Communicable diseases surveillance

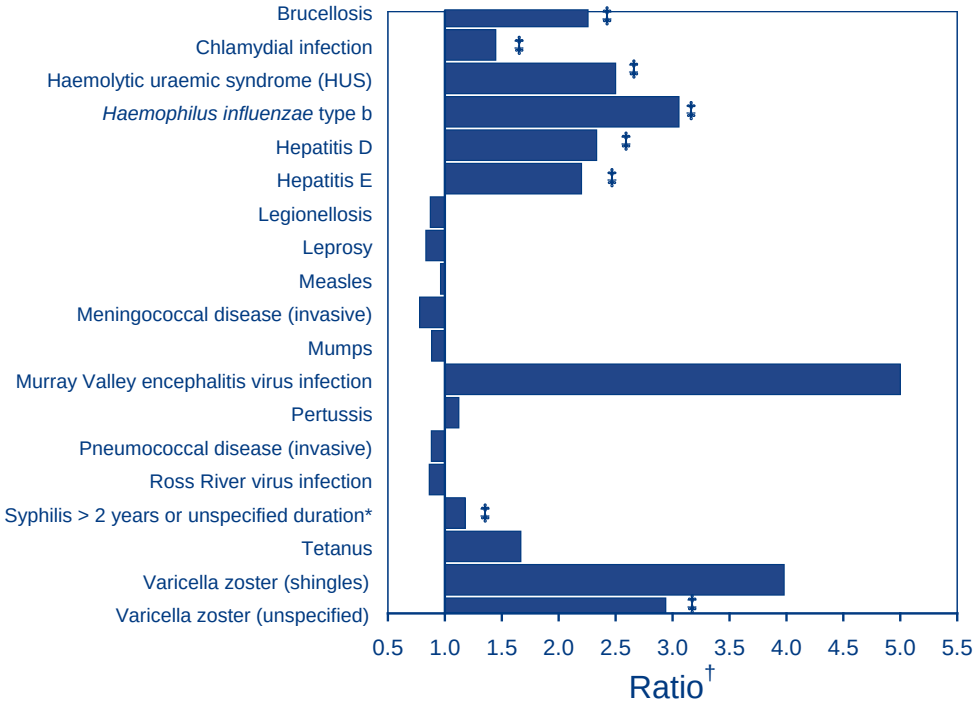
Highlights for 2nd quarter, 2008

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/or 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 and 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' while data from the LabVISE scheme are referred to as 'laboratory reports'.

Figure 1 shows the changes in selected disease notifications to the National Notifiable Diseases Surveillance System (NNDSS) with a diagnosis in the first quarter (April to June) 2008, in comparison with the five-year mean for the same period. Notifications were above the five year mean for the same period and exceeded two standard deviations from the five-year mean for: brucellosis, chlamydial infection, haemolytic uraemic syndrome, *Haemophilus influenzae* type b, hepatitis D, hepatitis E, syphilis (greater than 2 years or unspecified duration) and varicella zoster (unspecified).

Figure 1. Selected* diseases from the National Notifiable Diseases Surveillance System, comparison of provisional totals for the period 1 April to 30 June 2008 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 5 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. See Table 1 for all diseases.

† Ratio of current quarter total to mean of corresponding quarter for the previous 5 years.

‡ Where the mean of the current quarter exceeds the mean of the corresponding quarter for the previous 5 years by more than 2 standard deviations.

§ Ratio for syphilis of less than 2 years duration based on 4 years data.

Notifications were above the five-year mean, but less than 2 standard deviations from the five-year mean for pertussis, tetanus, Murray Valley encephalitis virus infection and varicella zoster (shingles). Notifications were equal to or below the five-year mean for measles, mumps, invasive pneumococcal disease, legionellosis, Ross River virus infection, leprosy, and invasive meningococcal disease.

Bloodborne viruses

Hepatitis D

Hepatitis D infection requires the presence of the hepatitis B virus to replicate and can occur as an acute co-infection with hepatitis B virus, or as a super-infection with chronic hepatitis B infection. The modes of hepatitis D transmission are similar to those for hepatitis B through exposure to infected blood and serous body fluids. Hepatitis D infection can be misdiagnosed as an exacerbation of chronic hepatitis B.[1] Preventative measures for hepatitis D infection are essentially through hepatitis B immunisation in order to prevent hepatitis B infection and hence hepatitis D co-infection.

Hepatitis D occurs worldwide and is most prevalent in countries that have a high incidence of hepatitis B. The highest incidence occurs in parts of Russia, Romania, Southern Italy and the Mediterranean countries, Africa, South America and the islands of the Western Pacific. However, despite high rates of hepatitis B in China the incidence of hepatitis D is disproportionately lower.[2] In Australia, hepatitis D infection is uncommon.

During the second quarter of 2008 there were 14 cases of hepatitis D virus infection notified to the NNDSS. Cases were reported from New South Wales (n=5), Western Australia (n=4), Queensland (n=2), Victoria (n=2) and the Northern Territory (n=1).

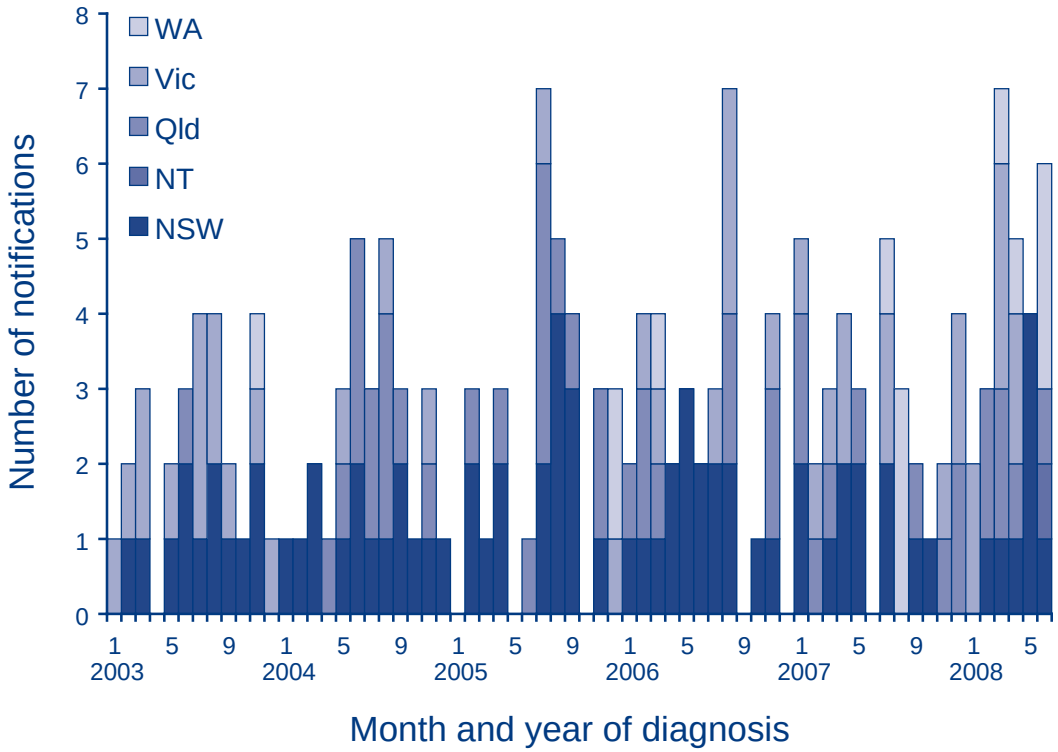
Figure 2 shows the number of notifications of hepatitis D reported to the NNDSS since 2003. For the first half of 2008 there were 25 cases of hepatitis D virus infection reported nationally, 92% higher than the 5 year-mean for the previous corresponding periods (n=13.0). The recent increase in hepatitis D virus infection notifications may be associated with increased co-testing for both hepatitis B and D viruses due to an increased awareness of the hepatitis D virus and co-infection issues.

Gastrointestinal diseases

Haemolytic uraemic syndrome

An association between infection with Shiga toxin-producing *Escherichia coli* (named for their similarity to toxins produced by *Shigella*) and the post diarrhoeal haemolytic uraemic syndrome (HUS) was first described in 1983.[3] Only confirmed cases

Figure 2. Notifications of hepatitis D, Australia, 1 January 2003 to 30 June 2008, by month of diagnosis



of HUS are reported to NNDSS. A confirmed case requires acute microangiopathic anaemia on peripheral blood smear (schistocytes, burr cells or helmet cells), and at least one of acute renal impairment (haematuria, proteinuria or elevated creatinine level), or thrombocytopaenia, particularly during the first 7 days of illness.

Figure 3 shows the number of notifications for HUS received by NNDSS between 1 January 2003 and 30 June 2008. During the second quarter of 2008, there were 6 notifications of HUS, including 2 fatal cases. Five cases were notified in New South Wales and 1 in the Northern Territory. In the year-to-date to 30 June 2008 there were 14 cases of HUS, exceeding the five-year mean of year to date notifications (7.2 notifications) by more than 2 standard deviations. The number of HUS notifications in the quarter represents an increase over the same period of 2007, when 3 cases were notified, with a total of 10 cases in the year-to-date in 2007.

Vaccine preventable diseases

Haemophilus influenzae type b

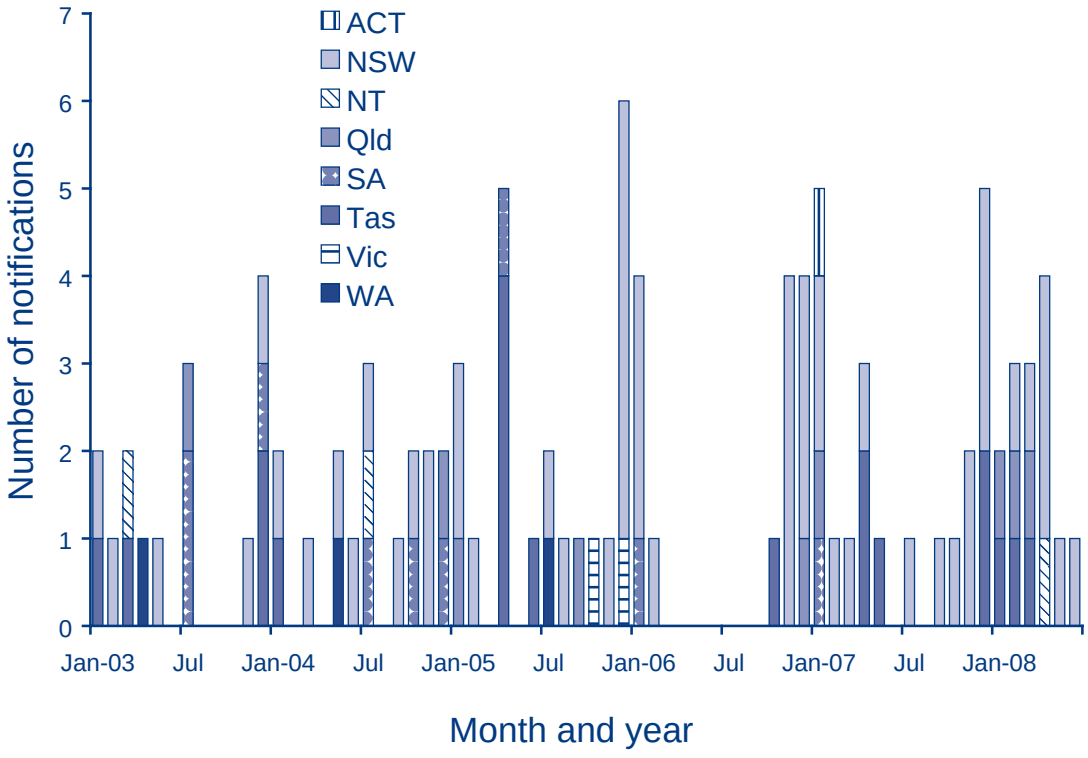
Haemophilus influenzae are Gram-negative coccobacilli that are classified into serotypes a through to f on the basis of the antigenic characteristics of the polysaccharide capsule, if present. The unencapsulated strains are nontypeable. *H. influenzae* serotype b is the most pathogenic. Humans are the reservoir of the bacteria, and transmission is via droplet infection and discharges from the nose and throat during the infectious period. The National Immunisation Program Schedule provides for a total of 4 doses of Hib vaccine, given at 2, 4, 6 and 12 months of age if using the PRP-Hib containing vaccine. The PRP-OMP Hib containing vaccine is indicated for use in Aboriginal and Torres Strait Islander children in areas of higher risk with doses provided at 2, 4 and 12 months.

Between 1 April and 30 June 2008, a total of 11 notifications of Hib were diagnosed and reported to the NNDSS. This was an increase from the 5 cases notified in the first quarter of 2008 and the 5 year-to-date mean for this period (n= 3.6). There have been 16 notifications for the year-to-date, which was 2.3 times the year-to-date five-year mean (7.0).

The annualised notification rate for this quarter was 0.2 cases per 100,000 population, an increase from 0.1 cases per 100,000 population in the first quarter of 2008.

The majority of cases were reported from New South Wales (n=6) and Queensland (n=3), with 1 each being notified from both Victoria and the Northern Territory. Five cases were in children, with 2 being infants aged less than 12 months. Both infants were reported to be unvaccinated for

Figure 3. Notifications of haemolytic uraemic syndrome, Australia, 1 January 2003 to 30 June 2008, by month of diagnosis



the disease. The majority of cases (n=10) were in non-Indigenous Australians, with 1 case being of unknown Indigenous status. Cases were approximately evenly divided between the sexes, with 5 males and 6 females affected.

Measles

Measles is an acute, highly communicable viral disease that can lead to serious complications such as pneumonia (lung infection), encephalitis (inflammation of the brain) or otitis media (middle ear infection). In the past, measles infection was a common childhood illness, but as a result of national immunisation campaigns measles is now rare in Australia, except for occasional outbreaks of limited duration that are generally linked to an imported case.[4] The current National Immunisation Program Schedule recommends 2 doses of the measles-mumps-rubella vaccine (MMR) at 12 months of age and at 4 years of age, unless there is a contraindication. High-level vaccination coverage is imperative to enable measles elimination, requiring rates for each new birth cohort of greater than 95% for a single dose and greater than 90% for 2 doses.[5]

Between 1 April and 30 June 2008, 26 cases of measles were reported to the NNDSS compared to the 33 cases reported in the first quarter of 2008. The majority of cases in this quarter were from New South Wales (n=23), with Western Australia (n=2) and Queensland (n=1) also reporting cases. The number of cases in the second quarter of 2008 was comparable to the five-year mean (n=27). The annualised notification rate has decreased this quarter to 0.5 cases per 100,000 population compared with the first quarter of 2008 when it was 0.6 cases per 100,000 population.

Fifty-four per cent of cases (n=14) were male and 46% (12) were female with ages ranging from less than 1 year to 48 years. Of the 26 cases, vaccination status was known for 21 of the cases, with 9 (35%) reported as fully vaccinated for age and 12 (46%) reported as not vaccinated.

Of the 26 cases, 1 unvaccinated infant aged less than 1 year acquired measles overseas. The annualised rate of locally acquired measles was estimated at 4.8 cases per million population. NSW Health has reported 4 generations of transmission of measles in a localised community.

Genotyping data was available for 7 cases, all from New South Wales. The majority (n=5) were D5, with 1 each being D4 and D9.

Mumps

The mumps virus is a member of the Paramyxovirdae family, genus *Rubulavirus*. Infection with the virus causes an acute disease characterised by fever, swelling, and tenderness of one or more salivary glands. Testicular atrophy occurs in about one-third of patients, but sterility is rare. Transmission is airborne, via droplet spread or by direct contact with the saliva of an infected person. In the absence of immunisation, mumps is endemic. In Australia, immunisation is included as part of the MMR vaccine provided at 12 months and 4 years of age.

Between 1 April and 30 June 2008, 52 cases of mumps were reported to the NNDSS. This was a decrease from the previous quarter (n=144) and was also less than the 5 year-to-date mean for this quarter of 59 cases. However, total case numbers to date in 2008 (n=199) were 1.4 times higher than for the same period in 2007 (n=139) and were twice the 5 year-to-date mean of 96 cases. The annualised notification rate for this quarter was 1.0 cases per 100,000 population, a decrease from 2.7 for the first quarter of 2008.

Cases for this quarter were reported from Western Australia (n=27), the Northern Territory (n=9), New South Wales (n=8), Queensland (n=5), Victoria (n=2) and Tasmania (n=1). Fifty-four per cent of cases were male (n=28) and 46% female (n=24) with ages ranging from 8 to 70 years. Of the 52 cases, 18 were fully vaccinated for age, 1 was partially vaccinated for age, 10 were not vaccinated and in 23 cases vaccination status was unknown.

Of the 52 cases, 4 were imported from overseas of which 1 had a history of partial vaccination and the other 3 were reported as having unknown vaccination status.

Pertussis

Pertussis (whooping cough) is an acute bacterial infection of the respiratory tract cause by *Bordetella pertussis*. The initial catarrhal stage has an insidious onset with an irritating cough that gradually becomes paroxysmal, usually within 1–2 weeks and lasting for 1–2 months or longer. Paroxysms can be followed by a characteristic high-pitched inspiratory whoop. In vaccinated populations, the number of fatalities from pertussis is low. Infants under 6 months are at most risk of death being too young to have completed primary immunisation. Transmission is by direct contact with discharges from respiratory mucous membranes of infected persons by the airborne route. In vaccinated populations, bacteria are frequently brought home by an older sibling and sometimes a parent.

Between 1 April and 30 June 2008, 1,935 cases of pertussis were reported to the NNDSS. The majority of cases were reported in New South Wales (n=881) followed by Queensland (n=337) and Victoria (n=321) with South Australia (n=168), the Northern Territory (n=129), Western Australia (n=67), the Australian Capital Territory (n=24) and Tasmania (n=8) also reporting cases in this quarter. These case numbers were 1.5 times more than in the same period in 2007 (n=1,271) but only 1.2 times the year-to-date five-year mean for this quarter.

The annualised notification rate for this quarter of 37 cases per 100,000 population was higher than that for the first quarter (29) and for the same period in 2007 (23 per 100,000). Notifications for the year-to-date (n=3,448) exceeded both the same period in 2007 (n=2,309) and the year-to-date five-year mean (n=3,271).

Fifty-eight per cent of cases were female (n=1,125) and 42% male (n=810). The average age in this quarter was 38 cases with ages ranging from less than 1 year to 92 years.

Tetanus

Tetanus is an acute disease induced by an exotoxin of the bacteria *Clostridium tetani*, which grows anaerobically at the site of a puncture wound injury. Direct person-to-person transmission is not possible. The disease is characterised by painful muscular contractions and has a case mortality rate of between 10% and 80%. Active immunity is induced by tetanus toxoid and persists for at least 10 years after full immunisation. The current National Immunisation Program schedule provides for immunisation at 2, 4 and 6 months, 4 years and 15–17 years.

Between 1 April and 30 June 2008, there was 1 new case of tetanus reported to the NNDSS. In the previous quarter, there were 3 reported cases. The number of cases in the second quarter of 2008 was comparable with the five-year mean (n=0.6). However, the year-to-date of 4 cases exceeded the five-year mean (n=1.6). The annualised rate for the second quarter of 2008 was 0.02 cases per 100,000 population, compared with 0.00 cases per 100,000 population for the same period in 2007.

All 4 cases reported for the year-to-date in 2008 were from elderly people, with the cases having an age range of 70 through to 87 years and a mean of 80 years. Vaccination status for all cases was either unknown (n=3) or partially vaccinated with 1 dose of vaccine (n=1). No deaths resulted from illness.

Vectorborne diseases

There are currently 9 notifiable mosquito-borne diseases under national surveillance in Australia. These include alphaviruses (Barmah Forest virus and Ross River virus), flaviviruses (dengue, Japanese encephalitis, Kunjin, Murray Valley encephalitis and flavivirus infection not elsewhere classified), yellow fever and malaria.

Murray Valley encephalitis virus infection

On 29 April 2008, the Western Australian Department of Health issued a media release reminding people living and holidaying in Western Australia's north to continue to take precautions against mosquito bites following the death of a 49-year-old Kimberley resident from Murray Valley encephalitis virus (MVEV) infection.

MVEV was first isolated from patients who died from encephalitis in the Murray Valley in Victoria and South Australia in 1951. Retrospectively, the first epidemics of disease caused by this virus are thought to have occurred in 1917 and 1918 (initially named Australian X disease). It was previously included as one of the causative agents in the disease called Australian encephalitis, which also included disease caused by Kunjin virus, another flavivirus. These viruses are now accepted as causing 2 separate diseases. The last Australia-wide outbreak of MVEV disease was in 1974. Since then almost all cases have been in northern and central Australia (with a few cases reported in the Midwest and Murchison regions, less than 500 km north of Perth, in 2000).

Acknowledgements

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