Communicable diseases surveillance

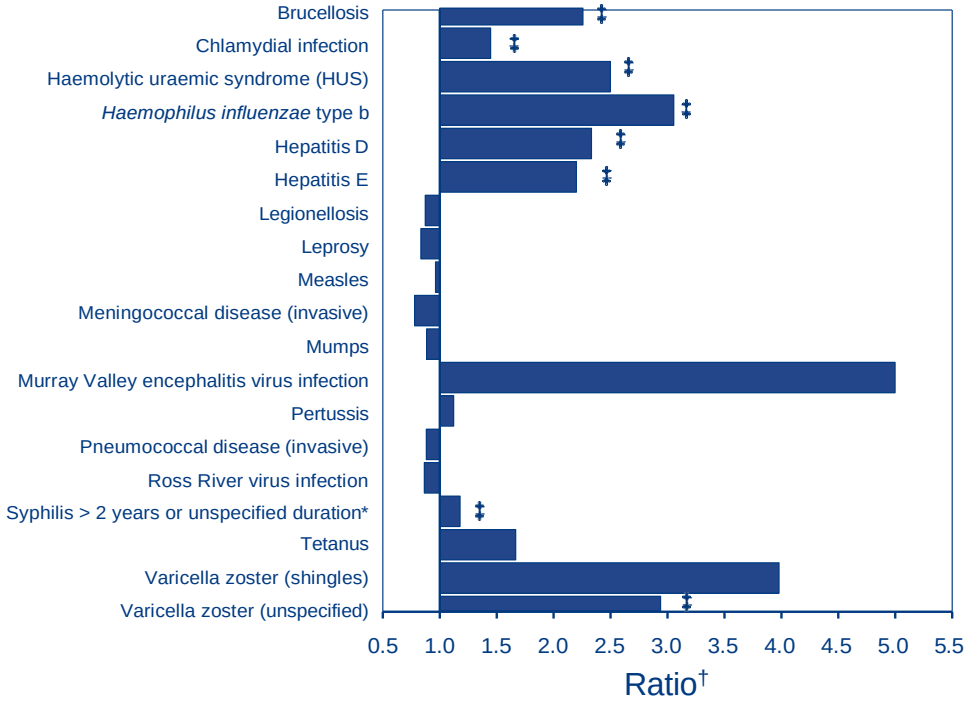
Highlights for 2nd quarter, 2008

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).

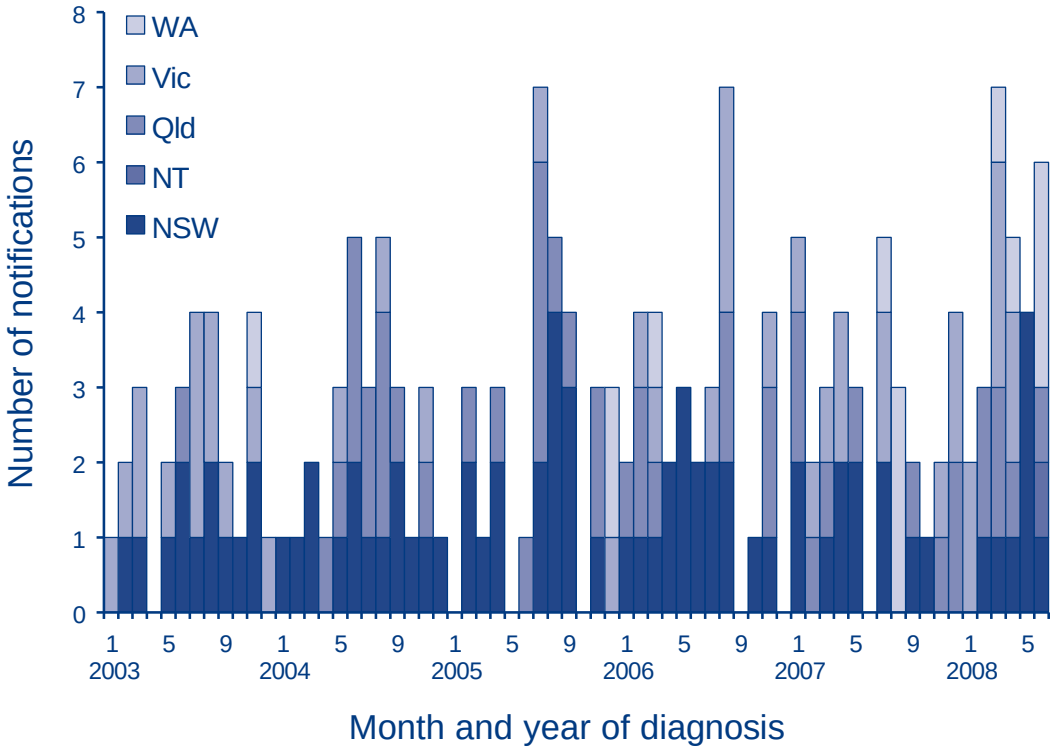
Figure 2 shows the number of notifications of hepatitis D reported to the NNDSS since 2003. For the first half of 2008 there were 25 cases of hepatitis D virus infection reported nationally, 92% higher than the 5 year-mean for the previous corresponding periods (n=13.0). The recent increase in hepatitis 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

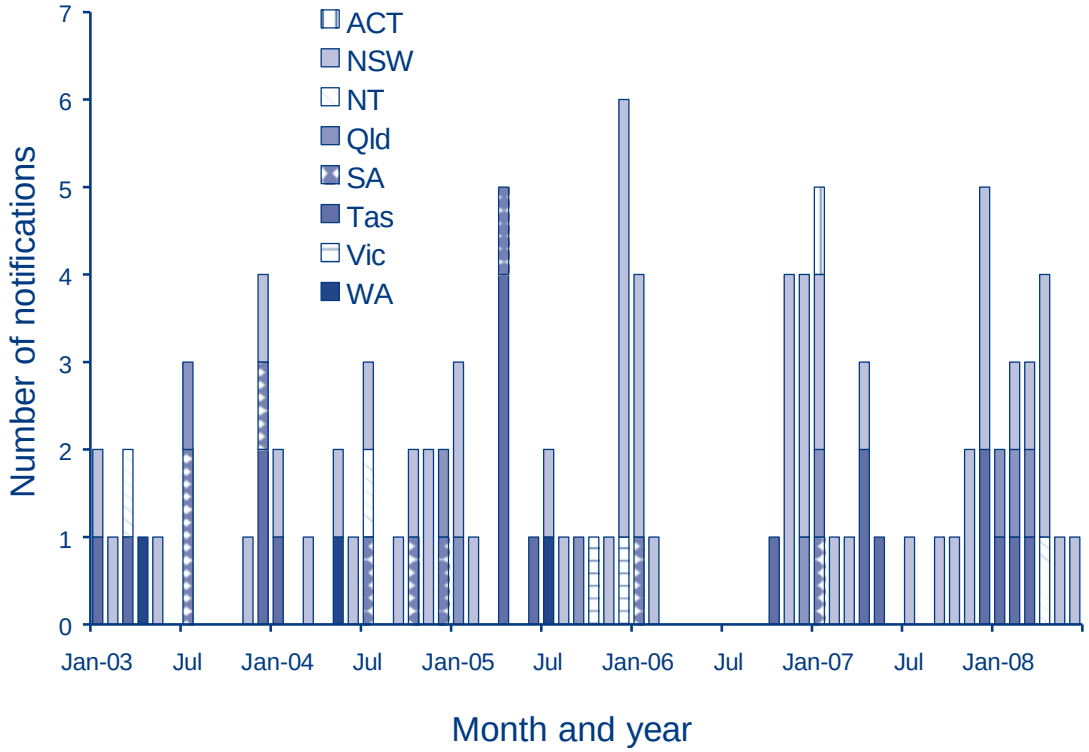
Haemophilus influenzae are Gram-negative coccobacilli that are classified into serotypes a through to f on the basis of the antigenic characteristics of the polysaccharide capsule, if present. The unencapsulated strains are nontypeable. *H. influenzae* serotype b is the most pathogenic. Humans are the 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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Tables

National Notifiable Diseases Surveillance System

A summary of diseases currently being reported by each jurisdiction is provided in Table 1. There were 36,787 notifications to the National Notifiable Diseases Surveillance System (NNDSS) with a notification received date between 1 April and 30 June 2008 (Table 2). The notification rate of diseases per 100,000 population for each state or territory is presented in Table 3.

Table 1. Reporting of notifiable diseases by jurisdiction

Disease	Data received from:
Bloodborne diseases	
Hepatitis (NEC)	All jurisdictions
Hepatitis B (incident)	All jurisdictions
Hepatitis B (unspecified)	All jurisdictions
Hepatitis C (incident)	All jurisdictions except Qld
Hepatitis C (unspecified)	All jurisdictions
Hepatitis D	All jurisdictions
Gastrointestinal diseases	
Botulism	All jurisdictions
Campylobacteriosis	All jurisdictions except NSW
Cryptosporidiosis	All jurisdictions
Haemolytic uraemic syndrome	All jurisdictions
Hepatitis A	All jurisdictions
Hepatitis E	All jurisdictions
Listeriosis	All jurisdictions
Salmonellosis	All jurisdictions
STEC, VTEC	All jurisdictions
Shigellosis	All jurisdictions
Typhoid	All jurisdictions
Quarantinable diseases	
Cholera	All jurisdictions
Highly pathogenic avian influenza in humans	All jurisdictions
Plague	All jurisdictions
Rabies	All jurisdictions
Severe acute respiratory syndrome	All jurisdictions
Smallpox	All jurisdictions
Viral haemorrhagic fever	All jurisdictions
Yellow fever	All jurisdictions
Sexually transmissible infections	
Chlamydial infection	All jurisdictions
Donovanosis	All jurisdictions
Gonococcal infection	All jurisdictions
Syphilis (all)	
Syphilis <2 years duration	All jurisdictions
Syphilis >2 years or unspecified duration	All jurisdictions
Syphilis - congenital	All jurisdictions

Table 1. Reporting of notifiable diseases by jurisdiction, continued

Disease	Data received from:
Vaccine preventable diseases	
Diphtheria	All jurisdictions
Haemophilus influenzae type b	All jurisdictions
Influenza (laboratory confirmed)*	All jurisdictions
Measles	All jurisdictions
Mumps	All jurisdictions
Pertussis	All jurisdictions
Pneumococcal disease (invasive)	All jurisdictions
Poliomyelitis	All jurisdictions
Rubella	All jurisdictions
Rubella - congenital	All jurisdictions
Tetanus	All jurisdictions
Varicella zoster (chickenpox)	All jurisdictions except NSW & Vic
Varicella zoster (shingles)	All jurisdictions except NSW & Vic
Varicella zoster (unspecified)	All jurisdictions except NSW & Vic
Vectorborne diseases	
Arbovirus infection (NEC)†	All jurisdictions
Barmah Forest virus infection	All jurisdictions
Dengue virus infection	All jurisdictions
Japanese encephalitis virus infection	All jurisdictions
Kunjin virus infection	All jurisdictions
Malaria	All jurisdictions
Murray Valley encephalitis virus infection	All jurisdictions
Ross River virus infection	All jurisdictions
Zoonoses	
Anthrax	All jurisdictions
Australian bat lyssavirus	All jurisdictions
Brucellosis	All jurisdictions
Leptospirosis	All jurisdictions
Lyssaviruses (NEC)	All jurisdictions
Ornithosis	All jurisdictions
Q fever	All jurisdictions
Tularaemia	All jurisdictions
Other bacterial infections	
Legionellosis	All jurisdictions
Leprosy	All jurisdictions
Meningococcal infection	All jurisdictions
Tuberculosis	All jurisdictions

* Notifiable in South Australia as of 1 May 2008.

† Flavivirus (NEC) replaced Arbovirus (NEC) from 1 January 2004. Arbovirus (NEC) replaced Flavivirus (NEC) from 2008.

NEC Not elsewhere classified.

Table 2. Notifications of diseases received by state and territory health authorities in the period 1 April to 30 June 2008, by date of diagnosis*

Disease	State or territory								Total 2nd quarter 2008†	Total 1st quarter 2008	Total 2nd quarter 2007	Last 5 years mean 2nd quarter	Year to date 2008	Last 5 years YTD mean	Ratio‡
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA							
Bloodborne diseases															
Hepatitis (NEC)	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.2	0.0
Hepatitis B (incident)	0	12	0	10	2	3	19	13	59	59	79	76.6	122	155.0	0.8
Hepatitis B (unspecified)	17	786	17	194	85	13	450	148	1,710	1,735	1,747	1528.8	3,499	3,095.2	1.1
Hepatitis C (incident)	2	4	0	NN	11	6	32	24	79	82	82	89.0	165	182.2	0.9
Hepatitis C (unspecified)	40	1,189	59	656	121	85	629	320	3,099	3,316	2,898	3011.4	6,469	6,289.2	1.0
Hepatitis D	0	5	1	2	0	0	2	4	14	12	7	6.0	27	13.2	2.3
Gastrointestinal diseases															
Botulism	0	0	0	0	0	0	0	0	0	0	0	0.4	0	1.0	0.0
Campylobacteriosis§	88	NN	66	932	506	105	1,398	332	3,427	4,675	3,893	3465.2	8,112	7,768.8	1.0
Cryptosporidiosis	2	111	21	173	10	8	120	33	478	761	617	625.4	1,243	1,613.4	0.8
Haemolytic uraemic syndrome	0	5	1	0	0	0	0	0	6	8	3	2.4	14	7.2	2.5
Hepatitis A	2	9	2	27	4	0	35	7	86	85	39	77.0	172	169.4	1.1
Hepatitis E	0	2	3	2	0	0	2	2	11	14	7	5.0	25	13.8	2.2
Listeriosis	0	6	0	1	0	0	5	2	14	26	8	13.8	40	32.0	1.0
Salmonellosis	28	530	131	457	170	32	433	173	1,954	2,903	2,360	1948.8	4,876	4,897.0	1.0
STEC, VTEC‖	0	3	0	4	10	0	2	0	19	32	14	16.8	51	37.2	1.1
Shigellosis	0	17	33	25	39	1	18	49	182	243	135	139.8	427	313.2	1.3
Typhoid	0	11	1	5	0	0	7	1	25	35	19	14.2	60	40.2	1.8
Quarantinable diseases															
Cholera	0	0	0	0	0	0	0	0	0	0	1	1.0	0	1.8	0.0
Highly pathogenic avian influenza in humans	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
Severe acute respiratory syndrome	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0.0
Smallpox	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

Table 2. Notifications of diseases received by state and territory health authorities in the period 1 April to 30 June 2008, by date of diagnosis,* continued

Disease	State or territory								Total 2nd quarter 2008†	Total 1st quarter 2008	Total 2nd quarter 2007	Last 5 years mean 2nd quarter	Year to date 2008	Last 5 years YTD mean	Ratio+
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA							
Sexually transmissible infections															
Chlamydial infection¶	236	3,535	744	3,847	971	335	3,211	2,274	15,153	14,549	13,219	10475.0	29,804	21,033.4	1.4
Donovanosis	0	0	1	0	0	0	0	0	1	0	0	2.0	1	5.2	0.5
Gonococcal infection	4	303	515	402	204	6	234	676	2,344	2,081	2,320	2084.0	4,441	4,118.6	1.1
Syphilis (all)	3	344	61	76	15	3	210	80	792	828	796	615.8	1,629	1,226.6	1.3
Syphilis < two years duration	2	61	28	32	0	0	101	62	286	356	395	226.8	664	350.8	1.3
Syphilis >two years or unspecified duration	1	283	33	44	15	3	109	18	506	472	401	429.4	965	875.8	1.2
Syphilis - congenital	0	1	0	1	0	0	0	0	2	1	3	5.0	3	8.2	0.4
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	6	1	3	0	0	1	0	11	5	4	3.6	16	7.0	3.1
Influenza (laboratory confirmed)	27	161	4	299	11	16	77	82	677	436	569	411.4	1,147	634.6	1.6
Measles	0	23	0	1	0	0	0	2	26	33	3	27.0	59	39.0	1.0
Mumps	0	8	9	5	0	1	2	27	52	144	93	58.8	199	95.6	0.9
Pertussis	24	881	129	337	168	8	321	67	1,935	1,515	1,271	1724.2	3,524	3,274.8	1.1
Pneumococcal disease (invasive)	11	156	12	81	35	9	89	36	429	208	381	486.8	642	754.4	0.9
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0.0
Rubella	0	5	0	0	0	0	4	0	9	4	15	13.4	13	25.8	0.7
Rubella - congenital	0	0	0	0	0	0	0	0	0	0	2	0.6	0	0.8	0.0
Tetanus	0	0	0	1	0	0	0	0	1	3	0	0.6	4	1.6	1.7
Varicella zoster (chickenpox)	8	NN	18	64	98	8	2	76	274	260	295	154.7	537	500.0	1.8
Varicella zoster (shingles)	3	NN	18	80	170	33	0	129	433	533	370	108.8	974	298.5	4.0
Varicella zoster (unspecified)	27	NN	0	731	104	8	2	188	1,060	976	934	360.6	2,031	751.4	2.9
Vectorborne diseases															
Arbovirus infection (NEC)	0	0	0	3	0	0	0	0	3	7	6	7.8	10	25.0	0.4
Barmah Forest virus infection	1	142	20	270	9	0	8	41	491	836	574	549.2	1,329	979.4	0.9
Dengue virus infection	0	30	4	21	10	1	2	25	93	151	82	102.4	244	267.4	0.9
Japanese encephalitis virus infection	0	0	0	0	0	0	0	0	0	0	0	0.2	0	0.4	0.0
Kunjin virus infection	0	0	0	0	0	0	0	0	0	1	0	1.4	1	6.0	0.0
Malaria	3	32	4	37	3	2	27	20	128	125	161	165.8	255	367.0	0.8
Murray Valley encephalitis virus infection	0	0	0	0	0	0	0	1	1	1	0	0.2	2	0.8	5.0
Ross River virus infection	3	236	56	535	31	8	47	242	1,158	2,797	1,290	1341.0	3,962	3,040.0	0.9

Table 2. Notifications of diseases received by State and Territory health authorities in the period 1 April to 30 June 2008, by date of diagnosis,* continued

Disease	State or territory								Total 2nd quarter 2008†	Total 1st quarter 2008	Total 2nd quarter 2007	Last 5 years mean 2nd quarter	Year to date 2008	Last 5 years YTD mean	Ratio‡
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA							
Zoonoses															
Anthrax	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.4	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	1	0	13	0	0	0	0	14	10	7	6.2	24	16.4	2.3
Leptospirosis	0	5	0	25	0	0	1	0	31	42	28	40.8	73	91.8	0.8
Lyssavirus (NEC)	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0.0
Ornithosis	0	14	0	1	0	0	14	3	32	23	24	43.2	56	84.8	0.7
Q fever	1	23	2	29	6	0	2	2	65	109	115	110.0	177	234.4	0.6
Tularaemia	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0.0	0.0
Other bacterial infections															
Legionellosis	3	22	0	9	2	0	22	15	73	63	86	83.6	138	170.4	0.9
Leprosy	0	1	0	0	0	0	1	0	2	3	4	2.4	5	5.4	0.8
Meningococcal infection**	1	20	2	15	5	0	18	5	66	43	59	84.8	107	160.2	0.8
Tuberculosis	6	96	5	38	9	2	86	26	268	293	246	244.0	579	497.2	1.1
Total	540	8,735	1,940	9,412	2,809	693	7,533	5,125	36,787	40,066	34,866		72,649		0.5

* Date of diagnosis = true onset date, or where not available, the earliest of (i) specimen date, (ii) notification date, or (iii) notification receive date. Hepatitis B and C unspecified were analysed by the date of notification.

† 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.

‡ Ratio = ratio of current quarter total to the mean of last 5 years for the same quarter. Note: Ratios for syphilis <2 years; syphilis >2 years or unspecified duration based on 2 years data

§ Not reported for New South Wales where it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.

|| Infections with Shiga-like toxin (verotoxin) producing *Escherichia coli* (STEC/VTEC).

¶ Includes *Chlamydia trachomatis* identified from cervical, rectal, urine, urethral, throat and eye samples, except for South Australia, which reports only genital tract specimens; Northern Territory and Queensland, which exclude ocular specimens; and Western Australia, which excludes ocular and perinatal infections.

** Only invasive meningococcal disease is nationally notifiable. However, New South Wales, the Australian Capital Territory and South Australia also report conjunctival cases.

NN Not notifiable.

NEC Not elsewhere classified.

NDP No data provided.

Table 3. Notification rates of diseases, 1 April to 30 June 2008, by state or territory. (Annualised rate per 100,000 population)

Disease*	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Bloodborne diseases									
Hepatitis (NEC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hepatitis B (incident)	0.0	0.7	0.0	1.0	0.5	2.4	1.5	2.5	1.1
Hepatitis B (unspecified)	20.0	45.6	31.6	18.6	21.5	10.5	34.6	28.1	32.6
Hepatitis C (incident)	2.4	0.2	0.0	NN	2.8	4.9	2.5	4.6	1.9
Hepatitis C (unspecified)	47.1	69.0	109.8	62.8	30.6	68.9	48.3	60.8	59.0
Hepatitis D	0.0	0.3	1.9	0.2	0.0	0.0	0.2	0.8	0.3
Gastrointestinal diseases									
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Campylobacteriosis†	103.6	NN	122.8	89.2	127.8	85.1	107.4	63.1	97.1
Cryptosporidiosis	2.4	6.4	39.1	16.5	2.5	6.5	9.2	6.3	9.1
Haemolytic uraemic syndrome	0.0	0.3	1.9	0.0	0.0	0.0	0.0	0.0	0.1
Hepatitis A	2.4	0.5	3.7	2.6	1.0	0.0	2.7	1.3	1.6
Hepatitis E	0.0	0.1	5.6	0.2	0.0	0.0	0.2	0.4	0.2
Listeriosis	0.0	0.3	0.0	0.1	0.0	0.0	0.4	0.4	0.3
Salmonellosis	33.0	30.8	243.8	43.7	42.9	25.9	33.3	32.9	0.4
STEC, VTEC‡	0.0	0.2	0.0	0.4	2.5	0.0	0.2	0.0	37.2
Shigellosis	0.0	1.0	61.4	2.4	9.8	0.8	1.4	9.3	3.5
Typhoid	0.0	0.6	1.9	0.5	0.0	0.0	0.5	0.2	0.5
Quarantinable diseases									
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Highly pathogenic avian influenza in humans	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
Severe acute respiratory syndrome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smallpox	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 infections									
Chlamydial infection§	277.8	205.3	1,384.6	368.0	245.2	271.6	246.8	431.9	288.5
Donovanosis	0.0	0.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0
Gonococcal infection	4.7	17.6	958.5	38.5	51.5	4.9	18.0	128.4	44.6
Syphilis (all)	3.5	20.0	113.5	7.3	3.8	2.4	16.1	15.2	15.1
Syphilis <2 years duration	2.4	3.5	52.1	3.1	0.0	0.0	7.8	11.8	5.4
Syphilis >2 years or unspecified duration	1.2	16.4	61.4	4.2	3.8	2.4	8.4	3.4	9.6
Syphilis - congenital	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
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	0.3	1.9	0.3	0.0	0.0	0.1	0.0	0.2
Influenza (laboratory confirmed)	31.8	9.3	7.4	28.6	2.8	13.0	5.9	15.6	12.9
Measles	0.0	1.3	0.0	0.1	0.0	0.0	0.0	0.4	0.5
Mumps	0.0	0.5	16.7	0.5	0.0	0.8	0.2	5.1	1.0
Pertussis	28.3	51.2	240.1	32.2	42.4	6.5	24.7	12.7	36.8
Pneumococcal disease (invasive)	13.0	9.1	22.3	7.7	8.8	7.3	6.8	6.8	8.2

Table 3. Notification rates of diseases, 1 April to 30 June 2008, by state or territory. (Annualised rate per 100,000 population), continued

Disease*	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Vaccine preventable diseases, continued									
Poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0	0.2
Rubella - congenital	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tetanus	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Varicella zoster (chickenpox)	9.4	NN	33.5	6.1	24.7	6.5	0.2	14.4	7.8
Varicella zoster (shingles)	3.5	NN	33.5	7.7	42.9	26.8	0.0	24.5	12.3
Varicella zoster (unspecified)	31.8	NN	0.0	69.9	26.3	6.5	0.2	35.7	30.0
Vectorborne diseases									
Arbovirus infection (NEC)	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1
Barmah Forest virus infection	1.2	8.2	37.2	25.8	2.3	0.0	0.6	7.8	9.3
Dengue virus infection	0.0	1.7	7.4	2.0	2.5	0.8	0.2	4.7	1.8
Japanese encephalitis virus infection	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	0.0
Malaria	3.5	1.9	7.4	3.5	0.8	1.6	2.1	3.8	2.4
Murray Valley encephalitis virus infection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
Ross River virus infection	3.5	13.7	104.2	51.2	7.8	6.5	3.6	46.0	22.0
Zoonoses									
Anthrax	0.0	0.0	0.0	0.0	0.0	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	0.1	0.0	1.2	0.0	0.0	0.0	0.0	0.3
Leptospirosis	0.0	0.3	0.0	2.4	0.0	0.0	0.1	0.0	0.6
Lyssavirus (NEC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ornithosis	0.0	0.8	0.0	0.1	0.0	0.0	1.1	0.6	0.6
Q fever	1.2	1.3	3.7	2.8	1.5	0.0	0.2	0.4	1.2
Tularaemia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other bacterial infections									
Legionellosis	3.5	1.3	0.0	0.9	0.5	0.0	1.7	2.8	1.4
Leprosy	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Meningococcal infection‖	1.2	1.2	3.7	1.4	1.3	0.0	1.4	0.9	1.3
Tuberculosis	7.1	5.6	9.3	3.6	2.3	1.6	6.6	4.9	5.1

* Rates are subject to retrospective revision.

† Not reported for New South Wales where it is only notifiable as 'foodborne disease' or 'gastroenteritis in an institution'.

‡ Infections with Shiga-like toxin (verotoxin) producing *Escherichia coli* (STEC/VTEC).

§ Includes *Chlamydia trachomatis* identified from cervical, rectal, urine, urethral, throat and eye samples, except for South Australia, which reports only genital tract specimens; Northern Territory and Queensland, which exclude ocular specimens; and Western Australia, which excludes ocular and perinatal infections.

‖ Only invasive meningococcal disease is nationally notifiable. However, New South Wales, the Australian Capital Territory and South Australia also report conjunctival cases.

NN Not notifiable.

NEC Not elsewhere classified.

NDP No data provided.

Laboratory Serology and Virology Reporting Scheme

There were 6,910 reports received by the Virology and Serology Laboratory Reporting Scheme (LabVISE) in the reporting period, 1 April to 30 June 2008 (Tables 4 and 5).

Table 4. Virology and serology laboratory reports by state or territory* for the reporting period 1 April to 30 June 2008, and total reports for the year†

	State or territory								This period 2008	This period 2007	Year to date 2008	Year to date 2007
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Measles, mumps, rubella												
Measles virus	–	8	–	1	1	–	1	–	11	6	24	12
Mumps virus	1	–	1	2	5	–	4	2	15	12	34	21
Rubella virus	–	1	–	1	–	–	1	–	3	6	9	14
Hepatitis viruses												
Hepatitis A virus	–	1	–	6	4	–	1	–	12	11	35	21
Hepatitis D virus	–	2	–	–	7	–	–	–	9	9	18	16
Hepatitis E virus	–	1	–	1	–	1	1	–	4	–	6	1
Arboviruses												
Ross River virus	–	9	17	191	20	–	6	19	262	422	1,058	723
Barmah Forest virus	–	14	1	108	4	–	1	–	128	158	378	297
Flavivirus (unspecified)	–	1	–	11	–	–	–	–	12	31	42	56
Adenoviruses												
Adenovirus not typed/ pending	–	50	–	60	251	2	4	–	367	210	716	390
Herpesviruses												
Herpes virus type 6	–	–	–	–	–	–	1	–	1	–	1	1
Cytomegalovirus	2	31	–	99	109	–	11	–	252	313	618	600
Varicella–zoster virus	3	79	–	301	148	2	29	–	562	625	1,322	1,322
Epstein–Barr virus	1	6	35	219	169	3	5	126	564	700	1,219	1,377
Other DNA viruses												
Parvovirus	–	2	–	28	8	–	5	–	43	73	123	165
Picornavirus family												
Echovirus type 11	–	3	–	–	–	–	–	–	3	–	3	–
Rhinovirus (all types)	1	44	–	–	3	–	–	–	48	95	85	160
Enterovirus not typed/ pending	1	6	1	6	1	2	2	–	19	55	100	82
Picornavirus not typed	–	–	–	–	–	6	–	–	6	1	7	1
Ortho/paramyxoviruses												
Influenza A virus	2	21	1	28	32	–	5	–	89	66	138	118
Influenza B virus	2	20	–	7	38	–	2	–	69	7	91	12
Parainfluenza virus type 1	–	23	–	7	44	–	12	–	86	7	149	11
Parainfluenza virus type 2	–	5	–	2	2	–	1	–	10	36	20	41
Parainfluenza virus type 3	–	7	–	5	5	–	–	–	17	48	24	81
Respiratory syncytial virus	–	406	1	114	154	7	56	–	738	604	943	775
Other RNA viruses												
HTLV–1	–	–	–	–	14	–	–	–	14	6	18	9
Rotavirus	–	24	–	–	63	–	1	–	88	58	197	103
Norwalk agent	–	11	–	–	–	–	–	–	11	98	28	238

Table 4. Virology and serology laboratory reports by state or territory* for the reporting period 1 April to 30 June 2008, and total reports for the year,† continued

	State or territory								This period 2008	This period 2007	Year to date 2008	Year to date 2007
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Other												
Chlamydia trachomatis not typed	2	272	1	1,099	639	12	14	–	2,039	2,057	4,397	4,221
Chlamydia pneumoniae	–	–	–	–	–	–	1	–	1	–	1	–
Chlamydia psittaci	1	2	–	5	–	–	25	–	33	15	55	36
Mycoplasma pneumoniae	–	6	6	83	47	6	54	15	217	309	423	622
Mycoplasma hominis	–	2	–	–	–	–	–	–	2	1	4	4
Coxiella burnetii (Q fever)	4	31	–	15	7	1	14	–	72	75	152	103
Orientia tsutsuganushi	–	–	–	1	1	–	1	–	3	4	8	7
Rickettsia – spotted fever group	–	9	–	12	2	4	33	2	62	69	90	72
Streptococcus group A	–	5	25	147	–	–	1	–	178	263	450	495
Brucella species	–	–	–	9	–	–	–	–	9	2	17	3
Bordetella pertussis	1	35	1	68	131	–	13	–	249	216	446	396
Legionella pneumophila	–	1	–	–	1	–	2	–	4	17	11	21
Legionella longbeachae	–	–	–	–	1	–	–	–	1	3	5	6
Cryptococcus species	–	1	–	3	4	–	–	–	8	11	15	20
Leptospira species	–	–	–	20	4	–	–	–	24	15	54	38
Treponema pallidum	1	44	14	193	286	–	6	–	544	722	1,108	1,257
Entamoeba histolytica	–	–	–	1	–	–	–	–	1	1	4	5
Toxoplasma gondii	–	–	–	2	1	–	2	–	5	7	6	15
Echinococcus granulosus	–	–	–	–	6	–	9	–	15	11	22	14
Total	22	1,183	104	2,855	2,212	46	324	164	6,910	7,455	14,674	13,982

* State or territory of postcode, if reported, otherwise state or territory of reporting laboratory.

† Data presented are for reports with reports dates in the current period.

– No data received this period.

Table 5. Virology and serology reports by laboratories for the reporting period 1 April to 30 June 2008*

State or territory	Laboratory	April 2008	May 2008	June 2008	Total this period
Australian Capital Territory	The Canberra Hospital	–	–	–	–
New South Wales	Institute of Clinical Pathology and Medical Research, Westmead	65	84	130	279
	New Children's Hospital, Westmead	85	126	125	336
	Repatriation General Hospital, Concord	–	–	–	–
	Royal Prince Alfred Hospital, Camperdown	41	54	49	144
	South West Area Pathology Service, Liverpool	87	108	16	211
Queensland	Queensland Medical Laboratory, West End	1,483	946	663	3,092
	Townsville General Hospital	–	–	–	–
South Australia	Institute of Medical and Veterinary Science, Adelaide	655	824	730	2,209
Tasmania	Northern Tasmanian Pathology Service, Launceston	9	9	22	40
	Royal Hobart Hospital, Hobart	–	–	–	–
Victoria	Australian Ricketsial Reference Laboratory	41	42	47	130
	Monash Medical Centre, Melbourne	14	6	54	74
	Royal Children's Hospital, Melbourne	12	6	–	18
	Victorian Infectious Diseases Reference Laboratory, Fairfield	49	52	62	163
Western Australia	PathWest Virology, Perth	–	–	–	–
	Princess Margaret Hospital, Perth	–	–	–	–
	Western Diagnostic Pathology	90		124	214
Total		2,631	2,257	2,022	6,910

* The complete list of laboratories reporting for the 12 months, January to December 2008, will appear in every report regardless of whether reports were received in this reporting period. Reports are not always received from all laboratories.

– No data received this period.

Additional reports

Australian Sentinel Practice Research Network

The Australian Sentinel Practices Research Network (ASPREN) is a national surveillance system that is owned and operated by the Royal Australian College of General Practitioners and directed through the Discipline of General Practice at the University of Adelaide.

The network consists of general practitioners who report presentations on a number of defined medical conditions each week. ASPREN was established in 1991 to provide a rapid monitoring scheme for infectious diseases that can alert public health officials of epidemics in their early stages as well as play a role in the evaluation of public health campaigns and research of conditions commonly seen in general practice. Electronic data collection was established in 2006 and currently, further development of ASPREN is in progress to create an automatic reporting system.

The list of conditions is reviewed annually by the ASPREN management committee and an annual report is published. In 2008, four conditions are being monitored. They include influenza like illness, gastroenteritis and varicella infections (chickenpox and shingles). Definitions of these conditions are described in Surveillance systems reported in CDI, *published in* Commun Dis Intell *2008;32:135.*

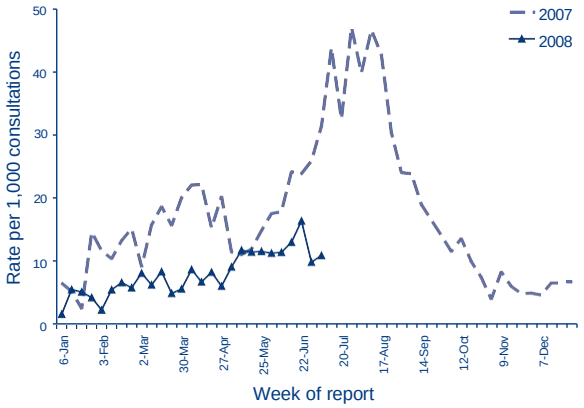
Data on influenza-like illness, gastroenteritis, chickenpox and shingles from 1 April to 30 June 2008 compared with 2007, are shown as the rate per 1,000 consultations in Figures 1, 2, 3 and 4, respectively.

Reporting period 1 April to 30 June 2008

Sentinel practices contributing to ASPREN were located in all jurisdictions other than the Northern Territory. A total of 96 general practitioners contributed data to ASPREN in the second quarter of 2008. Each week an average of 68 general practitioners provided information to ASPREN at an average of 7,160 (range 5,307 to 7,850) consultations per week.

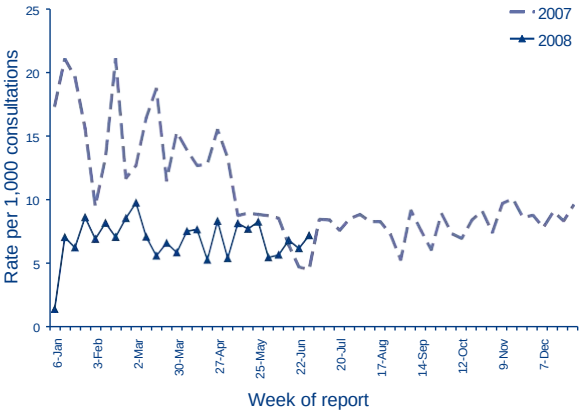
In the first quarter of 2008, influenza like illness (ILI) rates ranged from 6 to 17 cases per 1,000 consultations. For the same reporting period in 2007 reported rates were higher at 11 to 26 cases per 1,000 consultations (Figure 1).

Figure 1. Consultation rates for influenza-like illness, ASPREN, 1 January 2007 to 30 June 2008, by week of report



Reports of gastroenteritis from 1 April to 30 June 2008 were lower compared to the same period in 2007 (Figure 2). During this reporting period, consultation rates for gastroenteritis ranged from 5 to 8 cases per 1,000 consultations.

Figure 2. Consultation rates for gastroenteritis, ASPREN, 1 January 2007 to 30 June 2008, by week of report



Reports of varicella infections were reported at a lower rate for the second quarter of 2008 compared with the same period in 2007. From 1 April to 30 June 2008, recorded rates for chickenpox were between 0 to 0.4 cases per 1,000 consultations (Figure 3).

In the second quarter of 2008, rates for shingles fluctuated between less than 1 to 1.5 cases per 1,000 consultations (Figure 4).

Figure 3. Consultation rates for chickenpox, ASPREN, 1 January 2007 to 30 June 2008, by week of report

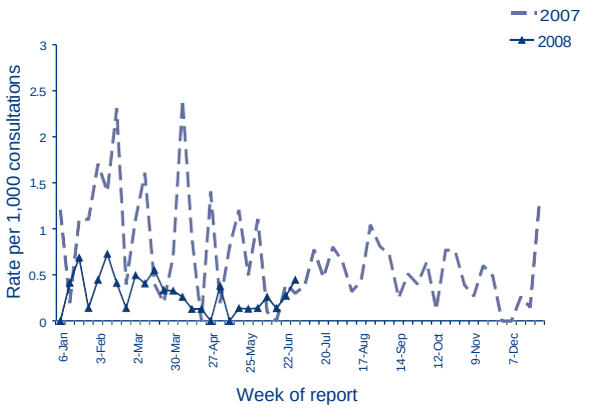
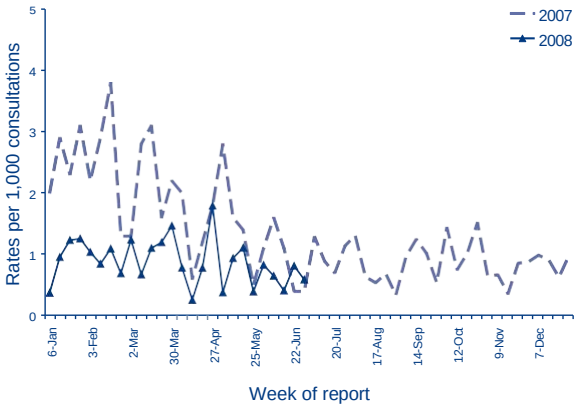


Figure 4. Consultation rates for shingles, ASPREN, 1 January 2007 to 30 June 2008, by week of report



Australian childhood immunisation coverage

Tables 1, 2 and 3 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 12 months of age for the cohort born between 1 January and 31 March 2007, at 24 months of age for the cohort born between 1 January and 31 March 2006, and at and at 5 years of age for the cohort born between 1 January and 31 March 2003 according to the National Immunisation Program Schedule. However from March 2002 to December 2007, coverage for vaccines due at 4 years of age was assessed at the 6-year milestone age.

For information about the Australian Childhood Immunisation Register see Surveillance systems reported in CDI, *published in* Commun Dis Intell *2008;32:134–135 and for a full description of the methodology used by the Register see* Commun Dis Intell *1998;22:36-37.*

Commentary on the trends in ACIR data is provided by the National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (NCIRS). For further information please contact the NCIRS at telephone: +61 2 9845 1435, Email: brynleyh@chw.edu.au

'Fully immunised' at 12 months of age is defined as a child having a record on the ACIR of 3 doses of a diphtheria (D), tetanus (T) and pertussis-containing (P) vaccine, 3 doses of polio vaccine, 2 or 3 doses of *Haemophilus influenzae* type b (Hib) vaccine, and 2 or 3 doses of hepatitis B vaccine. 'Fully immunised' at 24 months of age is defined as a child having a record on the ACIR of 3 or 4 doses of a DTP-containing vaccine, 3 doses of polio vaccine, 3 or 4 doses of Hib vaccine, 2 or 3 doses of hepatitis B vaccine and 1 dose of a measles, mumps

Table 1. Percentage of children immunised at 1 year of age, preliminary results by disease and state or territory for the birth cohort 1 January to 31 March 2007; assessment date 30 June 2008

Vaccine	State or territory								Australia
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Total number of children	1,156	24,042	960	15,365	4,880	1,596	17,530	7,558	73,087
Diphtheria, tetanus, pertussis (%)	93.7	91.6	92.4	91.6	91.8	91.4	92.8	90.5	91.8
Poliomyelitis (%)	93.8	91.5	92.3	91.6	91.8	91.3	92.8	90.5	91.8
Haemophilus influenzae type b (%)	95.8	94.7	95.6	93.9	94.3	94.0	94.8	94.2	94.5
Hepatitis B (%)	95.6	94.8	96.2	93.8	94.2	94.0	94.7	93.9	94.4
Fully immunised (%)	93.5	91.3	91.6	90.8	91.0	91.0	91.8	90.1	91.2
Change in fully immunised since last quarter (%)	-0.4	-0.3	+1.5	-0.4	+0.6	-1.7	-0.1	+1.1	-0.1

and rubella-containing (MMR) vaccine. 'Fully immunised' at 5 years of age is defined as a child having a record on the ACIR of 4 or 5 doses of a DTP-containing vaccine, 4 doses of polio vaccine, and 2 doses of an MMR-containing vaccine.

Immunisation coverage for children 'fully immunised' at 12 months of age for Australia decreased marginally by 0.1 percentage point to 91.2 (Table 1). There were no important changes in coverage for any individual vaccines due at 12 months of age or by jurisdiction.

Immunisation coverage for children 'fully immunised' at 24 months of age for Australia did not change and remained at 92.8% (Table 2). There were also no important changes in coverage for any individual vaccines due at 24 months of age or by jurisdiction.

Immunisation coverage for 'fully immunised' at 5 years of age for Australia decreased for the second consecutive quarter, by 0.9 percentage points, to 87.2% (Table 3). For 'fully immunised' and all individual vaccines, there were important decreases of greater than 1.5 percentage points in South Australia, New South Wales and the Australian Capital Territory, with a 2 percentage decrease in MMR coverage in New South Wales and the Australian Capital Territory. This decrease in coverage is likely due to the change in the coverage calculation algorithm, which, since the beginning of 2008, now calculates coverage for vaccines due at 4 years of age at the 5-year milestone, not the 6-year milestone. This means late immunisations given to a child aged between 5 and 6 years are no longer included in the assessment.

Figure 5 shows the trends in vaccination coverage from the first ACIR-derived published coverage estimates in 1997 to the current estimates. There is a clear trend of increasing vaccination coverage over time for children aged 12 months, 24 months and 6 years, although the rate of increase has slowed over the past few years for all age groups. However, there is a noticeable dip in recent coverage at 6 years of age after a second consecutive quarterly decrease. It should also be noted that, currently, coverage for the vaccines added to the NIP since 2003 (varicella at 18 months, meningococcal C conjugate at

Table 2. Percentage of children immunised at 2 years of age, preliminary results by disease and state or territory for the birth cohort 1 January to 31 March 2006; assessment date 30 June 2008*

Vaccine	State or territory								Australia
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Total number of children	1,204	22,941	932	14,687	4,608	1,601	16,598	7,182	69,753
Diphtheria, tetanus, pertussis (%)	96.7	94.9	96.1	94.9	95.4	95.1	95.9	93.8	95.1
Poliomyelitis (%)	96.6	94.8	96.1	94.8	95.3	95.1	95.8	93.7	95.1
Haemophilus influenzae type b (%)	96.6	95.4	95.4	93.9	94.4	95.4	94.6	93.6	94.6
Measles, mumps, rubella (%)	95.5	93.7	96.4	94.0	94.7	94.5	95.0	92.9	94.2
Hepatitis B (%)	97.2	95.7	97.3	95.6	96.2	96.2	96.4	94.8	95.9
Fully immunised (%)	94.8	92.5	94.7	92.6	93.3	93.4	93.6	91.2	92.8
Change in fully immunised since last quarter (%)	+0.8	-0.2	+0.8	+0.1	+0.6	-0.7	+0.0	-0.5	-0.0

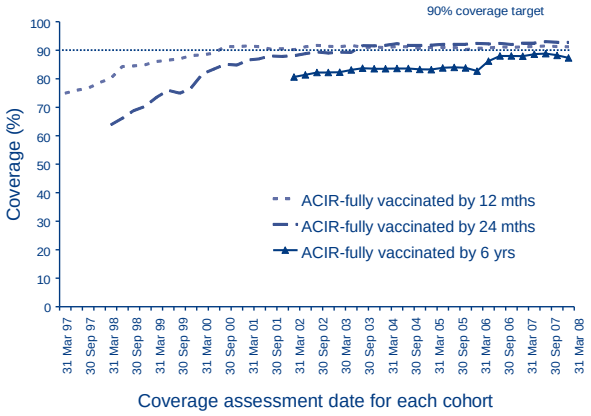
* The 12 months age data for this cohort was published in *Commun Dis Intell* 2007;31:333.

Table 3. Percentage of children immunised at 5 years of age, preliminary results by disease and state or territory for the birth cohort 1 January to 31 March 2003; assessment date 30 June 2008

Vaccine	State or territory								Australia
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Total number of children	1,028	21,494	942	13,525	4,293	1,420	15,502	6,615	64,819
Diphtheria, tetanus, pertussis (%)	89.9	87.4	88.5	88.0	84.7	90.5	91.1	85.2	88.1
Poliomyelitis (%)	89.6	87.2	88.5	87.8	84.7	90.5	91.0	84.9	88.0
Measles, mumps, rubella (%)	89.0	86.9	88.3	87.8	84.7	90.3	90.8	85.1	87.8
Fully immunised (%)	88.9	86.4	87.9	87.3	84.2	89.8	90.5	84.1	87.3
Change in fully immunised since last quarter (%)	-1.7	-1.9	-0.4	-1.1	-1.5	+3.4	+0.1	+0.2	-0.9

12 months and pneumococcal conjugate at 2, 4, and 6 months) are not included in the 12 or 24 months coverage data respectively.

Figure 5. Trends in vaccination coverage, Australia, 1997 to 31 March 2008, by age cohorts



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. For more information see Commun Dis Intell *2008;32:134.*

Reporting period 1 January to 31 March 2008

The AGSP laboratories received a total of 799 isolates in the first quarter of 2008 of which 783 underwent susceptibility testing. This approximates the 856 isolates reported in this period in 2007. Approximately 28% of this total was from New South Wales, 17.5% from Victoria, 16.1% from Queensland, 12.8% from Western Australia and South Australia and 11.7% from the Northern Territory. Small numbers of isolates were also received from Tasmania and the Australian Capital Territory.

Penicillins

In this quarter, 350 (44.7%) of all isolates examined were penicillin resistant by one or more mechanisms. Ninety-six (12.3%) were penicillinase producing *Neisseria gonorrhoeae* (PPNG) and 254 (32.4%) were penicillin resistant by chromosomal mechanisms, (CMRP). The proportion of all strains resistant to the penicillins by any mechanism ranged from nil in the Northern Territory and Australian Capital Territory to 75% in South Australia. In the corresponding quarter in 2007, 38.7% of isolates were penicillin resistant by any mechanism. The increase in penicillin resistant strains was in gonococci with chromosomally mediated resistance.

Figure 6 shows the proportions of gonococci fully sensitive (MIC ≤ 0.03 mg/L), less sensitive (MIC 0.06–0.5 mg/L), relatively resistant (MIC ≥ 1 mg/L) or else PPNG aggregated for Australia and by state and territory. A high proportion of those strains classified as PPNG or else resistant by chromo-

Figure 6. Categorisation of gonococci isolated in Australia, 1 January to 31 March 2008, by penicillin susceptibility and region

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.*

somal mechanisms fail to respond to treatment with penicillins (penicillin, amoxycillin, ampicillin) and early generation cephalosporins.

The highest number of PPNG and CMRP were found in New South Wales where there were 46 (21%) PPNG and 94 (43%) CMRP. South Australia had the highest proportion of penicillin resistant strains with 5 (5%) PPNG and 70 (70.7%) CMRP. Victoria had 63 (46%) CMRP and 11 (8%) PPNG. Queensland had higher numbers of PPNG, 21 (16.5%), but fewer CMRP, 11 (9%). Western Australia had equal numbers of PPNG and CMRP, each 12 (12%). No penicillin resistant strains were found in the Northern Territory or the Australian Capital Territory. There were 4 CMRP and 1 PPNG reported from Tasmania.

Ceftriaxone

Eight isolates with decreased susceptibility to ceftriaxone (MIC range 0.06–0.12 mg/L) were detected; 6 in New South Wales and 1 each in Western Australia and Queensland. A similar number was seen nationally in the first quarter of 2007.

Spectinomycin

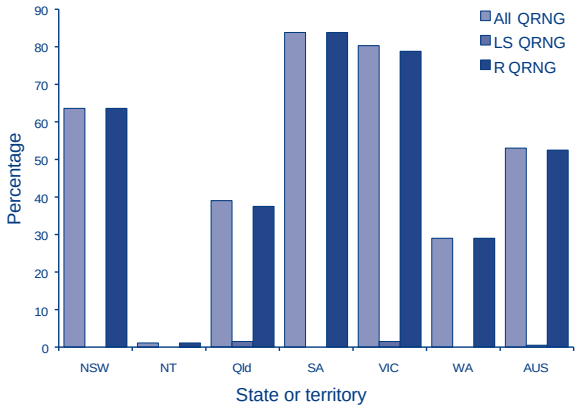
All isolates were susceptible to this injectable agent.

Quinolone antibiotics

The total number (415) and proportion (53%) of quinolone resistant *N. gonorrhoeae* (QRNG) was consistent with data reported in recent quarters showing high levels of resistance to this group of antibiotics. In the equivalent period in 2007, there were 436 (51.6%) QRNG. All but 4 of the 415 QRNG detected in this quarter had ciprofloxacin MICs of 1 mg/L or more and 379 had ciprofloxacin MICs of 4 mg/L or more. 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.

QRNG were present in all jurisdictions except the Australian Capital Territory (Figure 7). The highest number of QRNG was found in New South Wales (140) and this represented 63.6% of all isolates. The 83 (83.8%) QRNG in South Australia was the highest proportion of QRNG by jurisdiction. The 110 QRNG in Victoria also represented a high (80.3%) proportion of all isolates there. In Queensland, there were 28 (22%), and in Western Australia 24 (24%) QRNG. A single QRNG was detected in the Northern Territory and 3 in Tasmania.

Figure 7. The distribution of quinolone resistant isolates of Neisseria gonorrhoeae in Australia, 1 January to 31 March 2008, by jurisdiction



LS QRNG Ciprofloxacin MICs 0.06–0.5 mg/L.

R QRNG Ciprofloxacin MICs ≥1 mg/L.

High level tetracycline resistance

Nationally, the number (135) and proportion (17.2%) of high level tetracycline resistance (TRNG) detected increased when compared with the 2007 data (125 TRNG, 14.8%). TRNG were found in all states and territories except the Australian Capital Territory and elsewhere represented between 8% (South Australia and the Northern Territory) and 24% of isolates (Western Australia) in mainland states.

Reference

1. Management of sexually transmitted diseases. World Health Organization 1997; Document WHO/GPA/TEM94.1 Rev.1 p 37.

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, viral hepatitis and sexually transmissible infections 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. For more information see Commun Dis Intell *2005;29:91–92.*

HIV and AIDS diagnoses and deaths following AIDS reported for 1 October to 31 December 2007, as reported to 31 March 2008 are included in this issue of Communicable Diseases Intelligence *(Tables 4, and 5).*

Table 4. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 October to 31 December 2007, by sex and state or territory of diagnosis

	Sex	State or territory								Totals for Australia			
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	This period 2007	This period 2006	YTD 2007	YTD 2006
HIV diagnoses	Female	0	14	0	5	3	0	11	3	36	45	140	146
	Male	0	84	1	50	7	1	58	12	213	238	910	858
	Not reported	0	0	0	0	0	0	0	0	0	0	0	0
	Total*	0	98	1	55	10	1	59	15	249	284	1,051	1,007
AIDS diagnoses	Female	0	3	0	0	0	0	3	0	6	4	15	20
	Male	0	14	0	4	1	0	10	0	29	50	137	193
	Total*	0	17	0	4	1	0	13	0	35	54	153	216
AIDS deaths	Female	0	1	0	0	0	0	0	0	1	2	8	7
	Male	0	2	1	2	0	0	5	2	12	17	45	74
	Total*	0	3	1	2	0	0	5	2	13	19	53	83

* Totals include people whose sex was reported as transgender.

Table 5. Cumulative diagnoses of HIV infection, AIDS, and deaths following AIDS since the introduction of HIV antibody testing to 31 December 2007, and reported by 31 March 2008, by sex and state or territory

	Sex	State or territory								Australia
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
HIV diagnoses	Female	32	928	23	298	111	12	400	221	2,025
	Male	261	13,823	137	2,897	979	112	5,503	1,275	24,987
	Not reported	0	228	0	0	0	0	22	0	250
	Total*	293	15,009	160	3,204	1,091	124	5,947	1,503	27,331
AIDS diagnoses	Female	10	262	4	73	32	4	116	42	543
	Male	92	5,509	45	1,055	412	55	2,049	434	9,651
	Total*	102	5,789	49	1,130	445	59	2,178	478	10,230
AIDS deaths	Female	7	138	1	43	20	2	64	29	304
	Male	73	3,597	30	676	280	33	1,426	299	6,414
	Total*	80	3,746	31	721	300	35	1,499	329	6,741

* Totals include people whose sex was reported as transgender.

National Enteric Pathogens Surveillance System

The National Enteric Pathogens Surveillance System (NEPSS) collects, analyses and disseminates data on human enteric bacterial infections diagnosed in Australia. Communicable Diseases Intelligence *NEPSS quarterly reports include only* Salmonella. *NEPSS receives reports of* Salmonella *isolates that have been serotyped and phage typed by the five* Salmonella *typing laboratories in Australia.* Salmonella *isolates are submitted to these laboratories for typing by primary diagnostic laboratories throughout Australia.*

A case is defined as the isolation of a Salmonella *from an Australian resident, either acquired locally or as a result of overseas travel, including isolates detected during immigrant and refugee screening. Second and subsequent identical isolates from an individual within six months are excluded, as are isolates from overseas visitors to Australia. The date of the case is the date the primary diagnostic laboratory isolated* Salmonella *from the clinical sample.*

Quarterly reports include historical quarterly mean counts. These should be interpreted cautiously as they may be affected by outbreaks and by surveillance artefacts such as newly recognised and incompletely typed Salmonella.

NEPSS may be contacted at the Microbiological Diagnostic Unit, Public Health Laboratory, Department of Microbiology and Immunology, The University of Melbourne; by telephone: +61 3 8344 5701, facsimile: +61 3 8344 7833 or email joanp@unimelb.edu.au

Scientists, diagnostic and reference laboratories contribute data to NEPSS, which is supported by state and territory health departments and the Australian Government Department of Health and Ageing.

Reports to the National Enteric Pathogens Surveillance System of Salmonella *infection for the period 1 April to 30 June 2008 are included in Tables 6 and 7. Data include cases reported and entered by 18 July 2008. Counts are preliminary, and subject to adjustment after completion of typing and reporting of further cases to NEPSS. For more information see* Commun Dis Intell *2008;32:137.*

Reporting period 1 April to 30 June 2008

There were 1,712 reports to NEPSS of human *Salmonella* infection in the second quarter of 2008, approximately 25% fewer than in the first quarter of 2008. Limited second quarter data from Western Australia were available at the time of preparing this report. Taking this into account, the overall count of cases for the remainder of Australia appears to be around 10% more than the recent historical mean incidence of salmonellosis at this time of each year.

During the second quarter of 2008, the 25 most common *Salmonella* types in Australia accounted for 1,103 cases, 64% of all reported human *Salmonella* infections. Twenty of the 25 most common *Salmonella* infections in the second quarter of 2008 were also among those most commonly reported in the preceding quarter.

Increases above the historical average of *S*. Typhimurium phage type 135 (particularly in Victoria, New South Wales and South Australia) and *S*. Typhimurium phage type 44 (in Victoria and New South Wales) account for the greatest proportion of the overall national increase in salmonellosis.

Smaller, more localised increases during the second quarter of 2008 included *S*. Typhimurium phage types 126 and 120, and *S*. Johannesburg (all in Victoria), *S*. Paratyphi B biovar Java phage type Dundee, *S*. Typhimurium phage type U290, *S*. Montevideo and *S*. Wangata (in New South Wales), and *S*. Typhimurium phage type 9 (in the Australian Capital Territory).

Cases of *S*. Virchow phage type 8 were largely confined to Queensland during the second quarter of 2008. This contrasts with the first quarter when this typically Queensland *Salmonella* was reported widely from the other states and territories.

Acknowledgement: We thank scientists, contributing laboratories, state and territory health departments, and the Australian Government Department of Health and Ageing for their contributions to NEPSS.

Table 6. Reports to the National Enteric Pathogens Surveillance System of *Salmonella* isolated from humans during the period 1 April to 30 June 2008, as reported to 18 July 2008

	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
Total all *Salmonella* for quarter	28	505	86	417	144	38	455	39	1,712
Total contributing *Salmonella* types	13	104	33	101	48	14	99	23	210

* Limited second quarter data from Western Australia were available at the time of preparing this report.

Table 7. Top 25 *Salmonella* types identified in Australia, 1 April to 30 June 2008, by state or territory

National rank	*Salmonella* type	State or territory								Total 2nd quarter 2008	Last 10 years mean 2nd quarter	Year to date 2008	Year to date 2007
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
1	*S.* Typhimurium PT 135	4	115	0	35	22	5	86	0	267	144	649	446
2	*S.* Typhimurium PT 9	8	40	1	14	18	0	46	0	127	124	260	558
3	*S.* Typhimurium PT 44	1	24	0	9	3	3	76	0	116	25	224	294
4	*S.* Typhimurium PT 170	3	31	0	14	0	0	21	0	69	79	167	199
5	*S.* Saintpaul	0	5	8	34	3	0	3	4	57	94	162	227
6	*S.* Birkenhead	0	14	0	27	0	0	0	0	41	62	126	143
7	*S.* Infantis	0	16	5	3	9	0	7	0	40	38	118	97
8	*S.* Typhimurium PT 126	2	17	0	1	0	0	15	0	35	27	87	28
9	*S.* Chester	0	4	2	15	5	2	3	3	34	41	93	111
10	*S.* Mississippi	0	0	0	2	1	18	4	0	25	21	83	110
11	*S.* Aberdeen	0	0	0	22	0	0	1	0	23	35	52	91
12	*S.* Muenchen	0	2	2	11	2	0	3	3	23	35	68	88
13	*S.* Stanley	0	8	0	0	3	0	9	3	23	14	49	67
14	*S.* Montevideo	2	11	1	9	0	0	0	0	23	12	55	83
15	*S.* Anatum	0	6	5	6	2	0	1	2	22	22	46	41
16	*S.* Hvittingfoss	0	1	4	15	0	0	0	1	21	36	54	80
17	*S.* Waycross	0	7	0	14	0	0	0	0	21	31	58	68
18	*S.* Paratyphi B bv Java PT Dundee	1	19	0	0	1	0	0	0	21	3.1	31	7
19	*S.* Virchow PT 8	0	0	1	18	0	1	0	0	20	71	116	161
20	*S.* Typhimurium PT 197	2	6	0	5	3	1	1	0	18	25	73	135
21	*S.* Typhimurium PT U290	1	16	0	1	0	0	0	0	18	13	40	26
22	*S.* Agona	0	6	0	2	2	0	3	2	15	17	28	40
23	*S.* Weltevreden	0	1	7	4	1	0	1	1	15	14	42	40
24	*S.* Typhimurium PT 135a	0	0	2	0	13	0	0	0	15	8	31	36
25	*S.* Ball	0	1	13	0	0	0	0	0	14	13	25	20

* Limited second quarter data from Western Australia were available at the time of preparing this report.

Meningococcal surveillance

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

The reference laboratories of the Australian Meningococcal Surveillance Programme report data on the number of laboratory confirmed cases confirmed either by culture or by non-culture based techniques. Culture positive cases, where a Neisseria meningitidis is grown from a normally sterile site or skin, and non-culture based diagnoses, derived from results of nucleic acid amplification assays and serological techniques, are defined as invasive meningococcal disease (IMD) according to Public Health Laboratory Network definitions. Data contained in the quarterly reports are restricted to a description of the number of cases per jurisdiction, and serogroup, where known. A full analysis of laboratory confirmed cases of IMD is contained in the annual reports of the Programme, published in Communicable Diseases Intelligence. For more information see Commun Dis Intell *2008;32:135.*

Laboratory confirmed cases of invasive meningococcal disease for the period 1 April to 30 June 2008, are included in this issue of Communicable Diseases Intelligence *(Table 8).*

Table 8. Number of laboratory confirmed cases of invasive meningococcal disease, Australia, 1 April to 30 June 2008, by serogroup and state or territory

State or territory	Year	Serogroup													
		A		B		C		Y		W135		ND		All	
		Q2	YTD	Q2	YTD	Q2	YTD	Q2	YTD	Q2	YTD	Q2	YTD	Q2	YTD
Australian Capital Territory	08			2	2									2	2
	07			0	1						1			0	2
New South Wales	08			9	13	2	3	1	2	1	1			13	19
	07			5	17	3	6	2	2	1	1	3	4	14	30
Northern Territory	08					1	2							1	2
	07				1	1	1							1	2
Queensland	08			25	41	0	2			1	1			26	44
	07			8	19	1	1					1	1	10	21
South Australia	08			5	7									5	7
	07			3	4									3	4
Tasmania	08													0	0
	07									1	1			1	1
Victoria	08			20	24			1	1			3	3	24	28
	07			15	21	2	2	3	3	1	1	1	1	22	28
Western Australia	08			5	8								1	5	9
	07			4	7									4	7
Total	08			65	95	3	7	2	3	2	2	3	4	76	111
	07			35	70	7	10	5	5	3	3	5	6	55	94