis notification rates from 1991 to 2005. Rates for non-Indigenous Australians have declined over this time, from 2.3 cases per 100,000 in 1991 to 0.8 in 2005. Rates for Indigenous Australians were subject to greater fluctuations, however overall also showed a decline, from 13.5 cases per 100,000 in 1991 to 5.9 in 2005. Conversely, notification rates in overseas-born persons have shown a steady increase from 15.1 cases per 100,000 in 1991 to 20.6 in 2005.

Figure 8. Tuberculosis notification rates by ethnicity, 1991 to 2005



Acknowledgments

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