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Disclaimer

Opinions expressed in *Communicable Diseases Intelligence* are those of the authors and not necessarily those of the Australian Government Department of Health and Ageing or the Communicable Diseases Network Australia. Data may be subject to revision.

Front cover: Surveillance Section, Australian Government Department of Health and Ageing.

Clockwise from top left: A young boy receiving a measles vaccination; image sourced from the Centers for Disease Control and Prevention Public Health Image Library, courtesy of the Centers for Disease Control and Prevention, Atlanta, Georgia. Chicken flocks are used to provide an early warning of increased flavivirus activity. Fish are a common source of foodborne disease. A couple enjoying a healthy meal.

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Australia's notifiable diseases status, 2003 Annual report of the National Notifiable Diseases Surveillance System

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Australian Childhood Immunisation Register

Australian Gonococcal Surveillance Programme

Australian Meningococcal Surveillance Programme

Australian Sentinel Practice Research Network

Australian Quarantine Inspection Service

National Centre in HIV Epidemiology and Clinical Research

National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases

National Enteric Pathogens Surveillance Scheme

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Abstract

In 2003, 58 diseases and conditions were notifiable at a national level in Australia. States and territories reported a total of 104,956 cases to the National Notifiable Diseases Surveillance System an increase of 3.2 per cent on the total number of notifications in 2002. In 2003, the most frequently notified diseases were sexually acquired infections (38,854, 37% of total notifications), gastrointestinal diseases (24,655 notifications, 24%) and bloodborne viruses (20,825 notifications, 20%). There were 11,113 notifications of vaccine preventable diseases, 6,780 notifications of vectorborne diseases, 1,826 notification of other bacterial infections and 903 notifications of zoonotic diseases. *Commun Dis Intell* 2005;29:1–61.

Keywords: communicable diseases; epidemiology; surveillance

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Abbreviations used in this report

ACIR	Australian Childhood Immunisation Register
AFP	Acute flaccid paralysis
AIDS	Acquired immune deficiency syndrome
ASPREN	Australian Sentinel Practice Research Network
ASVS	Australian Standard Vaccination Schedule
BFV	Barmah Forest virus
CDI	Communicable Diseases Intelligence
CDNA	Communicable Diseases Network Australia
DENV	Dengue fever virus
DoHA	Australian Government Department of Health and Ageing
DTP	Diphtheria-tetanus-pertussis vaccine
Hib	*Haemophilus influenzae* type b
HIC	Health Insurance Commission
HIV	Human immunodeficiency virus
HUS	Haemolytic uraemic syndrome
ICD10-AM	International Classification of Diseases, version 10, Australian Modification
IPD	Invasive pneumococcal disease
JEV	Japanese encephalitis virus
KUNV	Kunjin virus
LabVISE	Laboratory Virology and Serology Reporting Scheme
MMR	Measles-mumps-rubella vaccine
NCHECR	National Centre in HIV Epidemiology and Clinical Research
NEC	Not elsewhere classified
NHMRC	National Health and Medical Research Council
NN	Not notifiable
NNDSS	National Notifiable Diseases Surveillance System
OPV	Oral polio vaccine
RRV	Ross River virus
SLTEC	Shiga-like toxin producing *Escherichia coli*
STI(s)	Sexually transmissible infection(s)
TB	Tuberculosis
VPD(s)	Vaccine preventable disease(s)
VTEC	Verotoxigenic *Escherichia coli*
WHO	World Health Organization

Introduction

Surveillance of communicable diseases is vital to the control of communicable diseases, to identify and assess the relative burden of diseases and to monitor trends over time. It is also required for the guidance of policy making.

Communicable disease surveillance in Australia exists at the national, state and local levels. Primary responsibility for public health action lies with the state and territory health departments and with local health authorities.

The role of communicable disease surveillance at a national level includes:

- identifying national trends;
- guidance for policy development at a national level and resource allocation;
- monitoring the need for and impact of national disease control programs;
- coordination of response to national or multi-jurisdictional outbreaks;
- description of the epidemiology of rare diseases, that occur infrequently at state and territory levels;
- meeting various international reporting requirements, such as providing disease statistics to the World Health Organization (WHO), and;
- support for quarantine activities, which are the responsibility of the national government.

Methods

Australia is a federation of six states (New South Wales, Queensland, South Australia, Tasmania, Victoria and Western Australia) and two territories (the Australian Capital Territory and the Northern Territory). State and territory health departments collect notifications of communicable diseases under their public health legislation. The Australian Government Department of Health and Ageing (DoHA) does not have any legislated responsibility for public health apart from human quarantine. States and territories have agreed to forward data on a nationally agreed set of communicable diseases to DoHA for the purposes of national communicable disease surveillance.

Fifty-eight communicable diseases (Table 1) agreed upon nationally through the Communicable Diseases Network Australia (CDNA) were reported to the National Notifiable Diseases Surveillance System (NNDSS) in 2003. The system is complemented by other surveillance systems, which provide information on various diseases, including some that are not reported to NNDSS.

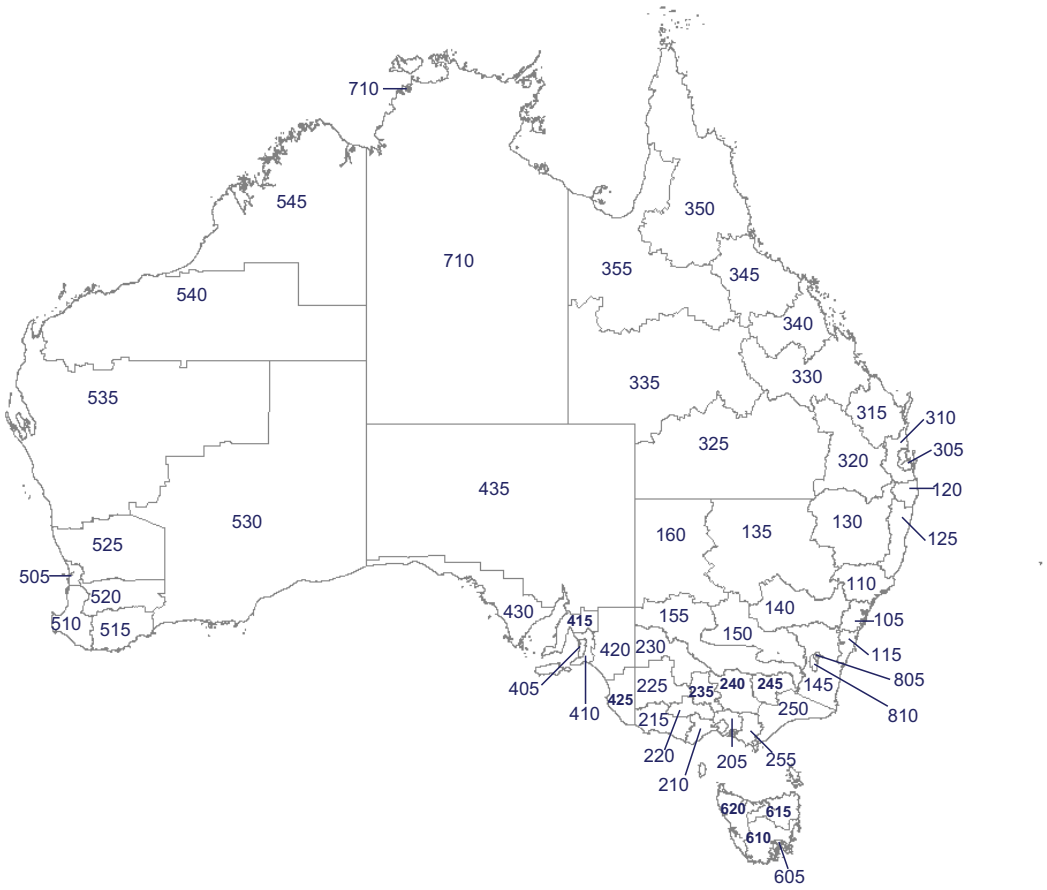
The national dataset included fields for unique record reference number; notifying state or territory; disease code; age; sex; Indigenous status; postcode of residence; date of onset of the disease; and date of report to the state or territory health department. Additional information was available on the species and serogroups isolated in cases of salmonellosis, legionellosis, meningococcal disease and malaria, and on the vaccination status in cases of childhood vaccine preventable diseases. While not included in the national dataset, additional information concerning mortality and specific health risk factors for some diseases was obtained from states and territories. The Australian Institute of Health and Welfare supplied hospital admission data for the financial year 2002–03.

Notification rates for each notifiable disease were calculated using 2003 mid-year resident population supplied by the Australian Bureau of Statistics (Appendix 1). Where diseases were not notifiable in a state or territory, adjusted rates were calculated by excluding the population of that jurisdiction from the denominator.

The geographical distribution of selected diseases was mapped using MapInfo software. Maps were based on the postcode of residence of each patient aggregated to the appropriate Statistical Division (Map 1). Rates for the different Statistical Divisions were ordered into six groups — the highest value, the lowest value above zero, those equal to zero, and the intermediate values sorted into three equal-sized groups. The two Statistical Divisions that make up the Australian Capital Territory were combined as were the two Statistical Divisions that make up the Northern Territory, to calculate rates for each territory as a whole.

Information from communicable disease surveillance is disseminated through several avenues of communication. Fortnightly teleconferences of the Communicable Diseases Network Australia provide the most up-to-date information on topics of immediate interest. The *Communicable Diseases Intelligence* (*CDI*) quarterly journal publishes surveillance data and reports of research studies on the epidemiology and control of various communicable diseases. The Communicable Diseases Australia website publishes disease surveillance summaries from the NNDSS. The annual report of the NNDSS, Australia's notifiable diseases status, provides yearly summaries of notifications.

Map 1. Australian Bureau of Statistics Statistical Divisions, and population by Statistical Division



Statistical Division		Population
Australian Capital Territory		
805	Canberra*	322,492
New South Wales		
105	Sydney	4,201,493
110	Hunter	599,998
115	Illawarra	408,059
120	Richmond-Tweed	221,549
125	Mid North Coast	288,040
130	Northern	179,734
135	North Western	119,101
140	Central West	178,969
145	South Eastern	198,487
150	Murrumbidgee	153,006
155	Murray	114,312
160	Far West	23,896
Northern Territory		
705	Darwin†	198,351
Queensland		
305	Brisbane	1,733,227
310	Moreton	774,660
315	Wide Bay-Burnett	244,572
320	Darling Downs	212,942
325	South West	27,005

Statistical Division		Population
Queensland continued		
330	Fitzroy	185,144
335	Central West	12,364
340	Mackay	141,567
345	Northern	197,389
350	Far North	231,253
355	Northwest	33,978
South Australia		
405	Adelaide	1,119,920
410	Outer Adelaide	118,850
415	Yorke & Lower North	44,545
420	Murray Lands	68,504
425	South East	62,997
430	Eyre	34,407
435	Northern	78,198
Tasmania		
605	Greater Hobart	199,886
610	Southern	35,017
615	Northern	135,071
620	Mersey-Lyell	107,120
910	*Other territories*	2,660

Statistical Division		Population
Victoria		
205	Melbourne	3,559,654
210	Barwon	262,473
215	Western District	100,587
220	Central Highlands	144,485
225	Wimmera	50,916
230	Mallee	91,124
235	Loddon	170,855
240	Goulburn	198,743
245	Ovens-Murray	94,912
250	East Gippsland	81,250
255	Gippsland	162,395
Western Australia		
505	Perth	1,433,217
510	South West	204,182
515	Lower Great Southern	53,826
520	Upper Great Southern	18,562
525	Midlands	53,320
530	South Eastern	54,951
535	Central	60,324
540	Pilbara	39,529
545	Kimberley	34,369
	Total Australia	19,881,500

* Includes Statistical Division 810 “ACT – balance.”

† Includes Statistical Division 710 “NT – balance.”

Notes on interpretation

The present report is based on 2003 'finalised' annual data from each state and territory. States and territories transmitted data to DoHA each fortnight and the final dataset for the year was agreed upon in July 2004. The finalised annual dataset represents a snap shot of the year after duplicate records and incorrect or incomplete data have been removed. Therefore, totals in this report may vary slightly from the totals reported in *CDI* quarterly publications.

Analyses in this report were based on the date of disease onset in an attempt to estimate disease activity within the reporting period. Where the date of onset was not known however, the date of specimen collection or date of notification (report), whichever was earliest, was used. As considerable time may have lapsed between onset and report dates for hepatitis B (unspecified) and hepatitis C (unspecified) notifications, these were analysed by report date.

Under-reporting is an important factor that should be considered when interpreting NNDSS data. Figure 1 shows the steps necessary for an episode of illness in the population to reach the NNDSS. Each step contributes to under-reporting resulting in only a proportion of notifiable diseases reaching the surveillance system. Due to under-reporting, notified cases can only represent a proportion (the 'notified fraction') of the total incidence. Moreover, the notified fraction varies by disease, by jurisdiction and by time.

Methods of surveillance can vary between states and territories, each with different requirements for notification by medical practitioners, laboratories and hospitals. Some diseases were not notifiable in some jurisdictions (Table 1). The case definitions for surveillance vary among jurisdictions. In addition, changes to surveillance practices may be introduced in some jurisdictions and not in others, making comparison of data across jurisdictions difficult. To inform the interpretation of data in this report, states and territories were asked to report any changes in surveillance practices including changes in case definition, screening practices, laboratory practices, and major disease control or prevention initiatives undertaken in 2003.

Postcode information usually reflects the residential location of the case, but this does not necessarily represent the place where the disease was acquired. As no personal identifiers are collected in NNDSS, duplication in reporting may occur if patients move from one jurisdiction to another and were notified in both.

The completeness of data in this report is summarised in Appendix 3. The patient's sex was not stated in 0.5 per cent of notifications (n=476) and the patient's age was not stated in 0.1 per cent of notifications (n=57). Indigenous status was reported for 43.1 per cent of notifications nationally. The proportion of reports with missing data in these fields varied by state and territory and by disease.

Discussions and comments of CDNA members and state and territory epidemiologists have informed the present report and their contribution to the accuracy of these data is gratefully acknowledged.

Figure 1. Communicable diseases notification fraction

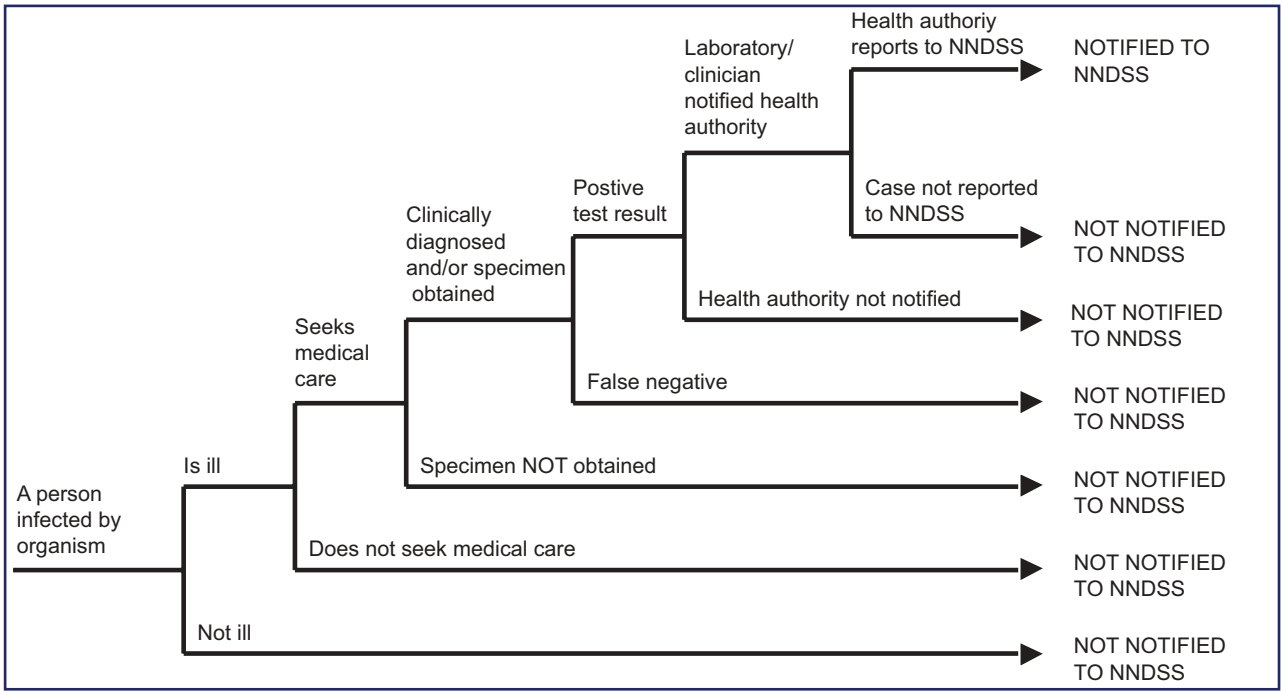


Table 1. Diseases notified to the National Notifiable Diseases Surveillance System, Australia, 2003*

Disease	Data received from
Bloodborne diseases	
Hepatitis B (incident)	All jurisdictions
Hepatitis B (unspecified)	All jurisdictions except NT
Hepatitis C (incident)	All jurisdictions except Qld
Hepatitis C (unspecified)	All jurisdictions
Hepatitis D	All jurisdictions
Hepatitis (NEC)	All jurisdictions except WA
Gastrointestinal diseases	
Botulism	All jurisdictions
Campylobacterosis	All jurisdictions except NSW
Cryptosporidiosis	All jurisdictions
Haemolytic uraemic syndrome	All jurisdictions
Hepatitis A	All jurisdictions
Hepatitis E	All jurisdictions
Listeriosis	All jurisdictions
Salmonellosis (NEC)	All jurisdictions
Shigellosis	All jurisdictions
SLTEC, VTEC	All jurisdictions
Typhoid	All jurisdictions
Quarantinable diseases	
Cholera	All jurisdictions
Plague	All jurisdictions
Rabies	All jurisdictions
Severe acute respiratory syndrome	All jurisdictions
Viral haemorrhagic fever (NEC)	All jurisdictions
Yellow fever	All jurisdictions
Sexually transmissible infections	
Chlamydial infection (NEC)	All jurisdictions
Donovanosis	All jurisdictions
Gonococcal infection	All jurisdictions
Syphilis	All jurisdictions
Syphilis – congenital	All jurisdictions
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
Vectorborne diseases	
Barmah forest virus infection	All jurisdictions
Dengue	All jurisdictions
Flavivirus infection (NEC)	All jurisdictions
Japanese encephalitis virus	All jurisdictions
Kunjin virus	All jurisdictions except ACT†
Malaria	All jurisdictions
Murray Valley encephalitis virus	All jurisdictions except ACT†
Ross River virus infection	All jurisdictions

Table 1. Diseases notified to the National Notifiable Diseases Surveillance System, Australia, 2003,* *continued*

Disease	Data received from
Zoonoses	
Anthrax	All jurisdictions
Australian bat lyssavirus	All jurisdictions
Brucellosis	All jurisdictions
Leptospirosis	All jurisdictions
Lyssavirus (NEC)	All jurisdictions
Ornithosis	All jurisdictions
Q fever	All jurisdictions
Other bacterial infections	
Legionellosis	All jurisdictions
Leprosy	All jurisdictions
Meningococcal infection	All jurisdictions
Tuberculosis	All jurisdictions

* Laboratory confirmed influenza was not a notifiable disease in the Australian Capital Territory or South Australia in 2003, but reports were forwarded to the National Notifiable Diseases Surveillance System.

† In the Australian Capital Territory, Murray Valley encephalitis virus and Kunjin virus were combined under Murray Valley encephalitis virus.

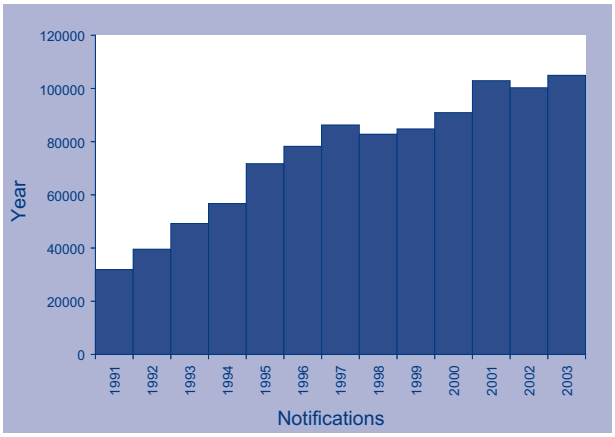
Results

Summary of 2003 data

There were 104,956 communicable disease notifications received by NNDSS in 2003 (Table 2). Notification rates per 100,000 population for each disease by state or territory are shown in Table 3. Trends in notifications and rates per 100,000 population for the period 1999 to 2003 are shown in Table 4.

In 2003, the total number of notifications was the highest recorded in NNDSS since the system began in 1991 and was an increase over the total in 2002 of 3.2 per cent (Figure 2).

Figure 2. Trends in notifications received by the National Notifiable Diseases Surveillance System, 1991 to 2003*



* The increase in notifications since 1991 reflects an increase in the number of notifiable diseases, more complete reporting by states and territories, as well as increased numbers of cases.

In 2003, the most frequently notified diseases were sexually acquired infections (38,854, 37% of total notifications), gastrointestinal diseases (24,655 notifications, 24%) and bloodborne viruses (20,825 notifications, 20%). There were 11,113 notifications of vaccine preventable diseases, 6,780 notifications of vectorborne diseases, 1,826 notification of other bacterial infections and 903 notifications of zoonotic diseases (Figure 3).

Figure 3. Notifications to the National Notifiable Diseases Surveillance System, Australia, 2003, by disease category

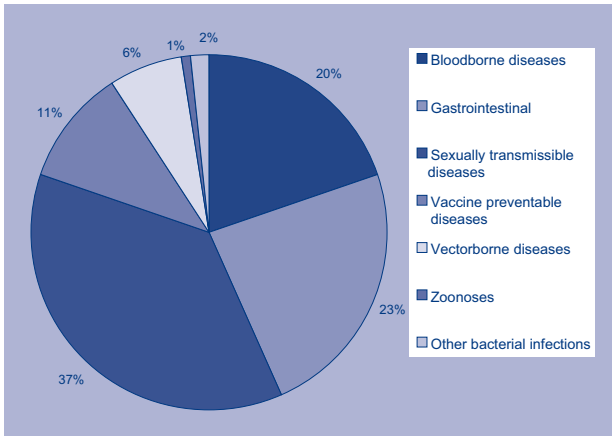


Table 2. Notifications of communicable diseases, Australia, 2003, by state or territory*

Disease	State or terriotry								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Bloodborne diseases									
Hepatitis B (incident)	0	70	15	40	10	10	147	45	337
Hepatitis B (unspecified)†,‡	57	2,632	NN	805	221	70	1,629	419	5,833
Hepatitis C (incident)	12	114	NN	NN	74	13	105	142	460
Hepatitis C (unspecified)†,‡,§	241	5,172	208	2,761	574	342	3,705	1,166	14,169
Hepatitis D	0	12	0	1	0	0	13	0	26
Hepatitis (NEC)	0	0	0	0	0	0	0	0	0
Gastrointestinal diseases									
Botulism	0	0	0	0	1	0	0	0	1
Campylobacteriosis‖	406	NN	268	3,857	2,644	624	5,596	1,977	15,372
Cryptosporidiosis	9	202	94	162	80	26	209	437	1,219
Haemolytic uraemic syndrome	0	5	1	1	3	0	4	1	15
Hepatitis A	5	124	40	48	13	14	89	85	418
Hepatitis E	2	6	0	0	0	0	2	0	10
Listeriosis	1	28	0	9	1	2	22	6	69
Salmonellosis (NEC)	80	1,858	360	2,201	445	151	1,302	614	7,011
Shigellosis	3	59	131	52	32	4	49	110	440
SLTEC, VTEC¶	0	0	0	6	37	0	3	3	49
Typhoid	0	16	0	4	2	1	18	10	51
Quarantinable diseases									
Cholera	0	0	0	0	0	0	0	0	0
Plague	0	0	0	0	0	0	0	0	0
Rabies	0	0	0	0	0	0	0	0	0
Severe acute respiratory syndrome	0	0	0	0	0	0	0	0	0
Viral haemorrhagic fever	0	0	0	0	0	0	0	0	0
Yellow fever	0	0	0	0	0	0	0	0	0
Sexually transmissible infections									
Chlamydial infection	523	7,556	1,602	7,661	1,990	609	6,457	3,763	30,161
Donovanosis	0	0	6	9	0	0	0	1	16
Gonococcal infection	30	1,194	1,399	1,042	297	23	1,172	1,454	6,611
Syphilis	12	826	316	375	21	14	356	136	2,056
Syphilis – congenital	0	1	8	1	0	0	0	0	10
Vaccine preventable diseases									
Diphtheria	0	0	0	0	0	0	0	0	0
Haemophilus influenzae type b	0	6	2	5	2	2	1	1	19
Influenza (laboratory confirmed)	7	861	151	975	311	7	659	616	3,587
Measles	0	18	1	11	24	0	38	0	92
Mumps	2	35	0	10	12		4	13	76
Pertussis	357	2,768	5	716	233	132	639	256	5,106
Pneumococcal disease (invasive)	40	784	72	466	176	43	443	150	2,174
Poliomyelitis	0	0	0	0	0	0	0	0	0
Rubella	0	24	0	23	1	1	1	3	53
Rubella – congenital	0	0	0	2	0	0	0	0	2
Tetanus	0	1	0	2	0	0	1	0	4

Table 2. Notifications of communicable diseases, Australia, 2003, by state or territory,* *continued*

Disease	State or terriotry								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Vectorborne disease									
Barmah Forest virus infection	1	451	14	872	2	0	8	22	1,370
Dengue	7	69	20	727	9	1	18	17	868
Flavivirus (NEC)	0	10	0	68	0	0	3	0	81
Japanese encephalitis virus	0	0	0	0	0	0	0	0	0
Kunjin virus	0	0	0	19	0	0	0	0	19
Malaria	18	120	40	253	28	27	59	56	601
Murray Valley encephalitis virus	0	0	0	0	0	0	0	0	0
Ross River virus infection	1	492	120	2,517	33	4	13	661	3,841
Zoonoses									
Anthrax	0	0	0	0	0	0	0	0	0
Australian bat lyssavirus	0	0	0	0	0	0	0	0	0
Brucellosis	0	1	0	13	0	0	3	0	17
Leptospirosis	0	37	4	67	2	0	9	6	125
Ornithosis	0	87	2	2	1	0	115	4	211
Lyssavirus (NEC)	0	0	0	0	0	0	0	0	0
Q fever	1	278	1	224	13	1	13	19	550
Other bacterial infections									
Legionellosis	1	60	3	39	65	2	93	65	328
Leprosy	0	1	0	0	0	0	2	1	4
Meningococcal infection	13	199	11	104	32	20	125	46	550
Tuberculosis	18	378	29	96	42	4	309	68	944
Total	1,847	26,555	4,923	26,246	7,431	2,147	23,434	12,373	104,956

* Analyses in this report were based on date of onset, (except for hepatitis B and hepatitis C unspecified, where date of report of disease was used). Where date of onset was not available the date of specimen collection or the date of notification, whichever was earliest was used.

† Unspecified hepatitis includes cases with hepatitis in which the duration of infection can not be determined.

‡ The analysis was by report date.

§ In the Northern Territory and Queensland, includes incident hepatitis cases.

|| Notified as 'foodborne disease' or 'gastroenteritis in an institution' in New South Wales.

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

NN Not notifiable.

NEC Not elsewhere classified.

Table 3. Notification rates of communicable diseases, Australia, 2003, by state and territory (per 100,000 population)*

Disease	State or territory								Aust
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Bloodborne diseases									
Hepatitis B (incident)	0.0	1.0	7.6	1.1	0.7	2.1	3.0	2.3	1.7
Hepatitis B (unspecified)†,‡	17.7	39.4	NN	21.2	14.5	14.7	33.1	21.5	29.3
Hepatitis C (incident)	3.7	1.7	NN	NN	4.8	2.7	2.1	7.3	2.3
Hepatitis C (unspecified) †,‡,§	74.6	77.3	104.9	72.7	37.6	71.7	75.3	59.7	71.3
Hepatitis D	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.1
Hepatitis (NEC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gastrointestinal diseases									
Botulism	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Campylobacteriosis‖	125.8	NN	135.1	101.6	173.1	130.8	113.8	101.3	116.5
Cryptosporidiosis	2.8	3.0	47.4	4.3	5.2	5.4	4.3	22.4	6.1
Haemolytic uraemic syndrome	0.0	0.1	0.5	0.0	0.2	0.0	0.1	0.1	0.1
Hepatitis A	1.5	1.9	20.2	1.3	0.9	2.9	1.8	4.4	2.1
Hepatitis E	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Listeriosis	0.3	0.4	0.0	0.2	0.1	0.4	0.4	0.3	0.3
Salmonellosis (NEC)	24.8	27.8	181.5	58.0	29.1	31.6	26.5	31.5	35.3
Shigellosis	0.9	0.9	66.0	1.4	2.1	0.8	1.0	5.6	2.2
SLTEC, VTEC¶	0.0	0.0	0.0	0.2	2.4	0.0	0.1	0.2	0.2
Typhoid	0.0	0.2	0.0	0.1	0.1	0.2	0.4	0.5	0.3
Quarantinable diseases									
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plague	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rabies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Severe acute respiratory syndrome	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	162.0	113.0	807.7	201.8	130.3	127.6	131.3	192.7	151.7
Donovanosis	0.0	0.0	3.0	0.2	0.0	0.0	0.0	0.1	0.1
Gonococcal infection	9.3	17.9	705.3	27.4	19.4	4.8	23.8	74.5	33.3
Syphilis	3.7	12.4	159.2	9.9	1.4	2.9	7.2	7.0	10.3
Syphilis – congenital	0.0	0.01	4.0	0.03	0.0	0.0	0.0	0.0	0.05
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	0.1	1.0	0.1	0.1	0.4	0.0	0.1	0.1
Influenza (laboratory confirmed)	2.2	12.9	76.1	25.7	20.4	1.5	13.4	31.6	18.0
Measles	0.0	0.3	0.5	0.3	1.6	0.0	0.8	0.0	0.5
Mumps	0.6	0.5	0.0	0.3	0.8	0.0	0.1	0.7	0.4
Pertussis	110.6	41.4	2.5	18.9	15.3	27.7	13.0	13.1	25.7
Pneumococcal disease (invasive)	12.4	11.7	36.3	12.3	11.5	9.0	9.0	7.7	10.9
Poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella	0.0	0.4	0.0	0.7	0.1	0.2	0.0	0.2	0.3
Rubella – congenital	0.0	0.0	0.0	0.05	0.0	0.0	0.0	0.0	0.01
Tetanus	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

Table 3. Notification rates of communicable diseases, Australia, 2003, by state and territory (per 100,000 population)* *continued*

Disease	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Vectorborne diseases									
Barmah Forest virus infection	0.3	6.7	7.1	23.0	0.1	0.0	0.2	1.1	6.9
Dengue	2.2	1.0	10.1	19.1	0.6	0.2	0.4	0.9	4.4
Flavivirus (NEC)	0.0	0.1	0.0	1.8	0.0	0.0	0.1	0.0	0.4
Japanese encephalitis virus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kunjin virus	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.1
Malaria	5.6	1.8	20.2	6.7	1.8	5.7	1.2	2.9	3.0
Murray Valley encephalitis virus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ross River virus infection	0.3	7.4	60.5	66.3	2.2	0.8	0.3	33.9	19.3
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	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.1
Leptospirosis	0.0	0.6	2.0	1.8	0.1	0.0	0.2	0.3	0.6
Ornithosis	0.0	1.3	1.0	0.1	0.1	0.0	2.3	0.2	1.1
Lyssavirus (NEC)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Q fever	0.3	4.2	0.5	5.9	0.9	0.2	0.3	1.0	2.8
Other bacterial infections									
Legionellosis	0.3	0.9	1.5	1.0	4.3	0.4	1.9	3.3	1.6
Leprosy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Meningococcal infection	4.0	3.0	5.5	2.7	2.1	4.2	2.5	2.4	2.8
Tuberculosis	5.6	5.7	14.6	2.5	2.7	0.8	6.3	3.5	4.7

* Analyses in this report were based on date of onset, (except for hepatitis B and hepatitis C unspecified, where date of report of disease was used). Where date of onset was not available the date of specimen collection or the date of notification, whichever was earliest was used.

† Unspecified hepatitis includes cases with hepatitis in which the duration of infection can not be determined.

‡ The analysis was by report date.

§ In the Northern Territory and Queensland, includes incident hepatitis cases.

|| Notified as 'foodborne disease' or 'gastroenteritis in an institution' in New South Wales.

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

NN Not notifiable.

NEC Not elsewhere classified.

Table 4. Notifications and notification rates of communicable diseases, Australia, 1999 to 2003*

Disease	Notifications					Rate per 100,000 population				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Bloodborne diseases										
Hepatitis B (incident)	301	408	412	406	337	1.6	2.1	2.1	2.1	1.7
Hepatitis B (unspecified)†,‡	6,813	7,248	8,139	6,822	5,833	36.0	38.8	41.9	34.7	29.3
Hepatitis C (incident)	439	469	678	444	460	2.3	2.5	3.5	2.3	2.3
Hepatitis C (unspecified)†,‡,§	18,378	18,864	18,982	16,156	14,169	97.1	98.5	97.8	82.2	71.3
Hepatitis D	19	26	20	19	26	0.1	0.1	0.1	0.1	0.1
Hepatitis (NEC)	0	1	2	0	0	0.0	<0.1	<0.1	0.0	0.0
Gastrointestinal diseases										
Botulism	0	2	2	0	1	0.0	<0.1	<0.1	0.0	<0.1
Campylobacteriosis‖	12,372	13,641	16,094	14,722	15,372	100.9	107.1	125.2	112.2	116.5
Cryptosporidiosis	NN	NN	1,619	3,268	1,219	NN	NN	8.3	16.6	6.1
Haemolytic uraemic syndrome	24	17	3	13	15	0.1	0.1	<0.1	0.1	0.1
Hepatitis A	1,546	813	530	383	418	8.2	4.2	2.7	2.0	2.1
Hepatitis E	9	10	10	19	10	0.1	0.1	0.1	0.1	0.1
Listeriosis	62	66	64	61	69	0.3	0.3	0.3	0.3	0.3
Salmonellosis (NEC)	7,017	6,225	6,977	7,863	7,011	37.1	32.5	36.0	40.0	35.3
Shigellosis	534	491	565	501	440	2.8	2.6	2.9	2.6	2.2
SLTEC, VTEC¶	51	42	45	53	49	0.3	0.2	0.2	0.3	0.2
Typhoid	63	56	74	70	51	0.3	0.3	0.4	0.4	0.3
Quarantinable diseases										
Cholera	3	2	4	5	0	<0.1	<0.1	<0.1	<0.1	0.0
Plague	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
Viral haemorrhagic fever	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
Sexually transmissible infections										
Chlamydial infection	14,082	16,927	20,213	24,294	30,161	74.4	88.4	104.1	123.6	151.7
Donovanosis	18	22	33	16	16	0.1	0.1	0.2	0.1	0.1
Gonococcal infection	5,587	5,901	6,238	6,308	6,611	29.5	30.8	32.1	32.1	33.3
Syphilis	2,029	2,067	1,803	2,017	2,056	10.7	10.8	9.3	10.3	10.4
Syphilis – congenital	0	4	21	13	10	0.0	<0.1	0.1	0.1	0.1
Vaccine preventable diseases										
Diphtheria	0	0	1	0	0	0.0	0.0	<0.1	0.0	0.0
Haemophilus influenzae type b	40	27	20	29	19	0.2	0.1	0.1	0.2	0.1
Influenza (laboratory confirmed)	NN	NN	1,284	3,672	3,587	NN	NN	6.6	18.7	18.0
Measles	238	109	140	31	92	1.3	0.6	0.7	0.2	0.5
Mumps	183	216	116	68	76	1.0	1.1	0.6	0.4	0.5
Pertussis	4,355	5,988	9,309	5,569	5,106	23.0	31.3	48.0	28.3	25.7
Pneumococcal disease (invasive)	NN	NN	1,690	2,311	2,174	NN	NN	8.7	11.8	10.9
Poliomyelitis	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0
Rubella	371	323	264	253	55	2.0	1.7	1.4	1.3	0.3
Rubella – congenital	0	0	0	1	2	0.0	0.0	0.0	<0.1	0.01
Tetanus	2	8	3	4	4	<0.1	<0.1	<0.1	<0.1	<0.1

Table 4. Notifications and notification rates of communicable diseases, Australia, 1999 to 2003,* *continued*

Disease	Notifications					Rate per 100,000 population				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Vectorborne diseases										
Barmah Forest virus infection	638	646	1,139	903	1,370	3.4	3.4	5.9	4.6	6.9
Dengue	131	217	179	223	868	0.7	1.1	0.9	1.1	4.4
Flavivirus (NEC)	51	46	33	21	81	0.3	0.2	0.2	0.1	0.4
Japanese encephalitis virus	NN	NN	0	0	0	NN	NN	0.0	0.0	0.0
Kunjin virus	NN	NN	5	0	19	NN	NN	<0.1	0.0	0.1
Malaria	717	970	712	466	601	3.8	5.1	3.7	2.4	3.0
Murray Valley encephalitis virus	NN	NN	5	2	0	NN	NN	<0.1	<0.1	0.0
Ross River virus infection	4,376	4,221	3,216	1,445	3,841	23.1	22.0	16.6	7.4	19.3
Zoonoses										
Anthrax	NN	NN	0	0	0	NN	NN	0.0	0.0	0.0
Australian bat lyssavirus	NN	NN	0	0	0	NN	NN	0.0	0.0	0.0
Brucellosis	52	27	21	39	17	0.3	0.1	0.1	0.2	0.1
Leptospirosis	319	246	242	160	125	1.7	1.3	1.3	0.8	0.6
Ornithosis	80	102	135	206	211	0.4	0.5	0.7	1.0	1.1
Lyssavirus (NEC)	NN	NN	0	0	0	NN	NN	0.0	0.0	0.0
Q fever	517	578	684	789	550	2.7	3.0	3.5	4.0	2.8
Other bacterial infections										
Legionellosis	250	473	309	687	328	1.3	2.5	1.6	1.6	2.8
Leprosy	8	4	7	6	4	<0.1	<0.1	<0.1	<0.1	<0.1
Meningococcal infection	588	628	678	689	550	3.1	3.3	3.5	3.5	2.8
Tuberculosis	1,145	1,063	948	1,007	944	6.1	5.6	4.9	5.1	4.7
Total	83,408	89,194	103,668	101,664	104,989					

* Analyses in this report were based on date of onset, (except for hepatitis B and hepatitis C unspecified, where date of report of disease was used). Where date of onset was not available the date of specimen collection or the date of notification, whichever was earliest was used.

† Unspecified hepatitis includes cases with hepatitis in which the duration of infection can not be determined.

‡ The analysis was by report date.

§ In the Northern Territory and Queensland, includes incident hepatitis cases.

|| Notified as 'foodborne disease' or 'gastroenteritis in an institution' in New South Wales.

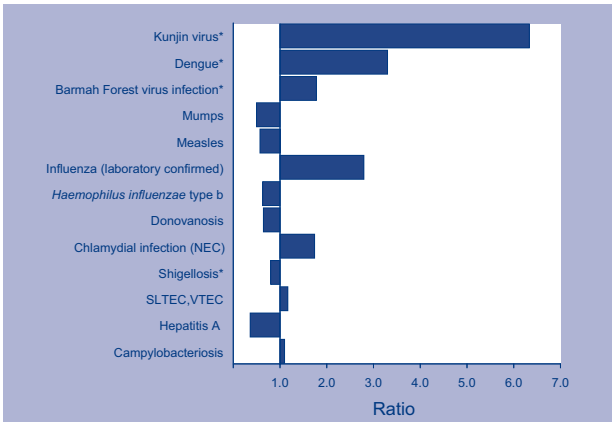
¶ Infections with Shiga-like toxin/verotoxin-producing *Escherichia coli* (SLTEC/VTEC).

NN Not notifiable.

NEC Not elsewhere classified.

The major changes in communicable disease notifications in 2003 are shown in Figure 4, as the ratio of notifications in 2003 to the mean number of notifications for the previous five years. The number of notifications of chlamydial infection, Barmah Forest virus infections, Dengue and Kunjin virus infections in 2003 surpassed the expected range (5-year mean plus two standard deviations). Notifications of hepatitis B (unspecified) and hepatitis C (unspecified), and shigellosis in 2003 were below the expected range (5-year mean minus two standard deviations). Notifications for the remaining diseases were within the historical range.

Figure 4. Comparison of total notifications of selected diseases reported to the National Notifiable Diseases Surveillance System in 2003, with the previous five-year mean



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

In the financial year 2002–03, there were 92,366 hospital separations in Australian hospitals with a primary diagnosis of infectious diseases (International Classification of Diseases, version 10, Australian Modification (ICD10–AM) codes A01–B99, Australian Institute of Health and Welfare). This represents 1.4 per cent of all hospital separations in that period. A further 65,986 separations were recorded with a principal diagnosis of influenza or pneumonia (ICD10–AM J10–J18).

Bloodborne diseases

In 2003, bloodborne viruses reported to the NNDSS included hepatitis B, C and D. HIV and AIDS diagnoses are reported directly to the National Centre in HIV Epidemiology and Clinical Research (NCHECR). Information on national HIV/AIDS surveillance can be obtained through the NCHECR website at http://www.med.unsw.edu.au/nchecr

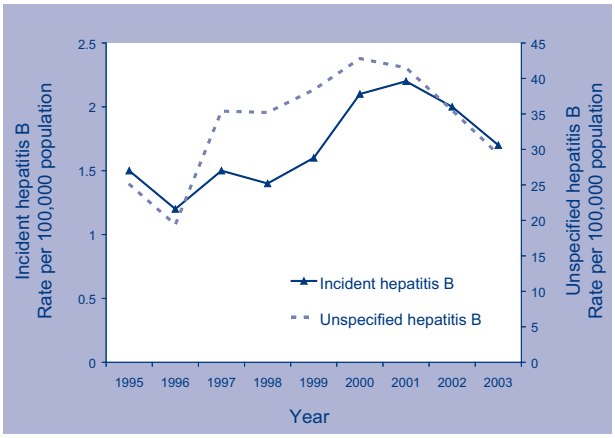
When reported to NNDSS, newly acquired (incident) hepatitis B and hepatitis C infections were differentiated from those where the timing of disease acquisition was unknown (unspecified). As considerable time may have elapsed between onset and report date for unspecified hepatitis infections, the analysis of unspecified hepatitis B and unspecified hepatitis C infections in the following sections is by report date, rather than by onset date.

Hepatitis B

Incident hepatitis B notifications

In 2003, 337 incident hepatitis B infections were reported to the NNDSS, giving a national notification rate of 1.7 cases per 100,000 population. The highest rates were reported from the Northern Territory (7.6 cases per 100,000 population) and Victoria (3.0 cases per 100,000 population). In 1995–2003, the rate of notification of incident hepatitis B infection was around 1–2 cases per 100,000 population (Figure 5).

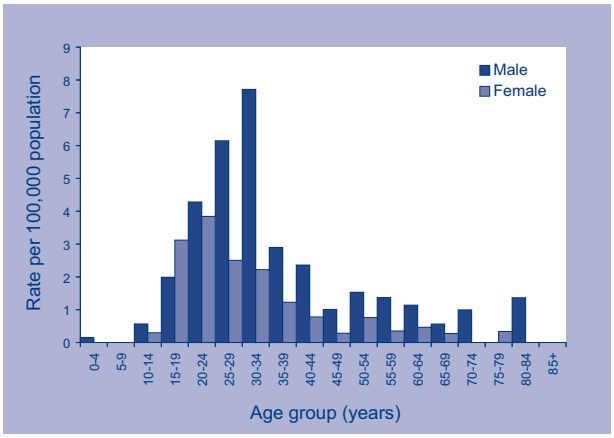
Figure 5. Trends in notification rates, incident and unspecified hepatitis B infection, Australia, 1995 to 2003*



* Year of onset for incident hepatitis B and year of report for unspecified hepatitis B notifications.

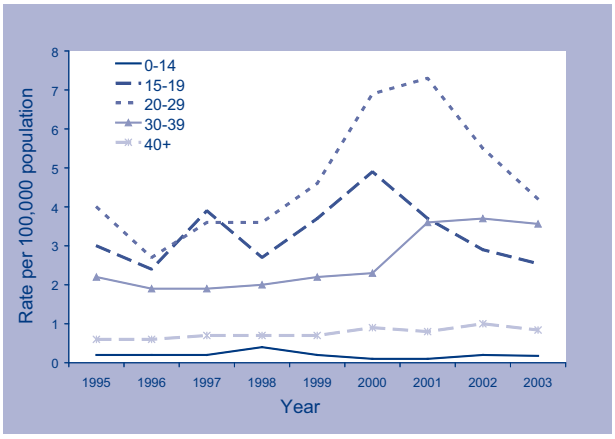
In 2003, the highest rate of incident hepatitis B infection was in the 30–34 year age group among males (7.7 cases per 100,0000 male population) and in the 20–24 year age group among females (3.8 cases per 100,000 female population, Figure 6). Overall, infections in males exceeded those in females, with a male to female ratio of 2:1.

Figure 6. Notification rate for incident hepatitis B infections, Australia, 2003, by age group and sex



Trends in incident hepatitis B infection by year and age group are shown in Figure 7. Rates of incident hepatitis B infection among people aged less than 15 years or 40 years and older remained low in 1995–2003. Rates of notification of incident hepatitis B infection in the 15–19 and 20–29 year age groups peaked in 2000 and 2000–2001 respectively. Rates in the 15–19 and 20–29 year age groups declined from 3.7 and 7.3 cases in 2001 to 2.5 and 4.2 cases in 2003, respectively while rates in the 30–39 year age group remained around three cases per 100,000 population in 2001–2003.

Figure 7. Trends in notification rates of incident hepatitis B infections, Australia, 1995 to 2003, by age group



The increased rates in these age groups in 2000–2001 was attributed to increased hepatitis B transmission among injecting drug users in Victoria, followed by a decline in the prevalence of infections in 2002 and 2003 during a heroin 'drought' (Greg Dore, personal communication).

Risk factor information for incident hepatitis B infection was available from all states and territories except New South Wales, Western Australia and Queensland (Table 5). No cases of incident hepatitis B infection were reported from the Australian Capital Territory.

Table 5. Risk exposures associated with incident hepatitis B infection, Australia, 2003, by reporting state or territory*

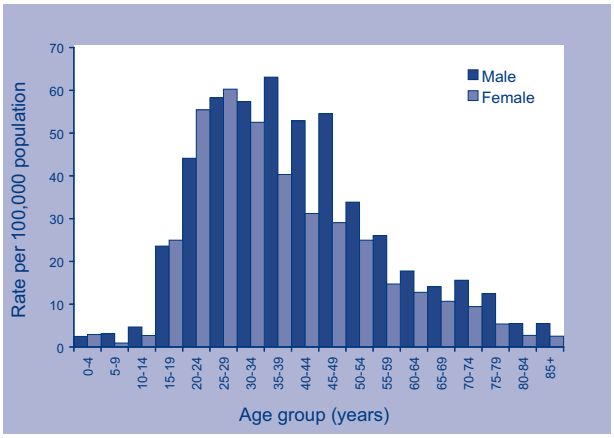
Risk factor	NT	SA	Tas	Vic
Injecting drug use	5	5	6	80
Sexual contact with hepatitis B case	1	1	0	66
Household/other contact with hepatitis B	0	0	0	0
Overseas travel	1	1	0	0
Other risk factors	1	0	0	0
No risk factors identified	7	3	4	1
Total	15	10	10	147

* There were no cases of incident hepatitis B infection notified in the Australian Capital Territory.

Unspecified hepatitis B notifications

In 2003, 5,833 cases of unspecified hepatitis B infection were notified to NNDSS, giving a rate of 29.3 cases per 100,000 population. By jurisdiction, New South Wales (39.4 cases per 100,000 population) and Victoria (33.1 cases per 100,000 population) recorded the highest notification rates. The male to female ratio was 1.3:1. Among males, the highest notification rate was in the 35–39 year age group (63.1 cases per 100,000 population), whereas among females, the highest notification rate was in the 25–29 year age group (60.3 cases per 100,000 population, Figure 8). In 1995–2003, the rate of notification of unspecified hepatitis B infection ranged from 20 to 40 cases per 100,000 population (Figure 5).

Figure 8. Notification rate for unspecified hepatitis B infections, Australia, 2003, by age group and sex*

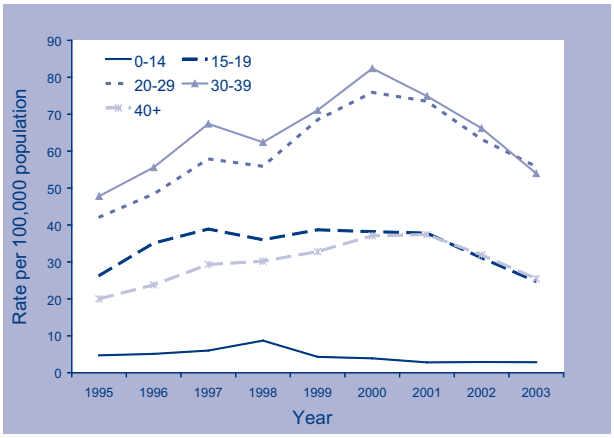


* By report date.

In 2003, 14 cases of unspecified hepatitis B infection in children in the 0–4 year age group were reported. Five children had been vaccinated for hepatitis B infection, one child had not been vaccinated and the vaccination status of the remainder was unknown. Approximately 95 per cent of infants born in 2003 received hepatitis B vaccination in Australia.[1]

Trends in unspecified hepatitis B infection by age group and year are shown in Figure 9. Rates of notification of unspecified hepatitis B infection peaked in 2000–2001 in the age groups 15–19 and 20–29 years. This pattern was similar to that for incident hepatitis B infection (Figure 7). In 2000–2003, the notification rate declined substantially in all age groups except in the 0–14 year age group, which had the lowest notification rate.

Figure 9. Trends in notification rates of unspecified hepatitis B infections, Australia, 1995 to 2003, by age group*



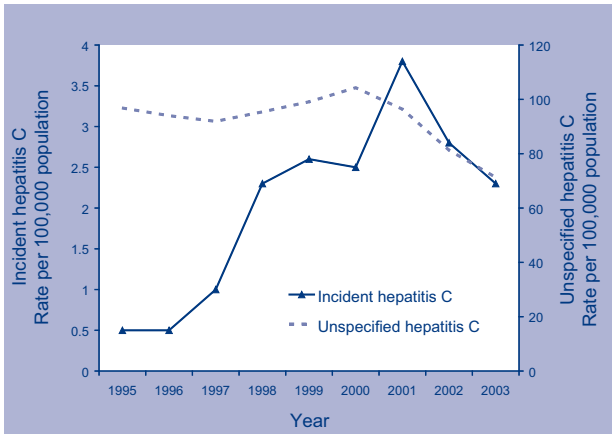
* By report date.

Hepatitis C

Incident hepatitis C notifications

A total of 460 incident cases of hepatitis C with an onset date in 2003 were notified, giving a rate of 2.3 cases per 100,000 population (Figure 10). The proportion of all hepatitis C notifications that were known incident cases was 3.1 per cent in 2003. The highest rate of incident hepatitis C infection was reported from Western Australia (7.3 cases per 100,000 population).

Figure 10. Trends in notification rates, incident and unspecified hepatitis C infection, Australia, 1995 to 2003



Incident hepatitis C notification rates fell from 3.8 cases per 100,000 population in 2001 to 2.3 cases per 100,000 population in 2003. The reasons for this decline are not clear, as notifications of incident hepatitis C are a small fraction of the true number of new infections, estimated to be 16,000 in 2001.[2]

In 2003, the highest rate of incident hepatitis C notification was in the 20–24 year age group for males (11.4 cases per 100,000 population) and females (7.1 cases per 100,000 population, Figure 11). Overall, the male to female ratio was 1.6:1.

Trends in the age distribution of incident hepatitis C infection are shown in Figure 12. In 1997–2003, the highest rates of notification of incident hepatitis C infection were in the age group 20–29 years and 15–19 years.

Hepatitis C transmission in Australia continued to occur predominately among people with a recent history of injecting drug use.[2] More than 75 per cent of people with incident hepatitis C infection reported a history of injecting drug use. Modelling of hepatitis has estimated that in 2003, an estimated 181,000 people were living with hepatitis C infection in

Figure 11. Notification rate for incident hepatitis C infections, Australia, 2003, by age group and sex

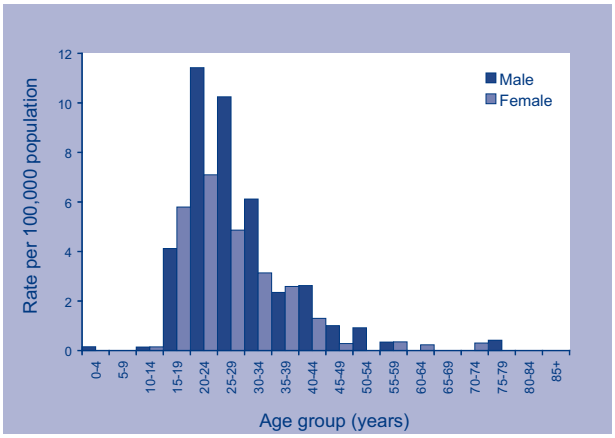
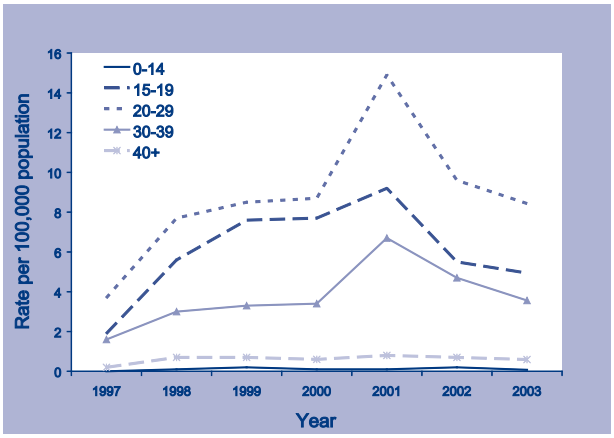


Figure 12. Trends in notification rates of incident hepatitis C infections, Australia, 1997 to 2003, by age group



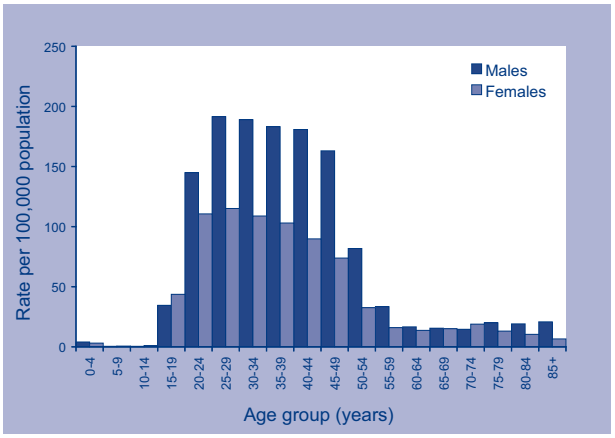
Australia, including 143,000 with chronic hepatitis C infection and early liver disease (stage 0/1), 31,000 with chronic hepatitis C and moderate liver disease (stage 2/3) and 7,500 with hepatitis C related cirrhosis. A further 61,000 had hepatitis C antibodies without chronic infection.[2]

Unspecified hepatitis C notifications

National notification rates of unspecified hepatitis C infection ranged between 96 and 104 cases per 100,000 population in 1995–2001. The national rate declined to 81.3 in 2002 and to 71.3 per 100,000 in 2003 (Figure 10). Improved surveillance practice, such as better classification of incident cases and increased duplicate checking may account for some of the decrease in unspecified hepatitis C notifications.

In 2003, 14,169 unspecified hepatitis C infections were notified to NNDSS, giving a notification rate of 71.3 cases per 100,000 population. Of the total notifications of unspecified hepatitis C, 36 per cent were from New South Wales, but the Northern Territory had the highest notification rate (104.9 cases per 100,000 population). The male to female ratio was 1.7:1. The highest reporting rates were in the 25–29 year age group for both males (191.5 cases per 100,000 population), and females (115.1 cases per 100,000 population, Figure 13).

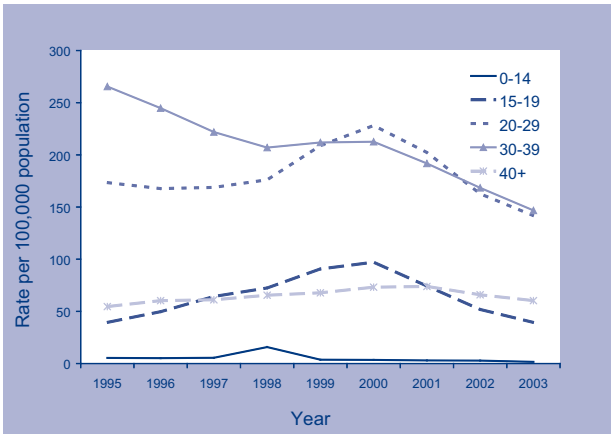
Figure 13. Notification rate for unspecified hepatitis C infections, Australia, 2003, by age group and sex*



* By report date.

Trends in the age distribution of unspecified hepatitis C infections are shown in Figure 14. Overall, the highest rates were in the 20–29 and 30–39 year age groups. In the age group 30–39 years, the rate of diagnosis of unspecified hepatitis C infection declined steadily in 1995–2003 whereas in the age groups, 15–19 years and 20–29 years, a steady decline occurred from 2000 to 2003.

Figure 14. Trends in notification rates of unspecified hepatitis C infections, Australia, 1995–2003, by age group*



* By report date.

Hepatitis D

Hepatitis D is a defective single-stranded RNA virus that requires the hepatitis B virus to replicate. Hepatitis D infection can be acquired either as a co-infection with hepatitis B or as a superinfection with chronic hepatitis B infection. People co-infected with hepatitis B and hepatitis D may have more severe acute disease and a higher risk of fulminant hepatitis compared with those with hepatitis B alone. The modes of hepatitis D transmission are similar to those for hepatitis B, and in countries with low hepatitis B prevalence, injecting drug users are the main risk group for hepatitis D.

There were 26 notifications of hepatitis D to the NNDSS in 2003 giving a notification rate of 0.1 per 100,000 population. Of the 26 notifications, 12 were reported from New South Wales, 13 from Victoria, and one from Queensland. The majority (22/26, 85%) of cases were males, with the highest rate reported in 40–44 and 45–49 year olds (0.6 cases per 100,000 population).

Gastrointestinal diseases

Gastrointestinal diseases that were notified to NNDSS in 2003 were: botulism, campylobacteriosis, cryptosporidiosis, haemolytic uraemic syndrome (HUS), hepatitis A, hepatitis E, listeriosis, salmonellosis, shigellosis, Shiga toxin producing *Escherichia coli*/verotoxigenic *E. coli* (STEC/VTEC) infections and typhoid. Notifications of gastrointestinal diseases decreased by 9 per cent, from 26,953 in 2002 to 24,655 in 2003 (Table 4). Compared with 2002, there was a decrease in the number of notifications of cryptosporidiosis (63%), hepatitis E (47%), salmonellosis (11%), shigellosis (12%), SLTEC/VTEC (8%) and typhoid (27%) in 2003. On the other hand, there were increases in the notifications of campylobacteriosis (4%), HUS (15%), hepatitis A (9%) and listeriosis (13%).

In this section reference will be made to the OzFoodNet 2003 annual report of foodborne diseases in Australia.[3] This report was used as a resource for additional information on foodborne gastrointestinal disease outbreaks in Australia in 2003.

Botulism

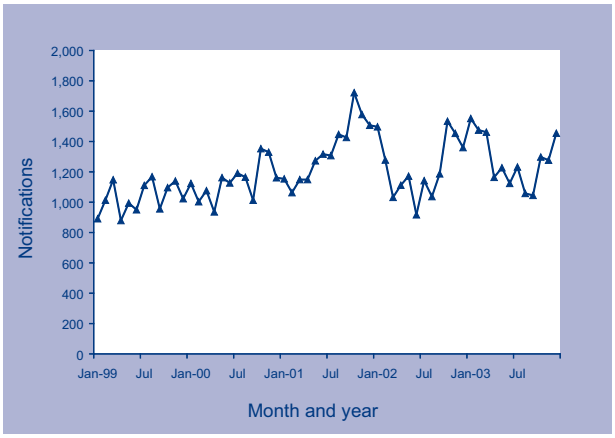
One case of infant botulism in a female, less than 12 months old was reported to NNDSS in 2003. While no classic foodborne botulism has been reported in Australia since the commencement of notifications in 1992, there have been five cases of infant botulism reported between 1998 and 2003.

Campylobacteriosis

There were 15,372 notifications of campylobacteriosis in Australia in 2003. Campylobacteriosis is notifiable in all jurisdictions, except New South Wales. The national rate of notifications in 2003 was 116.5 cases per 100,000 population; a marginal increase compared with the rate reported in 2002 (112 cases per 100,000 population). South Australia continues to have the highest notification rate (173 cases per 100,000 population) for the second consecutive year (Table 3).

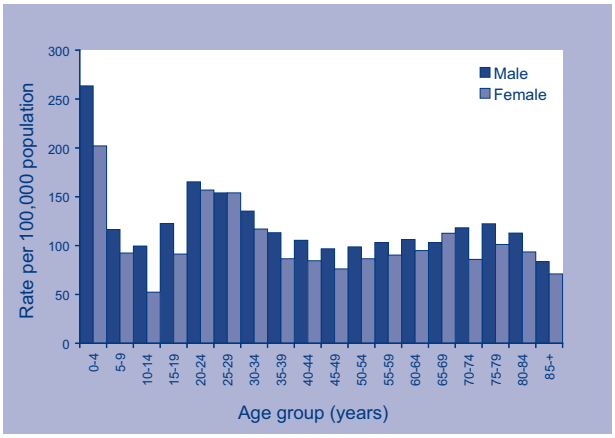
Monthly notifications of campylobacteriosis in 2003 were consistent with previous years (1998 to 2002), with the number of notifications peaking in the third quarter of the year (Figure 15). In 2003 four campylobacter related outbreaks were identified, two of which were associated with the consumption of un-pasteurised milk and close contact with animals.[3]

Figure 15. Trends in notifications of campylobacteriosis, Australia, 1999 to 2003, by month of onset



The highest notification rate of campylobacteriosis was among children aged 0–4 years (Figure 16). In this age group notification rates were higher in males (263 cases per 100,000 population) than in females (202 cases per 100,000 population). The overall female to male ratio, as in previous years, was 1.2:1.

Figure 16. Notification rates of campylobacteriosis, Australia, 2003, by age group and sex



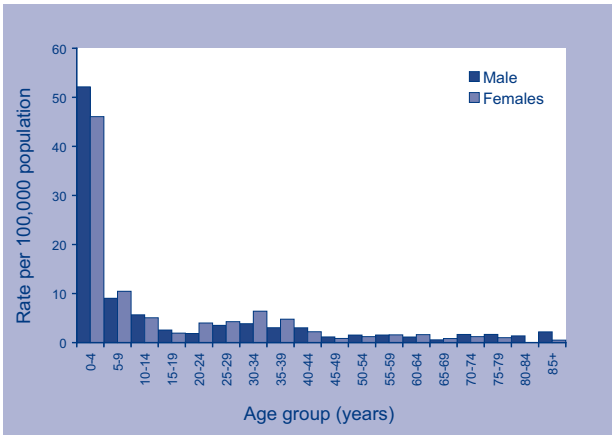
Cryptosporidiosis

In 2003, 1,219 cases of cryptosporidiosis were reported to NNDSS, a notification rate of six cases per 100,000 population and fall of 63 per cent on the 3,268 cases reported in 2002.

All states and territories reported decreases in cryptosporidiosis notifications. The Northern Territory and Western Australia had a notification rate above the national average at 47 and 22 cases per 100,000 population, respectively.

Children under the age of four continue to have the highest notification rate of cryptosporidiosis (49 cases per 100,000 population, (Figure 17). However, compared to 2002, the notification rate in this age group has dropped from 129 cases per 100,000 population.

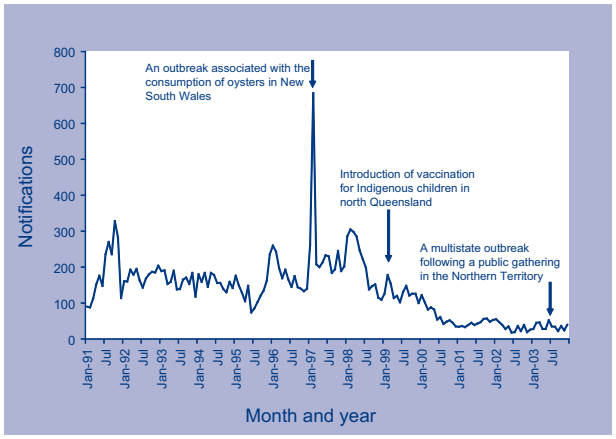
Figure 17. Notification rates of cryptosporidiosis, Australia, 2003, by age group and sex



Hepatitis A

There were 418 cases of hepatitis A reported to NNDSS in 2003, a notification rate of two cases per 100,000 population. The notification rate of hepatitis A has been steadily decreasing for the last decade, but remained stable compared to 2002 (Figure 18).

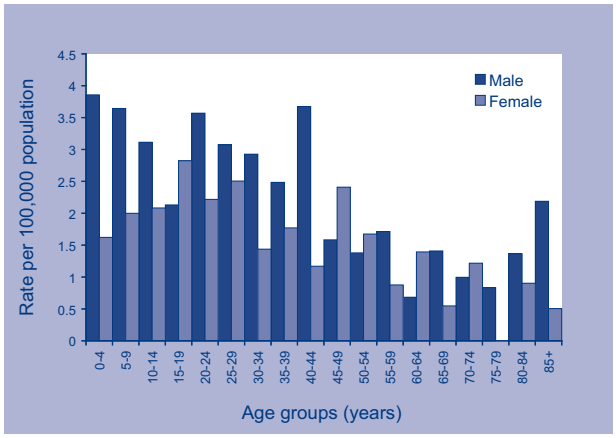
Figure 18. Trends in notifications of hepatitis A, Australia, 1991 to 2003, by month of notification



Compared to 2002, hepatitis A notification rates decreased in all jurisdictions except in Tasmania, Victoria and Western Australia. The largest increase was recorded in Western Australia (1.6 to 4.4 cases per 100,000 population in 2002 and 2003, respectively). The Northern Territory continues to have the highest notification rate (20.2 cases per 100,000 population).

Males had a higher notification rate of hepatitis A (2.5 cases per 100,000 population) than females (1.7 cases per 100,000 population). The highest age specific rate of hepatitis A notifications among males was in the 0–4 year age group (3.9 cases

Figure 19. Notification rates of hepatitis A, Australia, 2003, by age group and sex



per 100,000 population) and among females in the 15–19 year age group (2.8 cases per 100,000 population) (Figure 19).

Hepatitis A is commonly spread from person to person or from contaminated food or water. Among 101 cases of hepatitis A infection in 2003 (24% of all notifications) three frequently reported risk factors for hepatitis A infection were, overseas travel (51%), household or close contact with confirmed cases (23%) and childcare attendees, staff and their contacts (20%, Table 6).

Hepatitis E

There were 10 cases of hepatitis E reported to NNDSS in 2003. Six cases were reported in New South Wales and two cases each in the Australian Capital Territory and Victoria. There were four males and six females, all aged between 15 and 60 years. Data on travel history were available for three cases and showed that all had travelled overseas.

Listeriosis

In 2003, 69 cases of listeriosis were reported to NNDSS, a notification rate of 0.3 cases per 100,000 population. Listeriosis notifications have been stable at this rate since 1998. In 2003, 75 per cent of listeriosis cases were aged over 60 years, with the highest notification rate in the 80–84 year age group in males and the 75–79 age group in females (Figure 20).

In 2003, 12 per cent (8/69) of listeriosis cases were of materno-foetal origin and one death in a neonate was reported. OzFoodNet reported that in 2003, there were 16 deaths in non-pregnancy related listeriosis cases. No common-source outbreaks of listeriosis were investigated during 2003.[3]

Figure 20. Notification rates of listeriosis, Australia, 2003, by age group and sex

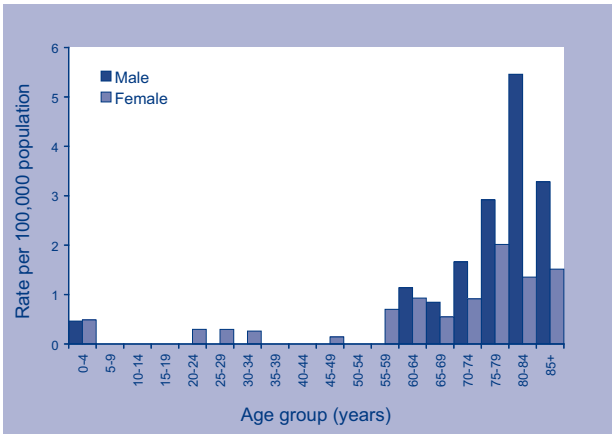


Table 6. Risk exposures associated with hepatitis A virus infection, Australia, 2003, by state or territory*

	State or territory					
	ACT	NT	Qld	SA	Tas	Vic
Total	5	40	48	13	14	89
Injecting drug use	–	0	0	1	0	0
– User	–	–	0	–	–	–
– Contact with	–	–	9	–	–	–
Household /close contact of case	–	4	9	–	0	10
Overseas travel	3	9	13	1	2	23
Childcare	–	3	9	–	0	8
– Attendee	–	–	3	–	–	–
– Staff	–	–	1	–	–	–
– Household contact	–	–	5	–	–	–
Homosexual contact	–	0	1	–	0	0
Sex worker	–	0	–	–	0	0
Interstate travel	–	–	–	–	–	2
Occupational exposure	–	–	–	–	–	1
Outbreak (source unknown)	–	–	–	–	–	4
Unknown	2	24	26	12	3	42

* New South Wales and Western Australia did not report risk exposures associated with hepatitis A. The number of cases notified were 124 in New South Wales and 85 in Western Australia. Exposures are not mutually exclusive hence more than one exposure per person is possible.

– Risk factor not sought.

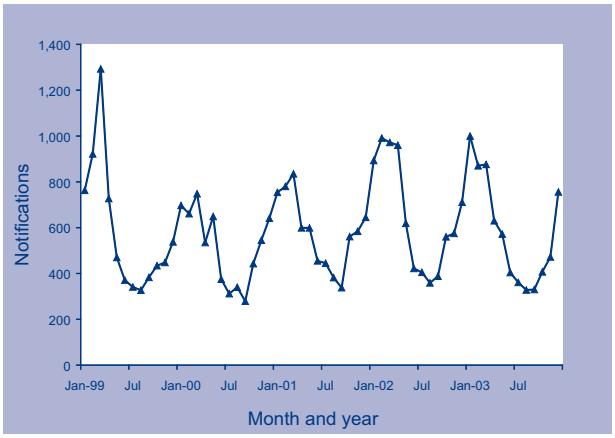
Salmonellosis (non-typhoidal)

A total of 7,011 salmonellosis cases were reported to NNDSS in 2003, a rate of 35.3 cases per 100,000 population and a 12 per cent decrease from the rate reported in 2002 (40 cases per 100,000 population). During the five year period 1998 to 2003, the highest national notification rate was 40 cases per 100,000 population in 2002.

The Northern Territory and Queensland had notification rates 5 and 1.6 times the national notification rate, respectively (Table 3). The highest notification rates of salmonellosis were reported in the northern part of the country (Map 2), with the Kimberley Statistical Division of Western Australia having the highest notification rate at 323 cases per 100,000 population in 2003.

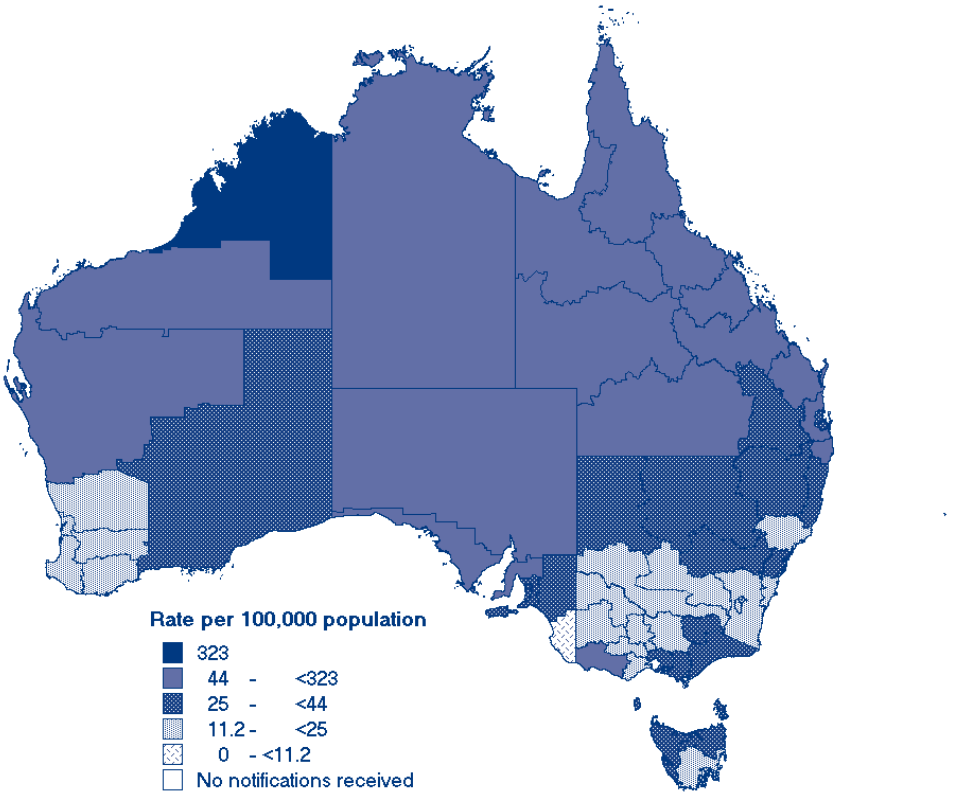
As in previous years, reports of salmonellosis peaked during summer (January to March). Thirty-nine per cent of salmonellosis cases in 2003 had dates of onset during this period (Figure 21).

Figure 21. Trends in notifications of salmonellosis, Australia, 1999 to 2003, by month of onset



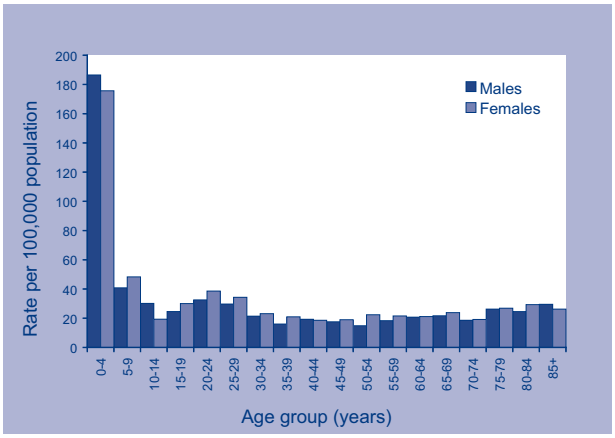
Similar to previous years, the highest rate was in children aged between 0–4 years: 32 per cent of salmonellosis notifications were in this age group (Figure 22). However, in 2003, the notification rate in children aged 0–4 years, dropped 14 per cent from 211 cases per 100,000 population in 2002 to 182 cases per 100,000 population in 2003.

Map 2. Notification rates of salmonellosis, Australia, 2003, by Statistical Division of residence



The National Enteric Pathogens Surveillance Scheme reported serovars for 6,808 isolates,[4] representing 97 per cent of notified cases of salmonellosis (n=7,011) in 2003. The 10 most frequently isolated serovars and phage types of *Salmonella,* which accounted for 44 per cent of all isolates, are shown in Table 7. Nationally, as in the previous year, the three most commonly reported *Salmonella* serovar or phage types were *Salmonella* Typhimurium 135, *Salmonella* Typhimurium 170 and *Salmonella* Typhimurium 9. Three *Salmonella* types: *S.* Infantis, *Salmonella* Typhimurium 197 and *Salmonella* Typhimurium 290 were not among the top 10 serovars reported in 2002. These have replaced *S.* Hvittingfoss, *S.* Muenchen, and *S.* Typhimurium 126 from top 10 serovars reported in 2002.

Figure 22. Notification rates of salmonellosis, Australia, 2003, by age group and sex



The distribution of *Salmonella* serovars varied across jurisdictions. The most commonly reported serovars in Queensland, Tasmania, and the Northern Territory were *S.* Virchow (8% of salmonellosis notifications), *S.* Mississippi (49% of salmonellosis notifications) and *S.* Ball (13% of salmonellosis notifications), respectively. *Salmonella* Typhimurium was the most commonly reported serovar in the rest of the jurisdictions. *Salmonella* Typhimurium 135 accounted for 33 per cent of cases in the Australian Capital Territory, 18 per cent in Victoria, and 12 per cent in Western Australia. In New South Wales the most commonly notified phage type was *Salmonella* Typhimurium 170 (12% of salmonellosis notifications) and in South Australia the most common notified phage type was *Salmonella* Typhimurium 9.

Outbreaks and clusters of salmonellosis

In 2003, OzFoodNet investigated 99 foodborne disease outbreaks of which 25 were attributable to S. Typhimurium infection. These outbreaks affected 672 persons with 78 hospitalisations and five deaths. Of the five significant foodborne outbreaks (affecting 50 or more persons each) in 2003, three were due to *Salmonella* Typhimurium. Of these, one occurred in a restaurant and was associated with dishes containing eggs, another was associated with the consumption of Vietnamese rolls from a bakery and the third was associated with pigeon meat. There were several others due to other serotypes of *Salmonella.*[3]

Table 7. Top ten isolates of *Salmonella*, Australia, 2003

Organism	Number of human isolates, by state or territory									Total %
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust	
S. Typhimurium 135	27	174	16	155	17	6	229	70	694	10
S. Typhimurium 170	4	232	0	66	1	5	129	4	441	7
S. Typhimurium 9	4	139	6	45	29	7	168	20	418	6
S. Saintpaul	2	41	26	163	13	5	18	30	298	4
S. Chester	1	43	17	94	23	0	7	34	219	3
S. Virchow 8	0	32	3	166	0	1	5	1	208	3
S. Infantis	3	95	5	16	18	3	50	11	201	3
S. Birkenhead	0	68	0	103	0	0	1	3	175	3
S. Typhimurium 197	0	63	0	86	1	0	17	3	170	3
S. Typhimurium 290	6	33	0	9	2	5	85	6	146	2
Other	35	927	274	1,205	327	110	551	409	3,838	56
Total	82	1,847	347	2,108	431	142	1,260	591	6,808	

Source: National Enteric Pathogens Surveillance Scheme.

Shigellosis

In 2003, 440 cases of shigellosis were reported to NNDSS, a notification rate of 2.2 cases per 100,000 population and a marginal decrease from the 2.5 cases per 100,000 population reported in 2002 (Table 4). The Northern Territory continues to have the highest notification rate at 66 cases per 100,000 population, which represents an increase of 27 per cent in notification rates compared to 2002. However, nationally, notifications of the disease continue to decline (Figure 23).

Children under the age of four continue to represent 33 per cent of shigellosis notifications. In 2003, this age group had the highest notification rate at 11 cases per 100,000 population (Figure 24), but compared to 2002 rates (14.1 cases per 100,000 population) notification rates in this age group have decreased by 17 per cent.

Figure 23. Trends in notifications of shigellosis, Australia, 1991 to 2003, by month of onset

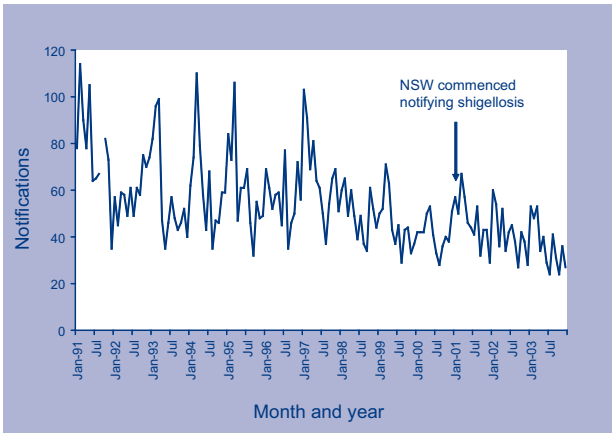
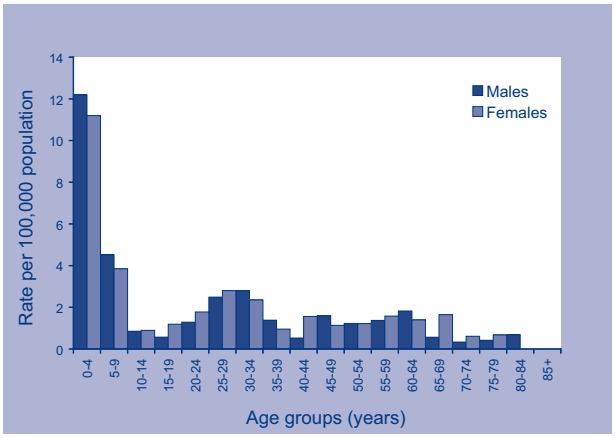


Figure 24. Notification rates of shigellosis, Australia, 2003, by age group and sex



Indigenous people carry the highest burden of shigellosis. In 2003, of the total national notifications of shigellosis, 67 per cent of cases with known Indigenous status (indigenous status was unknown in 33% of cases) were identified as Indigenous. In the Northern Territory (where in 98% of notifications the Indigenous status is known), 81 per cent of shigellosis cases notified were Indigenous.

Shiga-like toxin producing/verotoxigenic *Escherichia coli* (SLTEC/VTEC)

There were 49 cases of SLTEC/VTEC reported to NNDSS in 2003. With a notification rate of 0.2 cases per 100,000 population, the rate of SLTEC/VTEC notifications remained stable relative to the previous year. Seventy-six per cent of cases were notified in South Australia (2.4 cases per 100,000 population), where bloody stools are routinely tested by polymerase chain reaction for genes coding for shiga toxin. No cases were notified from the Australian Capital Territory, New South Wales, the Northern Territory or Tasmania. OzFoodNet reported that among typed *E. coli,* 25 per cent were subtype O157 and 15 per cent were subtype O111.[3]

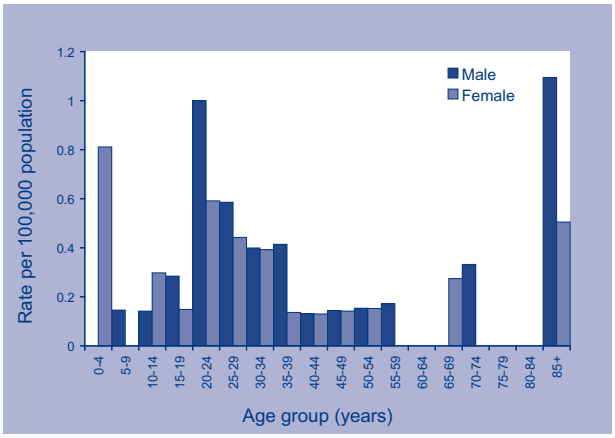
Haemolytic uraemic syndrome

In 2003, 15 cases of HUS were reported to NNDSS, a rate of 0.1 case per 100,000 population, comparable to the 13 cases reported in 2002. No HUS cases were notified in the Australian Capital Territory or Tasmania. Among the 15 cases of HUS notified in 2003, five were males. The median age among males was 9 years (range 0–80 years) and among females the median age was 7 years (range 1–51 years). OzFoodNet reported that STEC was isolated in three cases of HUS of which one was *E. coli* O157.[3]

Typhoid

The notification rate of typhoid has been relatively stable for the last five years. In 2003, there were 51 notifications of typhoid, a rate of 0.3 cases per 100,000 population. In 2002, 70 cases were notified. The male to female ratio was 1:1, with the highest notification rates in males aged 20–24 years and 85+ years (1.0 cases per 100,000 population) and in females aged 0–4 years (0.8 cases per 100,000 population) (Figure 25). The National Enteric Pathogen Surveillance Scheme identified 49 *Salmonella Typhi* isolates, 46 of which were from Australian residents and three cases from overseas visitors, including students. Of the 46 Australian residents, 29 had travelled to South and South East Asia and the Middle East, but 17 had no travel history recorded.[4]

Figure 25. Notification rates of typhoid, Australia, 2003, by age group and sex



Quarantinable diseases

Human diseases covered by the *Quarantine Act 1908,* and notifiable in 2003 were cholera, plague, rabies, yellow fever, and four viral haemorrhagic fevers (Ebola, Marburg, Lassa and Crimean-Congo). In 2003, there were no cases of a quarantinable disease notified in Australia.

Cholera, plague, rabies, yellow fever, and viral haemorrhagic fevers are of international public health importance and are notified to the World Health Organization. Although no local transmission had been reported in Australia, these diseases continue to occur around the world. Travellers are advised to seek information on the risk of contracting these diseases in their destinations and take appropriate measures. Information on quarantinable diseases can be found on the DoHA website at: http://www.health.gov.au/internet/wcms/publishing.nsf/Content/Quarantine+and+Travel+Health-2

Severe acute respiratory syndrome

Between November 2002 and July 2003, a clinical syndrome termed severe acute respiratory syndrome (SARS) emerged in Southern China and infected more than 8,000 people causing 774 deaths in 26 countries. In response to this new disease, caused by a novel coronavirus, SARS-CoV, the World Health Organization issued a global alert.

The Australian Government declared SARS a quarantinable disease under the Quarantine Act and placed health personnel at all Australian international airports to screen incoming passengers for symptoms associated with SARS. International travellers were provided with information about SARS and travel advisories were issued through the Department of Foreign Affairs and Trade. The Australian Government in collaboration with the Communicable Disease Network Australia issued infection control guidelines and advice about SARS to hospitals, health care workers, general practitioners, border control and airline staff and staff at Australian seaports.

More than 100 people were investigated for possible SARS infection of whom five were reported to the WHO as probable cases. A sixth probable case identified by laboratory testing overseas, but who was not under investigation when in Australia, was also reported to WHO.

Sexually transmissible infections

Sexually transmissible infections (STI) reported to the NNDSS in 2003 were chlamydial infection, donovanosis, gonococcal infections and syphilis including congenital syphilis. These conditions were notifiable in all states and territories.

Other national surveillance systems that monitor STI in Australia include the Australian Gonococcal Surveillance Programme, which is a network of specialist laboratories, and the National Centre in HIV Epidemiology and Clinical Research.

The number of notifications and notification rates of STI reported to the NNDSS between 1999 and 2003 are shown in Table 4. In interpreting these data it is important to note that changes in notifications over time may not solely reflect changes in disease prevalence. Increases in screening rates, more targeted screening, the use of more sensitive diagnostic tests, as well as periodic public awareness campaigns may contribute to changes in the number of notifications over time.

As far as the data allowed, efforts were made to compare notifications rates among population subgroups. Again these data have to be interpreted cautiously, as STI screening occurs predominantly in specific high risk groups. For example, comparisons of STI notification rates between males and females and between Indigenous and non-Indigenous peoples must be interpreted in light of differences in rates of testing between these sub-groups.

Chlamydial infection

Chlamydial infection was the most commonly notified disease in 2003. In this year, a total of 30,161 notifications of chlamydial infection were received by the NNDSS, a rate of 152 cases per 100,000 population. This rate represents an increase of 23 per cent compared with that reported in 2002 (122 cases per 100,000 population). Between 1999 and 2003, Chlamydia notification rates increased from 74 to 152 cases per 100,000 population, an increase of 103 per cent (Table 4).

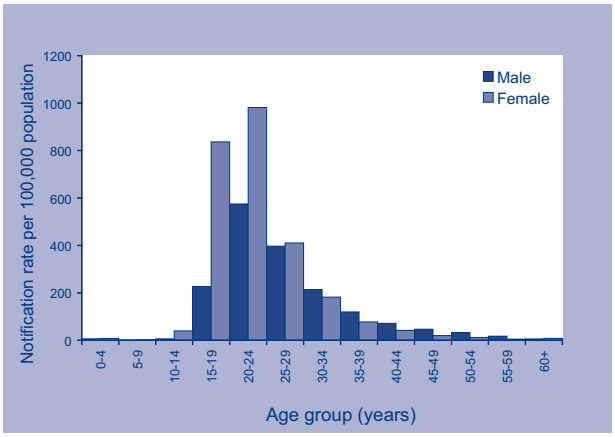
Chlamydial infection notification rates were higher than the national average in the Northern Territory (807 cases per 100,000 population), Queensland (202 cases per 100,000 population), Western Australia (193 cases per 100,000 population) and the Australian Capital Territory (162 cases per 100,000 population) (Table 3). The largest percentage increase in 2003 compared to 2002 was observed in New South Wales (32% increase). At the regional level, the Kimberley region of Western Australia had the highest chlamydial infection notification rate at 1,365 cases per 100,000 population (Map 3).

In 2003, notification rates of chlamydial infection in females and males were 179 and 123 cases per 100,000 population respectively. Compared to 2002, notification rates increased by 22 per cent in males and by 23 per cent in females. The female to male ratio remained at 1.5:1, with rates in females exceeding those of males in the 10–14,15–19 and 20–24 age groups. In all other age groups the sex-specific rates were comparable (Figure 26).

Trends in age and sex specific notification rates between 1999 and 2003 show increases in each of the 5-year age groups between 15 and 34 years in both males and females (Figure 27). Since 1999 the highest average annual percentage increase in notification rates occurred in males aged 20–24 years (23% increase per year) and females aged 15–19 and 20–24 years (20–21% increase per year).

In 2003, Indigenous status was reported in 43 per cent of chlamydial infection notifications. The notification of *Chlamydia* in the three jurisdictions with high completeness of reporting of Indigenous status (Northern Territory, South Australia and Western Australia) shows that in 2003, the crude notification rates of chlamydial infection increased in both Indigenous and non-Indigenous peoples. Western Australia reported the highest increase among

Figure 26. Notification rates of chlamydial infections, Australia, 2003, by age group and sex



Map 3. Notification rates of chlamydial infection, Australia, 2003, by Statistical Division of residence

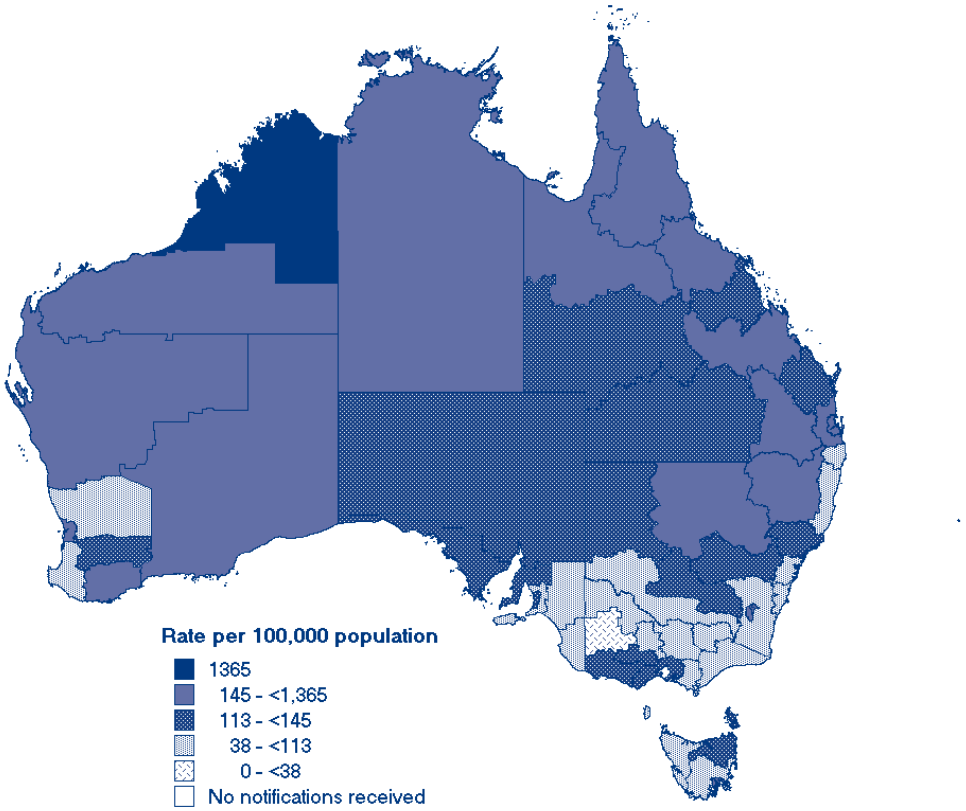
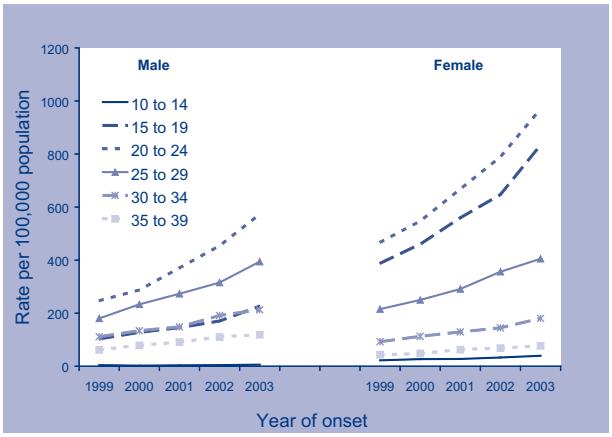


Figure 27. Trends in notification rates of chlamydial infection in persons aged 10–39 years, Australia, 1999 to 2003, by age group and sex

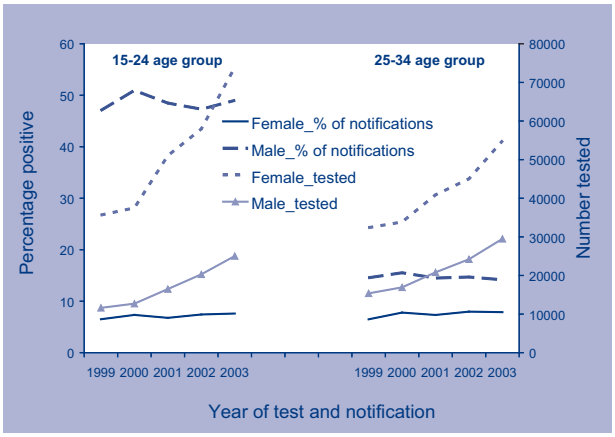


Indigenous (28% increase) and non-indigenous (19% increase) peoples compared to 2002 (Table 8). Indigenous people have the highest burden of chlamydial infection notifications. The Indigenous to non-Indigenous age adjusted rate ratio was 5:1, 4:1 and 8:1 for the Northern Territory, South Australia and Western Australia, respectively.[2]

Surveillance data continues to indicate substantial increases in chlamydial infection notifications over time by gender, age and jurisdiction. The impact on the number of notifications of factors such as new public health initiatives, changes in surveillance practices, changes in diagnostic tests and increases in testing for *Chlamydia*, is unknown.

Data from the Australian Health Insurance Commission (HIC) suggests that parallel to the increase in chlamydial infection notifications between 1999 and 2003 there has been an increase in the number of diagnostic tests for *Chlamydia trachomatis* (Figure 28). An ecological analysis, using the number of notifications as the numerator and the number of diagnostic tests (HIC data, http://www.hic.gov.au/statistics/dyn_mbs/forms/mbs_tab4.shtml) as the denominator, shows that from 1999 through 2003, the percentage positives (i.e., the proportion notified of the number tested for *Chlamydia*) within the 15–24 and 25–34 year age groups remained stable for both males and females (Figure 28). Subject to the limitations of an ecological analysis and the inherent limitations of each data set, this analysis suggests that an increase in the number of tests for *Chlamydia* may account for at least part of the increase in notifications. The surveillance of chlamydial infection via routine surveillance systems is problematic and the true extent of the disease burden in the Australian community is not known. It is therefore advisable to consider routine surveillance of chlamydial infection in conjunction with other sources of data such as population-based surveys and systematic sentinel site surveys.

Figure 28. Annual number of diagnostic tests for *Chlamydia trachomatis* and the proportion notified among persons aged 15–24 and 25–34 years, Australia, 1999 to 2003, by sex



Data source: National Notifiable Diseases Surveillance System and Australian Health Insurance Commission data.

Table 8. Trends in crude notification rates* (cases per 100,000 population) of chlamydial infection in the Northern Territory, South Australia and Western Australia, 1999 to 2003, by Indigenous status

Year	NT		SA		WA	
	Indigenous	Non Indigenous	Indigenous	Non Indigenous	Indigenous	Non Indigenous
1999	965.4	235.4	572.5	59.1	853.8	77.4
2000	1,198.6	240.8	700.0	56.1	1,101.9	105.8
2001	1,433.5	315.7	559.4	88.5	1,152.8	108.9
2002	1,518.3	386.3	666.1	109.3	1,035.5	128.5
2003	1,793.6	398.3	642.1	121.4	1,327.4	153.1

* The rates in non-Indigenous peoples include diagnoses in people whose Indigenous status was not reported.

Donovanosis

Donovanosis is a sexually transmitted infection characterised by a chronic ulcerative genital disease. Although relatively uncommon, it is a disease of public health importance in Australia because it predominantly occurs in Indigenous communities, it has been identified as a potential co-factor in HIV transmission, and it is preventable.[5,6] In 2001, donovanosis was targeted for elimination from Australia within three years through the donovanosis elimination project.

In 2003, 16 cases of donovanosis, six male and ten female, were reported to the NNDSS (Figure 29). An equivalent number were notified in 2002 (Figure 30). All cases were Indigenous, three male and six female cases were from Queensland, three male and three female cases were from the Northern Territory, and one female was from Western Australia. The case distribution by sex and age group is shown in Figure 29; cases ranged in age from 15–19 years to 50–54 years and the majority were aged 15–39 years.

The surveillance data indicate that the donovanosis elimination project has been successful to date but requires ongoing support to achieve its target of complete eradication of donovanosis in Australia.

Gonococcal infection

In 2003, 6,611 notifications of gonococcal infection were received by the NNDSS (Table 2). This represents a rate of 33 cases per 100,000 population, an increase of 4 per cent from the rate reported in 2002 (32 cases per 100,000 population). Nationally, this increase was attributed solely to an increase in the number of notifications in males (5%), as the rate in females was unchanged from that in 2002. The female to male ratio in 2003 was 0.4:1, compared to 0.5:1 in the previous two years.

The highest notification rate in 2003 was in the Northern Territory at 705 cases per 100,000 population (Table 3), while the highest increase in notification rate in 2003, compared to 2002, occurred in the Australian Capital Territory (99% increase overall; 107% in males and 66% in females). Victoria and South Australia each reported an increase of 41 per cent. In South Australia, there was a marked difference by gender, with rates increasing for males (70%) and decreasing for females (16%). New South Wales and Tasmania reported overall decreases in notification rates, 19 per cent and 6 per cent respectively.

Figure 29. Notifications of donovanosis, Australia, 2003, by age group and sex

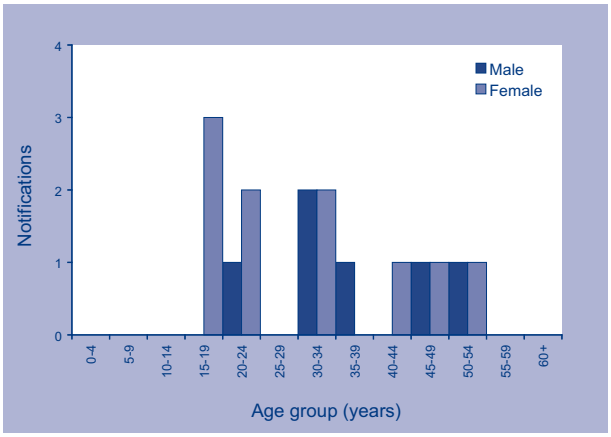
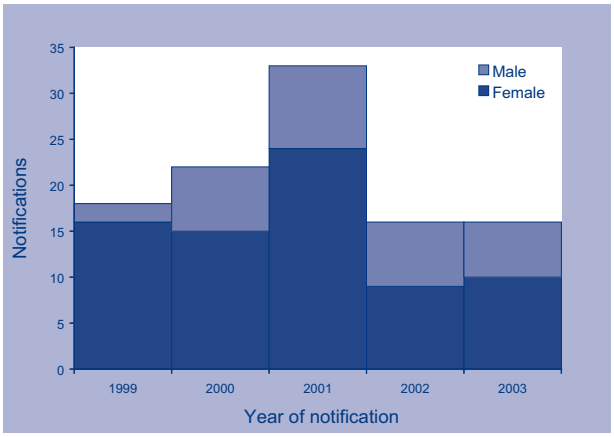


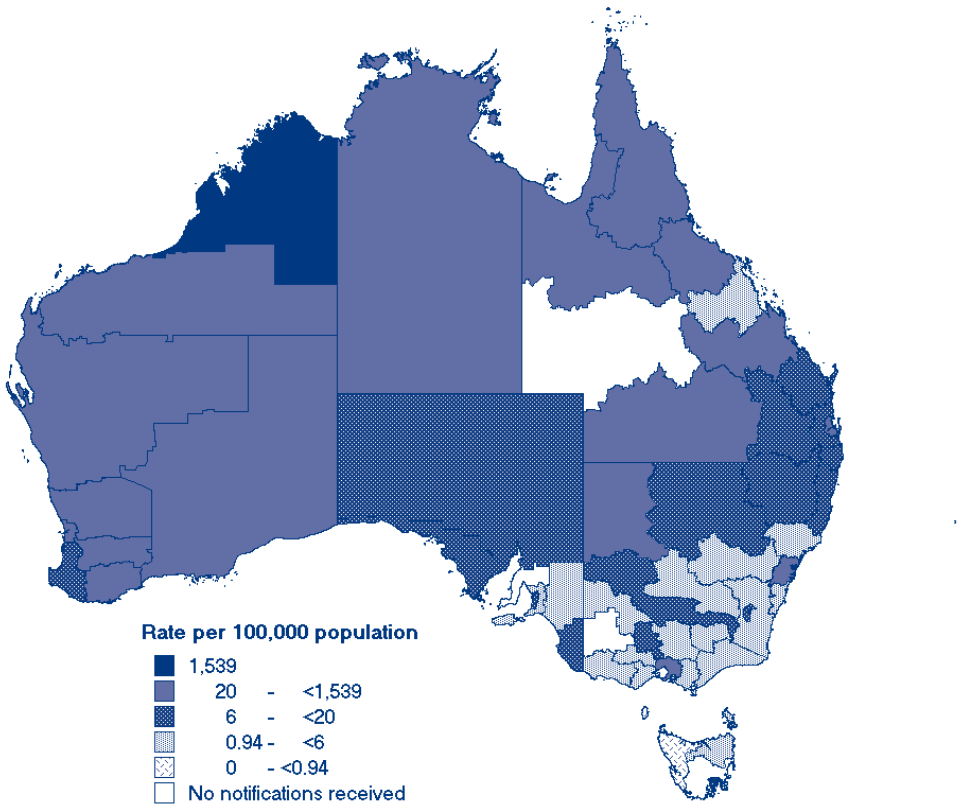
Figure 30. Number of notifications of donovanosis, Australia 1999 to 2003, by sex



In 2003, the national gonococcal infection notification rates for males and females were 46 and 21 cases per 100,000 population, respectively. The exception to this pattern was the Northern Territory, where females had higher notification rates than males (618 and 801 per 100,000 population respectively).

The regional distribution of gonococcal infection notifications shows that, as for chlamydial infection, the highest notification rate occurred in the Kimberley Statistical Division at 1,539 cases per 100,000 population (Map 4).

Map 4. Notification rates of gonococcal infection, Australia, 2003, by Statistical Division of residence



Notification rates for gonococcal infection in males exceeded those in females in all age groups except for the 10–14 and 15–19 year age groups (Figure 31). Trends in age and sex specific notification rates show that compared to 2002, increases in notification rates occurred in the 15–19, 20–24, 25–29, 40–44 and 40–45 year age groups in males and only in the 15–19 and 20–24 year age groups in females (Figure 32).

Figure 31. Notification rates of gonococcal infection, Australia, 2003, by age group and sex

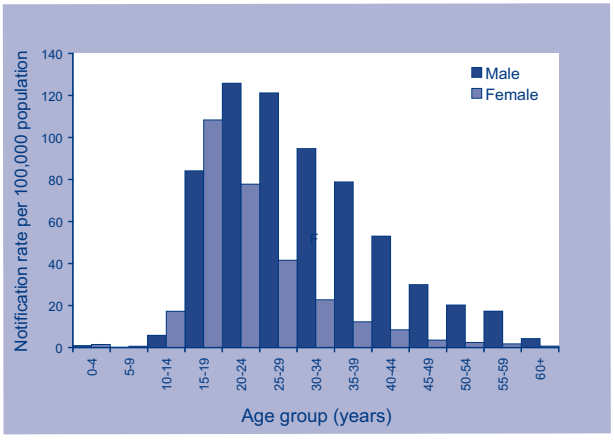
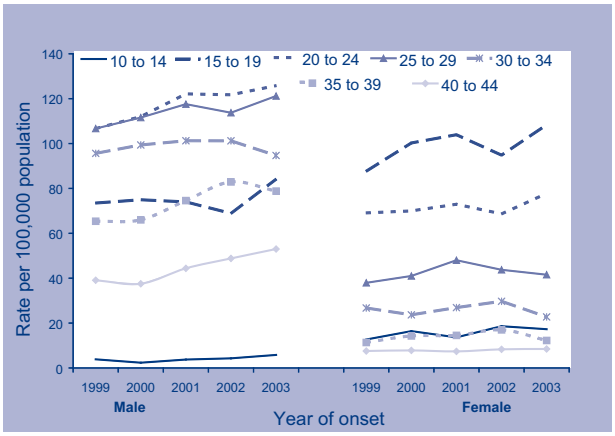


Figure 32. Trends in notification rates of gonococcal infection in persons aged 15–39 years, Australia, 1999 to 2003, by age group and sex



Indigenous status was reported for 66 per cent of gonococcal infection notifications in 2003. The notifications for the three jurisdictions with high completeness of reporting of Indigenous status (the Northern Territory, South Australia and Western Australia) shows that compared to 2002, the crude notification rate increased in both the Northern Territory and Western Australia, while in South Australia, there was a marginal decrease in Indigenous and an increase in non-Indigenous people (Table 9). Nevertheless, gonococcal infection notification rates in Indigenous people are many times the magnitude of the notification rates in non-Indigenous people. The age adjusted rate ratio of Indigenous to non-Indigenous in 2003, was 13:1, 28:1 and 43:1 for the Northern Territory, South Australia and Western Australia, respectively.[2]

Other surveillance activities for gonococcal infections

The Australian Gonococcal Surveillance Programme (AGSP) is the national surveillance system of antibiotic susceptibility of gonococcal isolates. In each state and territory, a network of reference laboratories determine susceptibility of the organism to a core group of antibiotics using a standard methodology.

In 2003, a total of 3,772 isolates of gonococci were tested for antibiotic susceptibility. Eighty-five per cent of isolates were from men, of which 76 per cent were obtained from the urethra and 13 per cent from the rectum. In females, 90 per cent of isolates were obtained from the cervix.[7]

Trends in the proportion of isolates resistant to penicillin, quinolines and tetracycline are shown in Table 10.

In 2003, the proportion of isolates resistant to penicillin by chromosomally-mediated resistance decreased by 17 per cent, but, the proportion of isolates resistant by plasmid-mediated resistance increased by 27 per cent. In 2003, quinolone resistance also increased by 44 per cent, compared to 2002. The level of quinolone resistance is of special concern in Australia. Until 1999 quinolone resistance was observed at a lower 'minimal inhibitory concentration' (MIC) range (0.06–0.5 mg/L) and was mainly in homosexually active males. In 2000 through to 2002 most of the quinolone resistance was at a high MIC (1 mg/L or more) and was widely spread among heterosexuals. This trend continued in 2003. Available data on countries were quinolone resistant strains were acquired shows that 63 per cent (69/110) were acquired from overseas. The AGSP advises that quinolones (including recently available groups) as unsuitable for treatment of overseas-acquired gonorrhoea.[7]

Table 9. Trends in crude notification rates* of gonococcal infection, Northern Territory, South Australia and Western Australia, 1999 to 2003, by Indigenous status

Year	NT		SA		WA	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
1999	1,674.4	161.7	628.1	5.6	1,185.5	16.3
2000	1,811.5	135.0	729.3	6.2	1,374.9	28.2
2001	2,059.8	198.4	481.2	6.8	1,697.4	16.3
2002	2,002.2	238.6	387.6	7.5	1,372.7	27.1
2003	2,013.9	162.9	376.6	13.4	1,391.8	29.8

* The rates in non-Indigenous peoples includes diagnoses in people whose Indigenous status was not reported.

Table 10. Proportion of gonococcal isolates showing antibiotic resistance, Australia, 1998 to 2003

Year	(% resistance)			
	Penicillin Plasmid mediated	Chromosomally mediated	Quinolone	High level tetracycline
1998	5.3	21.8	5.2	NR
1999	7.4	14.3	17.2	7.9
2000	8.7	10.6	17.8	9.1
2001	7.5	15.3	17.5	9.4
2002	7.1	10.9	10.0	11.4
2003	9.0	9.0	14.4	11.2

Source: Australian Gonococcal Surveillance Programme, annual report 2003.

NR Not reported.

Syphilis

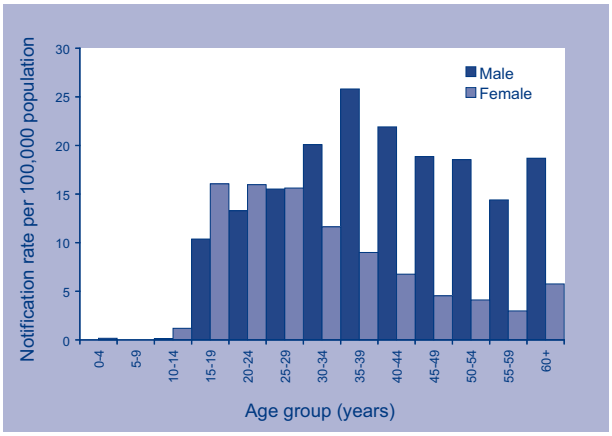
The notification of syphilis includes both new infections and newly diagnosis cases that may not be newly acquired. During 2003, a total of 2,056 cases of syphilis infection were reported, giving a notification rate of 10.3 per 100,000 population, similar to that in 2002 (Table 2 and 3). In 2003, increases in notification rates occurred in New South Wales (29% increase) and Queensland (8% increase) but these were offset in the national data by decreases in notification rates in the other jurisdictions, ranging from 19 per cent in the Northern Territory to 35 per cent in South Australia.

The Northern Territory had the highest notification rate of syphilis in 2003 (159 cases per 100,000 population; Table 3). At the regional level, the highest notification rate was in the Kimberley Statistical Division of Western Australia and the Northern Territory at 204 cases per 100,000 population (Map 5).

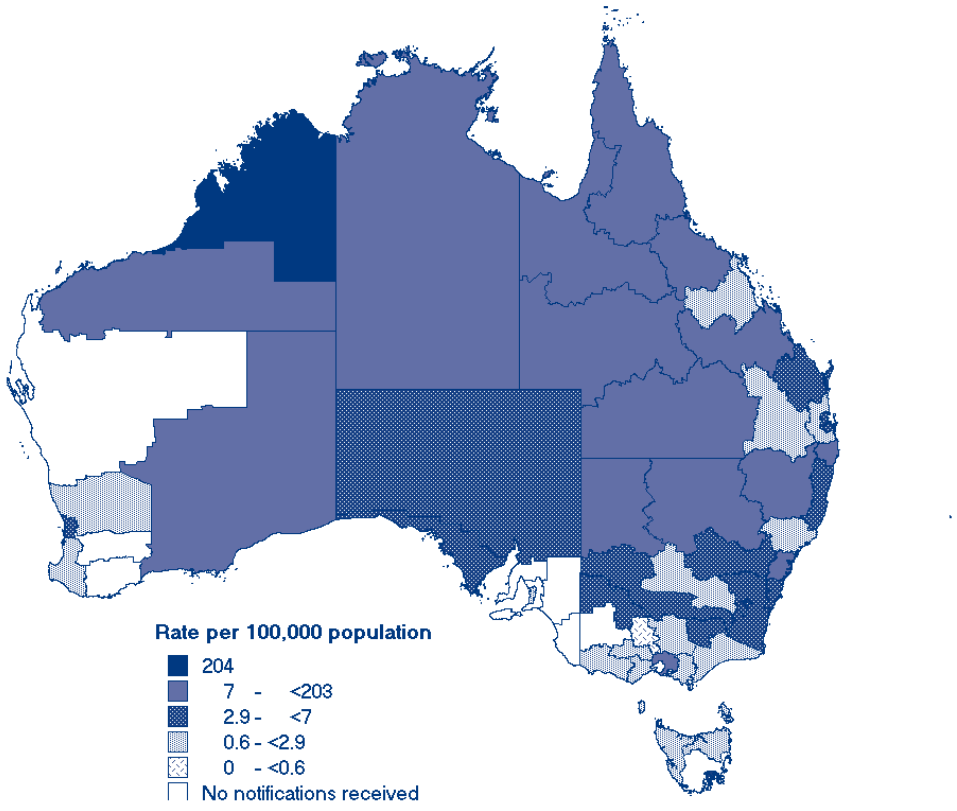
In 2003, syphilis infection notification rates in males and females were 13 and 7 cases per 100,000 population, respectively. Notification rates were higher in males than in females in all jurisdictions except in the Northern Territory, where females had a higher notification rate than males (164 and 156 cases per 100,000 population respectively). Nationally, compared to 2002, the notification rate of syphilis infection increased by 10 per cent in males but decreased by 12 per cent in females. In New South Wales, one of the two jurisdictions where notification rates increased in 2003, increases occurred in both males (36%) and females (15%).

Nationally, the female to male ratio in 2003 was 0.5:1, compared to 0.7:1 in the previous two years. The notification rates of syphilis infection in males peaked in the 35–39 year age group, while in females the rates in the 15–19, 20–24 and 25–29 year age groups were very similar (Figure 33). The peak age specific notification rate for males was 20–24 years in 2001 and 30–34 years in 2002.

Figure 33. Notification rates of syphilis, Australia, 2003, by age group and sex

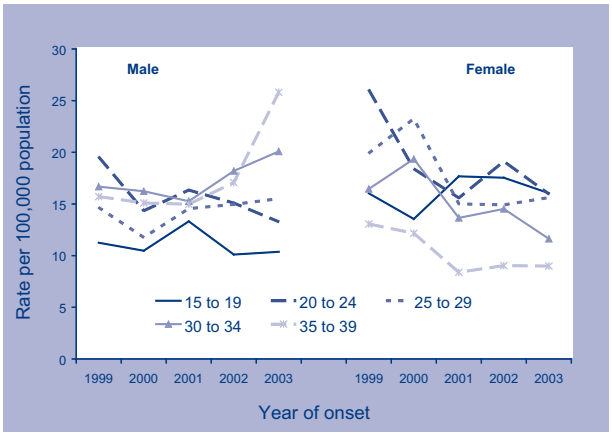


Map 5. Notification rates of syphilis infection, Australia, 2003, by Statistical Division of residence



Trends in age and sex specific notification rates for persons aged between 15 and 39 years show a steady increase in rates in males aged 30–34 and 35–39 years since 2001, and a general downward trend for all age categories in females (Figure 34).

Figure 34. Trends in notification rates of syphilis in persons aged 15–39 years, Australia, 1999 to 2003, by age group and sex



Indigenous status was reported for 77 per cent of syphilis infection notifications in 2003. The crude rate of syphilis for the three jurisdictions with high completeness of reporting of Indigenous status (the Northern Territory, South Australia and Western Australia) in 2003 is shown in Table 11. There was decrease in notification rates in 2003 compared to 2002 in both Indigenous and non-Indigenous populations. However, syphilis continues to have a high notification rate among Indigenous people. The Indigenous to non-Indigenous age adjusted rate ratio was 23:1, 45:1 and 63:1 in the Northern Territory, South Australia and Western Australia, respectively.[2]

The surveillance data indicate unacceptably high levels of syphilis in Indigenous Australians. Men who have sex with men are another sub-population at high risk of syphilis and increases in rates in males in New South Wales and Queensland in 2003 may reflect increases in infection in men who have sex with men in these jurisdictions. Enhanced reporting of syphilis notifications would allow inferences about trends in relation to sexual behaviour.

Syphilis – congenital

There were 10 cases of congenital syphilis notified in 2003, one less than in 2002 (Figure 35). Six of the cases were male and four were female, and all reported cases were under one year of age. Eight of the cases were from the Northern Territory, one case was from New South Wales and one case was from Queensland.

Figure 35. Trends in notifications of congenital syphilis, Australia, 1999 to 2003

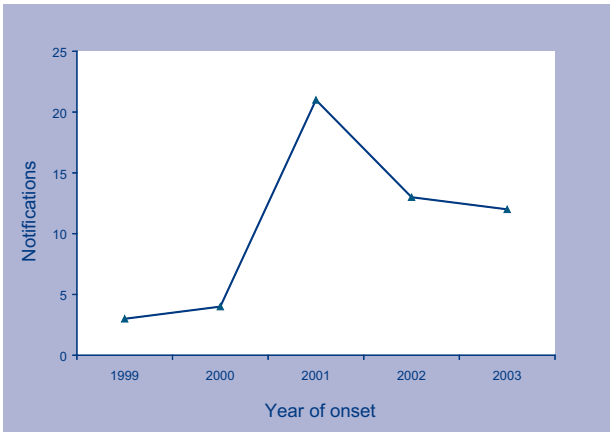


Table 11. Trends in crude notification rates of syphilis,* the Northern Territory, South Australia and Western Australia, 1999 to 2003, by Indigenous status

Year	NT		SA		WA	
	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	Non-Indigenous
1999	544.1	22.2	55.5	0.5	79.1	4.1
2000	414.6	27.7	54.5	0.1	120.8	3.3
2001	663.5	39.5	98.7	0.1	196.7	4.6
2002	576.6	42.6	109.0	0.3	210.9	3.6
2003	483.7	24.9	47.6	0.6	125.7	2.9

* Note that the rates in non-Indigenous peoples include diagnoses in people whose Indigenous status was not reported.

Vaccine preventable diseases

This section summarises the national notification data for influenza and diseases targeted by the Australian Standard Vaccination Schedule (ASVS) in 2003. These include diphtheria, *Haemophilus influenzae* type b infection, measles, mumps, pertussis, invasive pneumococcal disease, poliomyelitis, rubella and tetanus. (Notifications for hepatitis B and meningococcal disease, which are also targeted by the ASVS, can be found in this report under 'Bloodborne diseases' and 'Other bacterial infections.' Varicella-zoster infection is not a nationally notifiable disease.)

A number of changes to the Australian Standard Vaccination Schedule occurred during the time period of this report. Firstly, meningococcal C conjugate vaccine was funded for all children aged 1–18 years in 2003, with a routine dose incorporated into the ASVS at 12 months of age and a catch-up program for older ages (implementation of which varied by jurisdiction). Secondly, in September 2003, the National Health and Medical Research Council (NHMRC) endorsed the recommended changes to the ASVS. Two new vaccines were added to the ASVS – conjugate pneumococcal vaccine at 2, 4 and 6 months of age and varicella (chickenpox) vaccine at 18 months of age. Neither of these recommended vaccines was funded for the National Immunisation Program (NIP) in 2003.

The NHMRC also endorsed two further modifications to the ASVS. Firstly, inactivated poliomyelitis vaccine was recommended to replace oral polio vaccine (OPV) at 2, 4 and 6 months and at 4 years of age, due to the extremely rare but real risk of vaccine associated paralysis with OPV. However, OPV was recognised as being an acceptable alternative and remained on the NIP in 2003. Secondly, the timing of the pertussis vaccination schedule was changed by the removal of the 18 month booster and the addition of a booster at 15–17 years of age, resulting in a new schedule of administration at 2,4, 6 months, 4 years and 15–17 years. Removal of the 18 month dose was implemented immediately from September 2003, with the dose at 15–17 years replacing diphtheria-tetanus vaccine in the NIP from January 2004. The dose at 18 months was removed due to evidence suggesting that the primary schedule provides protection for at least 6 years and the emerging problem of local reactions to the fourth dose at 18 months.[8]

There were 11,113 notifications of vaccine preventable diseases (VPDs) with onset dates in 2003; 10.6 per cent of the total notifications to NNDSS. Pertussis was the most commonly notified Vaccine Preventable Disease (5,106 cases or 46% of all VPD notifications). Numbers of notifications and notification rates for VPDs in Australia are shown in Tables 2 and 3.

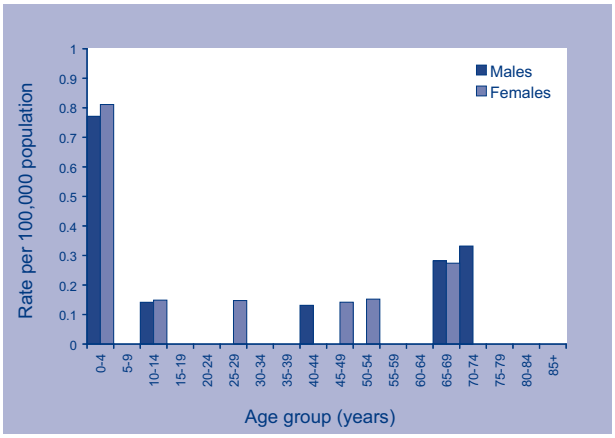
Diphtheria

There were no cases of diphtheria reported in 2003. A single case of cutaneous diphtheria in 2001 was the first case reported since 1993.[9]

Haemophilus influenzae type b disease

Notifications of *Haemophilus influenzae* type b (Hib) have fallen more than 30-fold since 1991 due to the impact of Hib conjugate vaccines.[5] There were 19 notifications of Hib disease in 2003, a rate of 0.1 case per 100,000 population. This is 10 (35%) fewer cases than reported in 2002, and is the lowest number of notifications recorded since national surveillance began in 1991. Ten cases (53% of the total) were in children aged less than 5 years and four were infants aged less than one year (Figure 36). There were nine cases in males and 10 cases in females, (male:female ratio 0.9:1).

Figure 36. Notification rate of *Haemophilus influenzae* type b infection, Australia, 2003, by age group and sex



The Northern Territory had the highest notification rate (1.0 per 100,000 population, 2 cases) although most cases were from New South Wales (n=6) and Queensland (n=5).

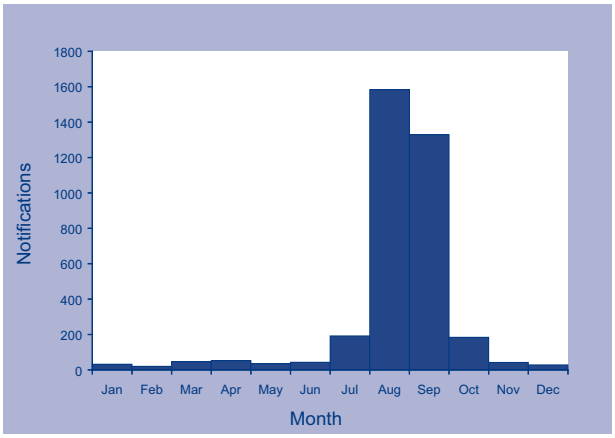
Of the 11 cases with a known Indigenous status, three were Indigenous and eight were non-Indigenous. Two of the three Indigenous cases occurred in children aged less than 5 years, compared with one of the eight cases in non-Indigenous people. Following the significant overall decline in Hib disease, Indigenous children now make up a greater proportion of cases than in the pre-immunisation era.[5]

The vaccination status of 11 of 19 cases was known – seven were unvaccinated, two were partially vaccinated and two were fully vaccinated.

Influenza (laboratory confirmed)

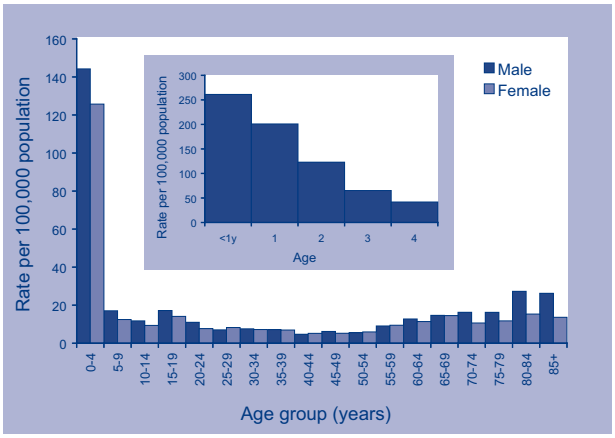
There were 3,587 reports of laboratory-confirmed influenza in 2003, a rate of 18 cases per 100,000 population. Notifications of influenza showed a peak in August (late winter, Figure 37).

Figure 37. Notifications of laboratory-confirmed influenza, Australia, 2003, by month of onset



Children aged less than 5 years made up 48 per cent of all notifications and had the highest rates of disease (136.6 cases per 100,000 population, Figure 38). This may reflect not only the high incidence of influenza in children, but also that children are more likely to undergo virological testing for respiratory viruses on presentation to hospital. The male to female ratio was 1.2:1.

Figure 38. Notification rate of laboratory-confirmed influenza, Australia, 2003, by age group and sex

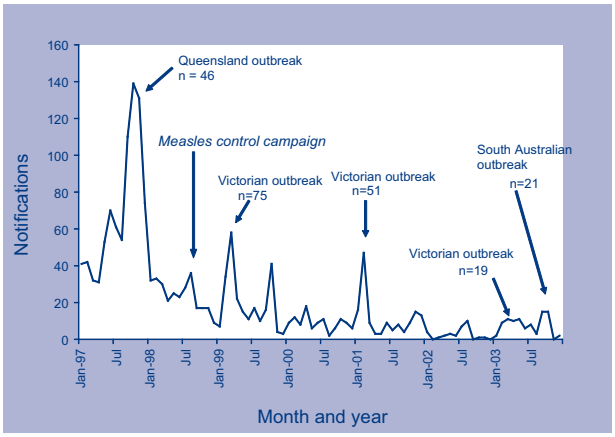


In 2003, 94 per cent of circulating viruses were influenza A. Of isolates analysed, 938 were A(H3), two were A(H1) strains and five were influenza B. The majority (98%) of A(H3) viruses were A/Fujian/411/2002 (H3N2)-like with significant antigenic drift. The 2003 Australian influenza vaccine strain, which contained the A/Panama/2007/99 virus, induced two to fourfold lower antibody responses to the Fujian strain. In 2003, 77 per cent of those aged 65 years or over in Australia received influenza vaccination.[6]

Measles

There were 92 confirmed measles cases in 2003, a national rate of 0.5 cases per 100,000 population. This is a threefold increase compared with 2002 when only 31 cases were notified, but is still the second lowest annual rate for Australia since national surveillance began in 1991 (Figure 39). The highest rate was in South Australia with 1.6 cases per 100,000 population (24 cases), where most cases were attributable to a single outbreak. In 2003, there were no cases reported from the Australian Capital Territory, Tasmania or Western Australia, and only a single case reported from the Northern Territory—the first case from this jurisdiction since 1999 (Tables 1 and 2).

Figure 39. Notifications of measles including major outbreaks, Australia, 1997 to 2003, by month of onset



Rates were highest in the 20–24 year age group (1.7 cases per 100,000 population), followed by the 0–4 year age group (1.3 cases per 100,000 population) and the 25–29 year age group (1.3 cases per 100,000 population; Figure 40). Of the 16 cases in the under 5 year age group, seven were aged less than one year.

Of the 92 cases reported in 2003, 75 (81%) occurred in seven outbreaks in four States (Table 12). The index case in five of the seven outbreaks acquired their infection outside Australia.

Figure 40. Notification rate of measles, Australia, 2003, by age group and sex

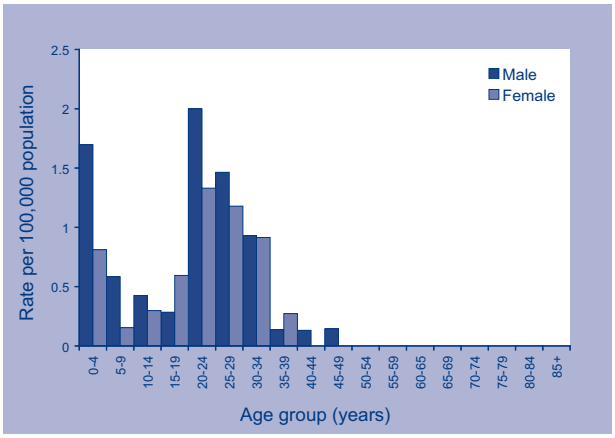
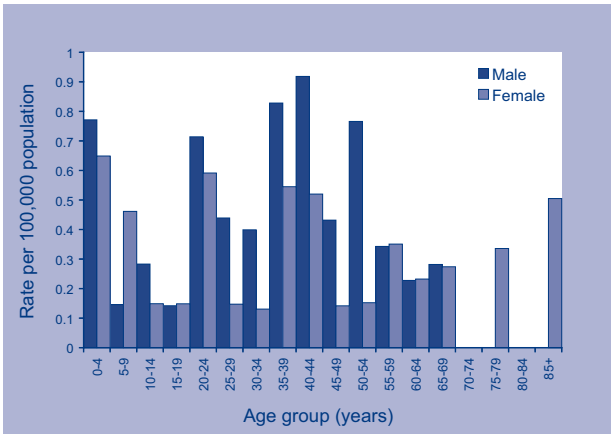


Figure 41. Notification rate for mumps, Australia, 2003, by age group and sex



The vaccination status was recorded for 30 cases: none were fully vaccinated for age, 13 were partially vaccinated and 17 were unvaccinated.

Studies of measles virus circulating in Australia between 1999 and 2001 provide evidence of the absence of a strain indigenous to Australia and the reintroduction of measles virus mainly from South East Asia causing limited outbreaks in susceptible populations in Australia.[10]

Mumps

In 2003, there were 76 notifications of mumps, a rate of 0.4 cases per 100,000 population. This is a 10 per cent increase on the 69 cases reported in 2002, but is still the second lowest rate since all states and territories began notifying the disease in 1996.

Compared with 2002, most of the increase in 2003 was in adult age groups, specifically the 20–24, 35–39 and 40–44 year age groups. The rate for the 0–4 year age group (0.7 cases per 100,000 population; Figure 41) was similar to that seen in 2002, when it was the lowest on record. Rates in the 5–19 year age group continued to decline to new record lows in 2003. This is presumably due to the ongoing impact of the Measles Control Campaign (which targeted primary school aged children with the MMR vaccine in 1998) and coverage with a two-dose schedule prior to school entry. As in previous years, there was a preponderance of cases in males (male: female ratio 1.5:1).

A study of mumps and rubella notifications in Victoria concluded that there was a low positive predictive value of clinical diagnoses for these infections and that notification rates in 2001–02 in Victoria for mumps were an over-estimate of the number of true cases.[11] New national surveillance case definitions for NNDSS, introduced in January 2004, will exclude clinical diagnoses of mumps without laboratory confirmation or a confirmed epidemiological link.

Pertussis

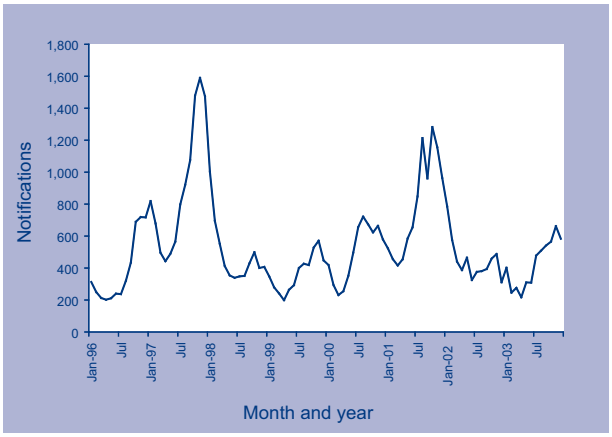
Pertussis continues to be the most common vaccine preventable illness in Australia, with periodic epidemics occurring at intervals of 3 to 5 years on a background of endemic circulation (Figure 42). In 2003 there were 5,106 cases notified (25.7 cases per 100,000 population).

Table 12. Outbreaks and clusters of measles, Australia, 2003*

Jurisdiction	Month of onset	Number of linked cases (including index case)	Place of acquisition of infection in index case
NSW	June	8	Overseas
Qld	Jan–Feb	4	Australia
	Aug–Oct	5	Overseas
SA	May	2	Overseas
	Aug–Oct	21	Overseas
Vic	Feb	20	Unknown
	Apr	15	Overseas

* There were no measles cases reported in 2003 from the Australian Capital Territory, Tasmania or Western Australia and only a single case reported from the Northern Territory.

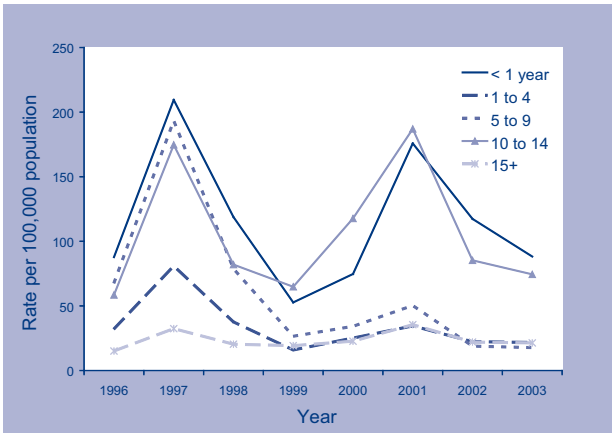
Figure 42. Notifications of pertussis, Australia, 1996 to 2003, by month of onset



The highest notification rates were among children aged <1 year (88.2 cases per 100,000 population) and those aged 10–14 years (74.4 cases per 100,000 population) (Figure 43). The overall male to female ratio was 0.8:1.

Torvaldsen and McIntyre examined the notification rates of pertussis in children aged 5–9 years in Australia after the introduction of the fifth dose of pertussis vaccine in 1994.[12] As evident in Figure 43, the rates of pertussis in this age group have fallen dramatically, from 193 cases per 100,000 population in 1997 to 17.7 cases per 100,000 population in 2003. Pertussis rates were highest in the 10–14 year age group between 1999 and 2001, but in the last two years, rates in this age group have fallen below those in the 0-4 year age group. A study of 140 infants hospitalised for pertussis in 2001 showed that 45 per cent were less than eight weeks of age (before the first scheduled dose of DTPa vaccine). Sixty-eight per cent of infants had contact with an adult, usually a parent with a cough. This study highlights the need for alternate strategies, which could include accelerated pertussis vaccine schedules for infants, the subject of ongoing research, and/or adult-formulated booster pertussis vaccines for adolescents and recent parents, as recently recommended in Australia.[13,14]

Figure 43. Notification rate for pertussis, Australia, 2003, by age group and sex

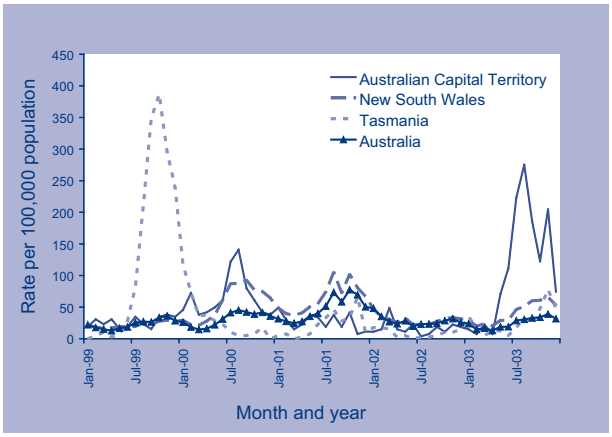


Notification rates of pertussis varied considerably by geographic location. The highest rates were in the Australian Capital Territory (110 cases per 100,000 population) and the lowest in the Northern Territory (2.5 cases per 100,000 population). Tasmania and New South Wales also recorded rates of pertussis above the national average in 2003 (Figure 44).

There was an outbreak of pertussis in the Australian Capital Territory in 2003, where a total of 339 cases were reported to the Australian Capital Territory health department from May to December 2003. Each case reported to the Australian Capital Territory health department was followed up individually and advice and education were given. Prophylactic antibiotics were recommended for household contacts if the index case had been coughing for less than three weeks. If a child was assessed to be at risk of contracting pertussis it was recommended that they be seen by a medical practitioner. Workplaces and schools where cases had occurred were notified and sent pertussis fact sheets. Information was also sent to general practitioners, schools, preschools, childcare centres and emergency services.

Pneumococcal disease (invasive)

Figure 44. Notification rates of pertussis, the Australian Capital Territory, New South Wales, Tasmania and Australia, 1999 to 2003 by month of notification



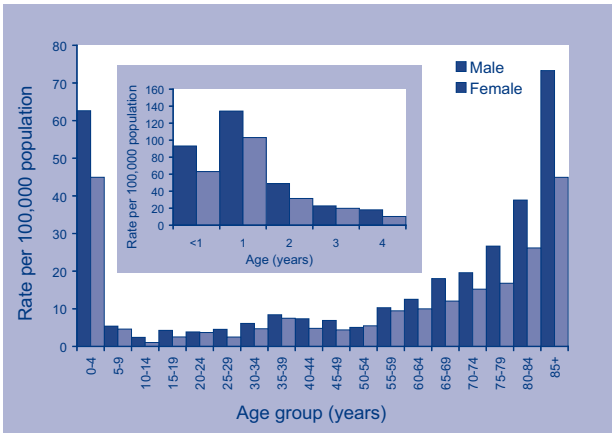
There were 2,174 notifications of invasive pneumococcal disease (IPD) in Australia in 2003 giving a rate of 10.9 cases per 100,000 population. While the largest numbers of cases were reported from New South Wales, Queensland and Victoria (Table 1), the highest rates were in the Northern Territory (36.3 cases per 100,000 population). The

geographical distribution of IPD varied within states and territories, with the highest rates in central and northern Australia.

IPD is largely a disease of the very young and very old. The highest rates of disease in 2003, were among children aged less than 5 years (54 cases per 100,000 population, with peak rates in those aged less than 2 years) and adults aged more than 85 years (53.9 cases per 100,000 population, Figure 45). There were more cases among males, with a male to female ratio of 1.3:1. IPD notifications peaked in late winter and early spring with the largest number of notifications in August.

Additional data were collected on cases of invasive pneumococcal disease in all Australian jurisdictions during 2003. Analyses of these data have recently been published.[15]

Figure 45. Notification rate for invasive pneumococcal disease, Australia, 2003, by age and sex



Poliomyelitis

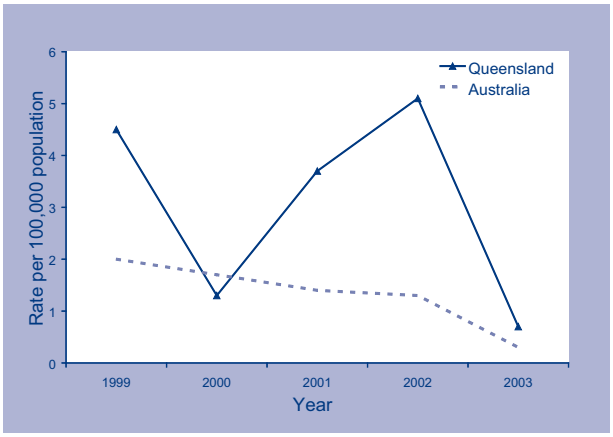
No cases of poliomyelitis were reported in Australia in 2003.

There were 44 notifications of acute flaccid paralysis (AFP) reported in 2003. Of these, 33 occurred in children aged less than 15 years. This number represents 83 per cent of the indicator target for AFP set by WHO as consistent with adequate AFP reporting. No poliovirus was isolated from any AFP case.[16]

Rubella

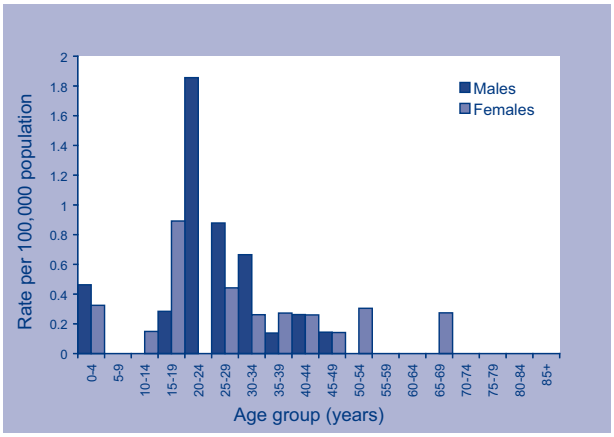
In 2003, there were 55 notifications for rubella, a notification rate of 0.3 cases per 100,000 population. This is the lowest rate on record and markedly lower than in 2002 (253 notifications, 1.3 per 100,000 population, Table 4). Unlike trends in the rest of Australia, rates in Queensland increased in 2001 to 2002. However, in 2003 the rate for Queensland fell to be close to rates for other jurisdictions (Figure 46).

Figure 46. Notifications of rubella, Queensland and Australia, 1999 to 2003



As in the past three years, notification rates were highest in males aged 20–24 years (1.9 cases per 100,000 population; Figure 47). Rates for this age group increased between 1999 and 2002, but were much lower in 2003. The male to female ratio of notified cases has been driven by these trends; increasing between 1999 (M:F ratio: 1.4:1) and 2002 (M:F ratio: 3.0:1) but declining in 2003 (M:F ratio: 1.6:1).

Figure 47. Notification rate for rubella, Australia, 2003, by age group and sex



In 2003, Queensland accounted for 43 per cent of all notified cases of rubella (notification rate 0.7 cases per 100,000 population). Ongoing transmission of rubella in Queensland, especially the high rates in 2002, resulted in two locally acquired cases of congenital rubella syndrome in 2003.[17,18] Altogether there were 16 cases of rubella notified from women

of child bearing age (15–49 years) in 2003. This number was 40 fewer than in 2002 and the lowest number on record.

Tetanus

Since 1999, two to eight cases of tetanus have been notified each year (Table 4). In 2003, there were four reported cases (one female, three male). One case was in the age range 65–69 years and the other three were all aged more than 85 years.

Childhood vaccination coverage reports

Estimates of vaccination coverage both overall and for individual vaccines for children at 12 months, 24 months and 6 years of age in 2003 are shown in Table 13, Table 14 and Table 15 respectively.

Table 13. Percentage of Australian children born in 2002 vaccinated according to data available on the Australian Childhood Immunisation Register, estimate at one year of age

	Percentage vaccinated			
Vaccine	1 Jan–31 Mar 2002	1 Apr–30 Jun 2002	1 Jul–30 Sep 2002	1 Oct–31 Dec 2002
DTP	92.2	92.9	92.5	92.4
OPV	92.1	92.8	92.3	92.3
Hib	94.9	94.8	94.4	94.5
Hepatitis B	94.6	95.3	94.8	94.7
Fully vaccinated	91.2	91.7	91.0	91.1

DTP Diphtheria-tetanus-pertussis

OPV Oral polio vaccine

Table 14. Percentage of Australian children born in 2001 vaccinated according to data available on the Australian Childhood Immunisation Register, estimate at two years of age

	Percentage vaccinated			
Vaccine	1 Jan–31 Mar 2001	1 Apr–30 Jun 2001	1 Jul–30 Sep 2001	1 Oct–31 Dec 2001
DTP	91.3	91.3	95.8	95.6
OPV	95.0	95.1	94.7	94.7
Hib	93.8	94.0	93.2	93.3
MMR	94.1	94.1	93.4	93.4
Hepatitis B	95.7	95.8	95.6	95.5
Fully vaccinated	89.3	89.2	91.6	91.5

DTP Diphtheria-tetanus-pertussis

OPV Oral polio vaccine

Hib *Haemophilus influenzae* type b

MMR Measles-mumps-rubella

Table 15. Percentage of Australian children born in 1997 vaccinated according to data available on the Australian Childhood Immunisation Register, estimate at six years of age

	Percentage vaccinated			
Vaccine	1 Jan–31 Mar 1997	1 Apr–30 Jun 1997	1 Jul–30 Sep 1997	1 Oct–31 Dec 1997
DTP	84.4	85.0	85.4	85.2
OPV	84.6	85.1	85.6	85.3
MMR	83.7	84.4	84.9	84.7
Fully vaccinated	82.3	83.1	83.7	83.5

DTP Diphtheria-tetanus-pertussis

OPV Oral polio vaccine

MMR Measles-mumps-rubella

Vectorborne diseases

A total of 6,780 notifications of mosquito-borne disease and malaria were reported to NNDSS during 2003 (6.5% of all notifications to NNDSS). The viral diseases notified include those caused by alphaviruses (Barmah Forest and Ross River virus) and flaviviruses (the viruses causing dengue, Murray Valley encephalitis, Kunjin and Japanese encephalitis). Aspects of the ecology of these viruses and the clinical features of the disease they cause have previously been described.[9] This section also reports on malaria notifications.

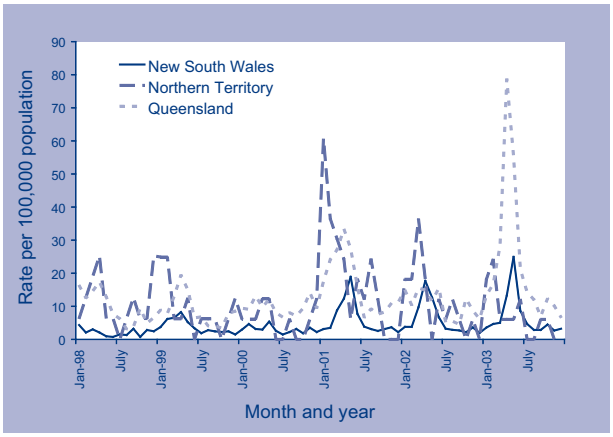
Alphaviruses

Alphaviruses are RNA viruses which cause disease epidemics characterised by fever, rash and arthropathy. In Australia, Barmah Forest virus and Ross River virus are the alphaviruses of major public health significance.

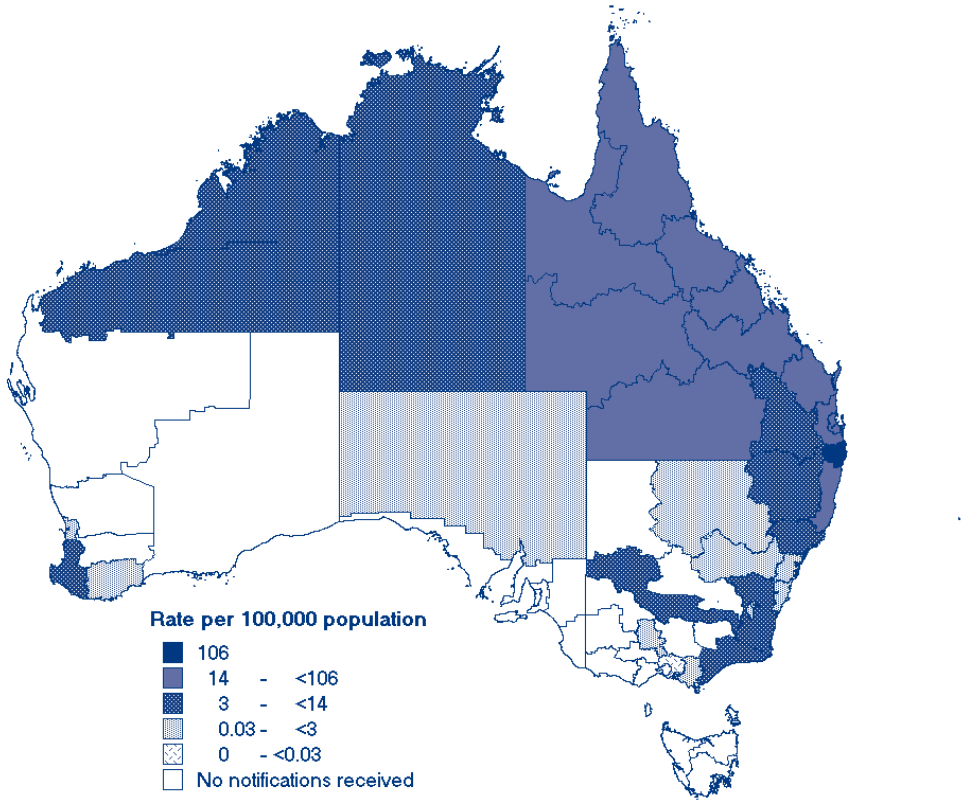
Barmah Forest virus infection

There were 1,370 cases of Barmah Forest virus (BFV) infection notified to NNDSS in 2003. Ninety-seven per cent of these were reported from Queensland (872 cases) and New South Wales (451 cases). The highest rate of notification occurred in Queensland (23 cases per 100,000 population). The national notification rate was 6.9 cases per 100,000 population, which is the highest since reporting began in 1995. There was a peak in notifications of BFV infection in Queensland in April 2003 (78.7 cases per 100,000 population) and in New South Wales (24.9 cases per 100,000 population, Figure 48) which were the highest recorded in these jurisdiction in the last five years.

Figure 48. Notification rates of Barmah Forest virus infections, Queensland, the Northern Territory and Australia, January 1998 to December 2003



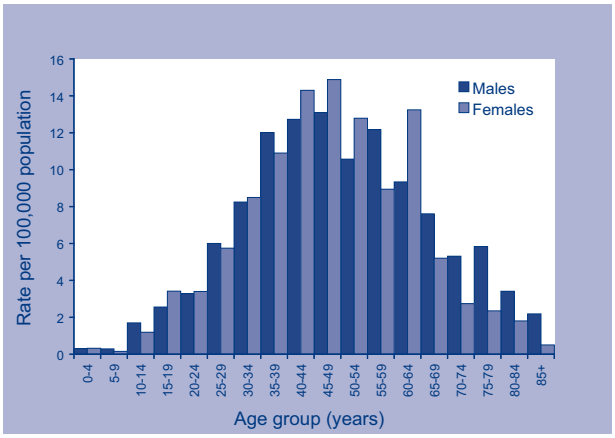
Map 6. Notification rates of Barmah Forest virus infection, Australia, 2003, by Statistical Division of residence



The highest rate of BFV infection in 2003, was in the Richmond Tweed area of New South Wales (106.1 cases per 100,000 population, Map 6). Rates of BFV infection were also high (>15.9 cases per 100,000 population) in most of Queensland.

The age and sex distribution of BFV notifications are shown in Figure 49. The notification rate was highest in the 45–49 year age group (14.1 cases per 100,000 population) and the male to female ratio was 1:1.

Figure 49. Notification rates of Barmah Forest virus infections, Australia, 2003, by age group and sex



Ross River virus infection

A total of 3,841 cases of Ross River virus (RRV) infection were notified to the NNDSS in 2003. There were 2,517 cases reported in Queensland and 661 cases reported in Western Australia. The highest rates were reported in Queensland (66.3 cases per 100,000 population) and the Northern Territory (60.5 cases per 100,000 population). The national rate for RRV notifications was higher than in 2002 but within the range of rates in previous years.

RRV infection notifications in Queensland peaked in April 2003 at 30 cases per 100,000 population (Figure 50). This was the highest rate since 1999. During the last quarter of 2003, the number of notifications of RRV infection increased largely due to an outbreak in the south-west of Western Australia (Map 7). During the summer of 1988–89 and again in 1995–96, the same region in Western Australia experienced a large outbreak of RRV infections.[19,20] The latest outbreak commenced in September 2003 and tapered off in April 2004, with a total of some 1,570 cases from throughout Western Australia (805 from the south-west and great southern, 485 from Perth, the remainder from elsewhere in the State). This was the largest ever outbreak of RRV in Western Australia.

Map 7. Notification rates of Ross River virus infection, Australia, 2003, by Statistical Division of residence

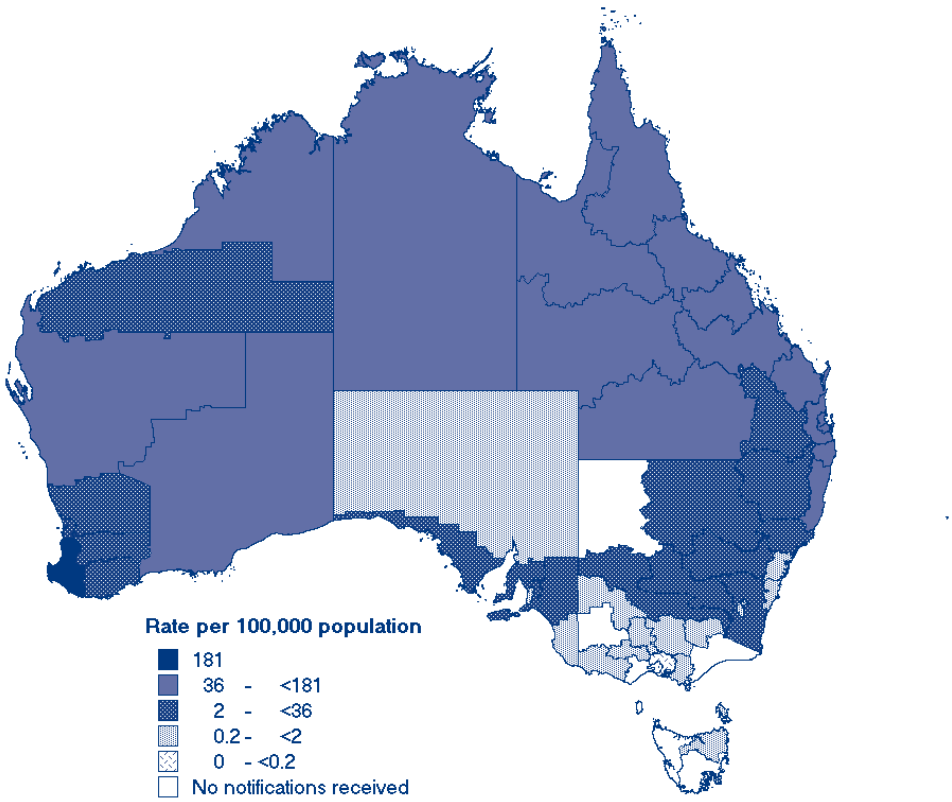
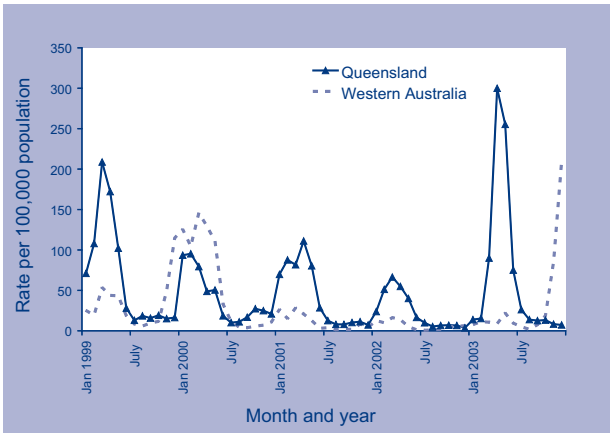
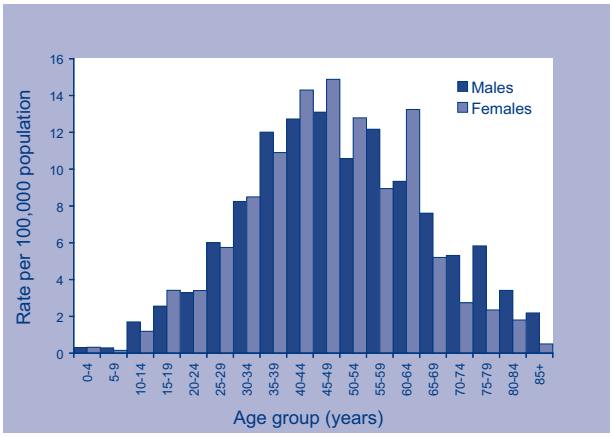


Figure 50. Notification rates of Ross River virus infection, Queensland, Western Australia and Australia, January 1998 to July 2004



The age and sex distribution of RRV notifications are shown in Figure 51. The notification rates were highest in the 45–49 year age group (37.1 cases per 100,000 population) and the female to male ratio was 1.1:1.

Figure 51. Notification rates of Ross River virus infection, Australia, 2003, by age group and sex



Flaviviruses

Flaviviruses are single-stranded RNA viruses, some of which are associated with epidemic encephalitis in various regions of the world. In Australia, flaviviruses of public health importance are Murray Valley encephalitis (MVEV), Kunjin (KUNV), Japanese encephalitis and dengue viruses.

Early warning of increased MVEV and KUNV activity in Australia is provided by the Sentinel Chicken Surveillance Program. Antibodies to MVEV and KUNV are detected in flocks located in four Australian States. Reports of the 2002/3 and 2003/4 seasons have been published,[21] with the most recent report by Broom and Whelan, 2004, included in this issue.

Murray Valley encephalitis virus and Kunjin virus

MVEV and KUNV activity is normally restricted to northern Australia. Incursions of MVEV into south-eastern Australia, under appropriate weather conditions, are rare but have in the past resulted in epidemics of Murray Valley encephalitis virus.

During 2003 no cases of MVEV infection were notified.

There were 19 cases of Kunjin virus infection in 2003, all of which were reported from Queensland. The cases of KUNV infection were symptomatic cases with mild febrile disease and without encephalitis, detected in the enhanced surveillance in Queensland during the outbreak of dengue in 2003. There are no sentinel chicken sites located in Queensland, thus making it difficult to determine if there was elevated circulation of KUNV at the same time as the dengue outbreak.

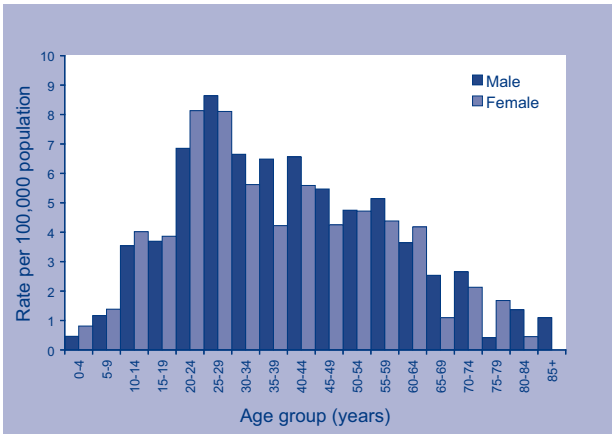
Dengue

Dengue viruses (DENV) were transmitted within Australia only in northern Queensland, where the vector mosquito *Aedes aegypti* is endemic. Cases notified in other parts of Australia and not acquiring their infection in Queensland were therefore all acquired overseas.

There were 868 cases of DENV infection notified to NNDSS during 2003. Most cases were reported from Queensland (727 cases, 19.1 cases per 100,000 population) where there was an outbreak of DENV serotype 2.

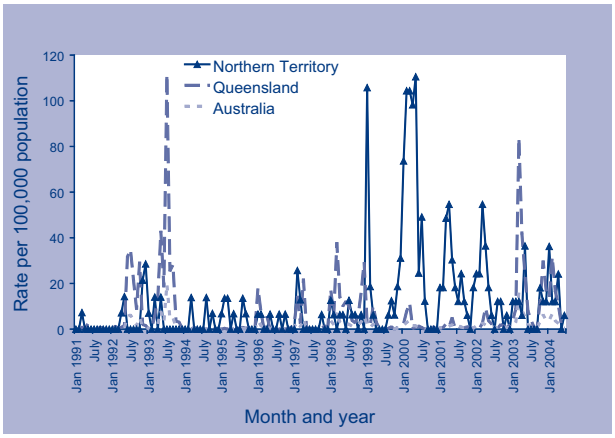
The age and sex distribution of DENV notifications is shown in Figure 52. The female to male ratio was 0.9:1. Most cases in males occurred in the 25–29 year age group (8.6 cases per 100,000 population), and in females in the 20–24 and 25–29 year age groups (8.1 cases per 100,000 population).

Figure 52. Notification rates of dengue, Australia, 2003, by age group and sex



An outbreak of DENV serotype 2 began in Cairns in January 2003. The index case was a woman who had been in Papua New Guinea and became ill with symptoms in Cairns on 22 January. Two smaller outbreaks of DENV serotype 2 were also identified in Townsville and Mareeba. In October, an outbreak of DENV type 2 that affected 98 persons, occurred on Yam Island. By November the outbreak had spread to Thursday Island where 71 cases were reported in the latter months of 2003 (Table 16, Figure 53). Mosquito control and community education were conducted continuously until the outbreak ended in 2004.

Figure 53. Notification rate of dengue by month, January 1991 to December 2003, the Northern Territory, Queensland and Australia



Japanese encephalitis virus

Incursions of Japanese encephalitis virus (JEV) into the Torres Strait Islands in 1995 and mainland Australia in 1998 have earlier been described.[22] Since 1998 no further infections in mainland Australia have been identified, and there were no cases reported in 2003. A number of sentinel pig herds in northern Queensland and the Northern Territory are serologically tested at regular intervals to identify any new incursion of JEV into mainland Australia.

Seroconversions in the sentinel pig herds on the Torres Strait islands have detected the presence of JEV each year from 1995 to 2003, with the exception of 1999. Evidence for the presence of the virus from sentinel pigs on the mainland has only occurred in 1998, the same year in which the human infections occurred.

Outside Australia, there is a strong likelihood that JEV is now endemic on the island of Papua New Guinea. Ritchie and Rochester[23] have found that the incursions of JEV into Australia in 1995 and 1998 were associated with low pressure systems that led to strong northerly winds blowing from New Guinea to Cape York Peninsula. A review of the emergence of JEV in the Australasian region describes the potential for JEV to be introduced to Australia and how any incursion should be controlled.[24]

Flavivirus (NEC)

There were 81 notifications of 'Flavivirus – not elsewhere classified' in 2003. These include flavivirus infections (e.g. MVEV and KUNV), where serology was unable to differentiate the different viruses.

Sixty-eight of these notifications were from Queensland, where serological evidence of previous infection with flaviviruses was detected in cases under investigation in the dengue outbreaks in Queensland during 2003.

Malaria

In 2003 there were 601 notifications of malaria, which is comparable with 699 cases in 2001, but higher than the number of malaria cases notified in 2002 (increase of 32 per cent). All notified cases

Table 16. Outbreaks and locally acquired cases of dengue, Queensland, 2003 to 2004

Period	Location	Total number of cases	Dengue serotype	Comments
Jan–July 2003	Cairns area	451	Type 2	First case was imported from Papua New Guinea
	Cairns area	3	Type 1	Unknown source
March 2003	Mareeba	1	Type 1	No link to Cairns
March–July 2003	Townsville area	20	Type 2	Source likely to be Cairns
Sept–Nov 2003	Yam Island	98	Type 2	Unknown source
Nov 2003–April 2004	Thursday Island	71 in 2003 (171 cases total outbreak)	Type 2	Imported from Yam Island
Nov 2003–May 2004	Townsville area	14 in 2003 (55 cases total outbreak)	Type 2	Carry-over from previous outbreak

Source: Queensland Health.

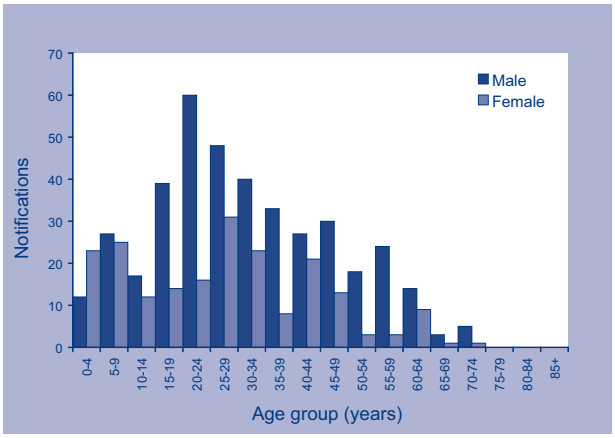
were acquired overseas. The majority of notifications were from Queensland (n=253) and New South Wales (n=120).

Tasmania reported 27 cases of malaria, 19 of which were found during screening at a refugee clinic. Of the 19 cases, 18 had *Plasmodium falciparum* and one had *P. malariae.* None of the cases had symptomatic disease but met the national case definition. Most of the cases (17/19) were paediatric with ages ranging from 3 to 13 years (David Coleman, Tasmanian Department of Health and Human Services, personal communication).

The largest number of notifications of malaria was amongst males in the 20–24 year age group, and in females in the 25–29 year age group (Figure 54). The male to female ratio was 2:1.

The infecting *Plasmodium* species were reported in 567 of 601 (94%) notifications (Table 17).

Figure 54. Notifications of malaria, Australia, 2003, by age group and sex



Zoonoses

Zoonoses are diseases transmitted between vertebrate animals and people.[27] The zoonotic diseases that were nationally notifiable in 2003 were anthrax, Australian bat lyssaviral or lyssaviral (unspecified) infection, brucellosis, leptospirosis, ornithosis and Q fever. A total of 903 notifications (0.9% of total notifications) were made during 2003. More detailed descriptions of these diseases were provided in the 2001 NNDSS annual report.[9]

Anthrax

Following the deliberate release of anthrax spores in the United States of America in 2001, anthrax became a notifiable disease in Australia. During 2003, no cases of anthrax were notified. The last human case of cutaneous anthrax in Australia, which occurred in a knackery worker, was reported in 1997.[26]

Certain rural areas in New South Wales and Victoria are associated with recurring cases of anthrax in cattle and sheep. In these areas stock can be protected with vaccination. Despite this, a number of incidents of anthrax in livestock were reported during 2003. Six incidents of anthrax were reported in New South Wales, where 74 sheep died in three separate incidents and 20 cattle deaths were recorded in the remaining three separate incidents. Victoria reported two cattle deaths on a dairy farm in northern Victoria. Action taken in response to the deaths included quarantine and vaccination of the remaining stock and stock on neighbouring farms.[27]

Table 17. Infecting *Plasmodium* species reported in notified cases of malaria, Australia, 2003, by state or territory

	State or territory								
Malaria species	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
P. falciparum	7	41	19	60	15	19	20	38	219
P. vivax	11	71	19	136	11	7	36	7	298
P. ovale	0	2	0	12	0	0	1	2	17
P. malariae	0	3	0	3	1	1	0	1	9
P. falciparum and *P. vivax*	0	0	1	20	0	0	2	0	23
P. malariae and *P. vivax*	0	1	0	0	0	0	0	0	1
Unknown	0	2	1	22	1	0	0	8	34
Total number of cases	18	120	40	253	28	27	59	56	601

Australian bat lyssaviral and lyssaviral (unspecified) infections

No cases of either Australian bat lyssaviral or lyssaviral (unspecified) infections were notified during 2003. Two cases of infection with Australian bat lyssavirus, in 1996 and 1998, occurred following close contact between bat-handlers and infected bats. Both resulted in the death of the infected person.

Molecular biological research into the genetic sequences of lyssaviruses isolated from different groups of bats suggests that the virus has been associated with bats in Australia for more than 1,500 years.[28] That is, the virus was well established before European colonisation, and its recent 'emergence' is more to do with changes in human behaviour and encroachment on bat habitats.

Brucellosis

There were 17 cases of brucellosis notified during 2003, a rate of 0.1 cases per 100,000 population. This number of notifications lies within the lower end of the range observed (13–52 notifications) over the previous 11 years and was a decrease compared to the number in 2002, when 40 cases were notified. In 2003, most cases were notified from Queensland (13 notifications, 76%), with one case in New South Wales and three cases reported from Victoria (Map 8).

Most cases were male (n=15, male:female ratio 7.5:1), and of these, nine were aged between 25 and 34 years. Bovine brucellosis (*Brucella abortus*) was eradicated from Australia in 1989, and most human cases occurring now are due to other *Brucella* species. Among notified cases for whom species data were available, five were identified as *Br. melitensis*, and four as *Br. suis*.

Leptospirosis

Leptospirosis is caused by the spirochaete, *Leptospira*. Nationally, 125 notifications of leptospirosis were received during 2003. This is relatively low compared to the previous years (Figure 55) and represents a continuation of the downward trend since a peak in 1999.

In 2003, the notification rate was highest in the Northern Territory (4 notifications, 2.0 cases per 100,000 population). The next highest rates occurred in Queensland (67 notifications, 1.8 cases per 100,000 population) and New South Wales (37 notifications, 0.6 cases per 100,000 population). More males were affected than females (male:

Map 8. Notification rates of brucellosis infection, Australia, 2003, by Statistical Division of residence

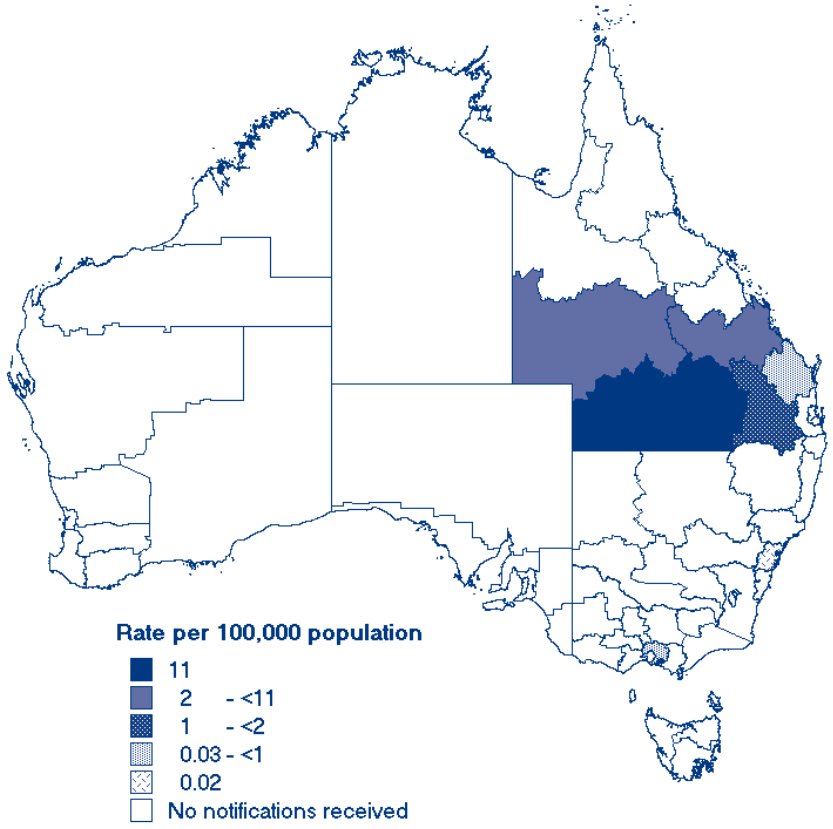
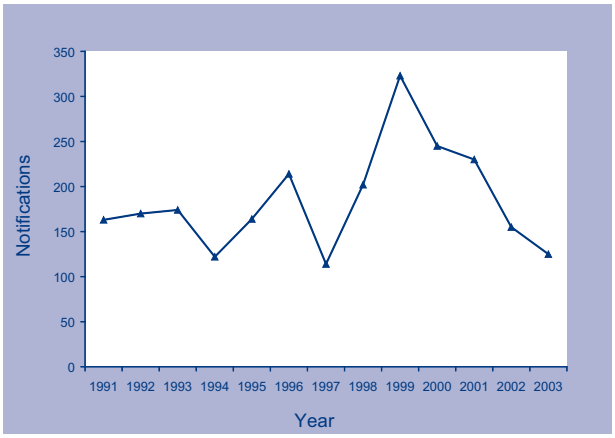


Figure 55. Trends in notifications of leptospirosis, Australia, 1991 to 2003

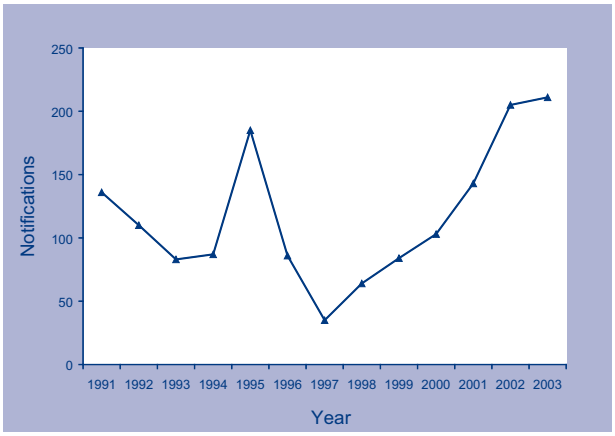


female 5.6:1). The highest rates of notifications were in 30–39 year age group for males and the 35–59 year age group for females. The distribution of leptospirosis notifications by Statistical Division is shown in Map 9.

Ornithosis

During 2003, 211 notifications of ornithosis were received (1.1 cases per 100,000 population), compared with 205 notifications in 2002. Victoria had the highest number of notifications (115 notifications, 2.3 cases per 100,000 population). The total number of notifications has continued to increase each year since 1997 (Figure 56). Most notifications were males in the 60–64 year age group (18 notifications, 4.1 cases per 100,000 population), and females in the 45–49 year age group (13 notifications, 1.8 cases per 100,000 population, Figure 57).

Figure 56. Trends in notifications of ornithosis, Australia, 1991 to 2003



Map 9. Notifications rates of leptospirosis infection, Australia, 2003, by Statistical Division of residence

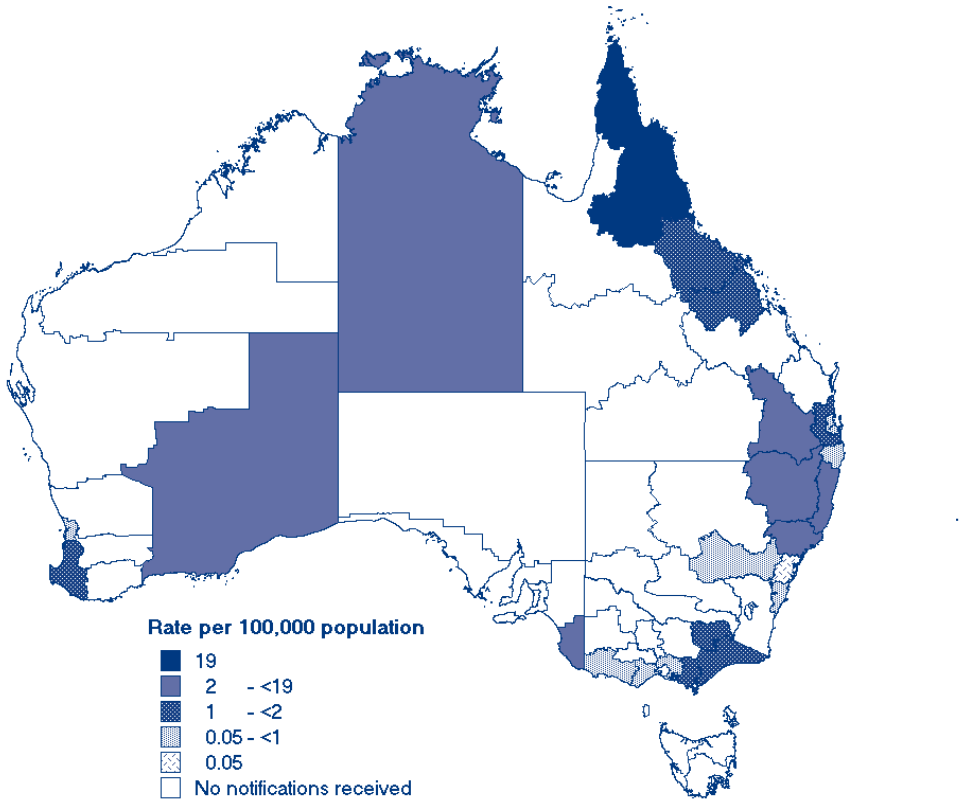
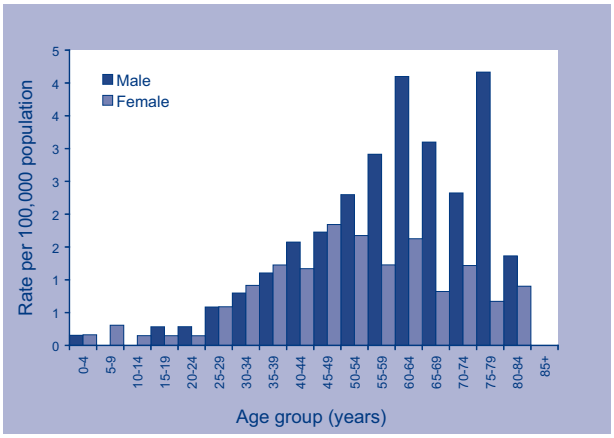


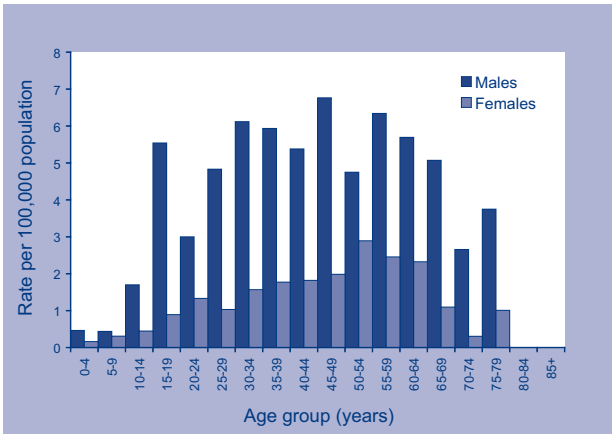
Figure 57. Notification rates of ornithosis, Australia, 2003, by age group and sex



Q fever

There were 550 cases of Q fever notified during 2003, a decrease of 27 per cent on 2002. The number of cases notified had increased each year between 1999 and 2002. In 2003, the largest number of notifications were from New South Wales (278 notifications, 4.2 cases per 100,000 population) and Queensland (224 notifications, 5.9 cases per 100,000 population). The highest rate observed for males was 6.8 cases per 100,000 population, in the 45–49 year age group, and for females, 2.9 cases per 100,000 population, in the 50–54 year age group (Figure 58). The male to female ratio was 3.2:1, which is the same as the previous year.

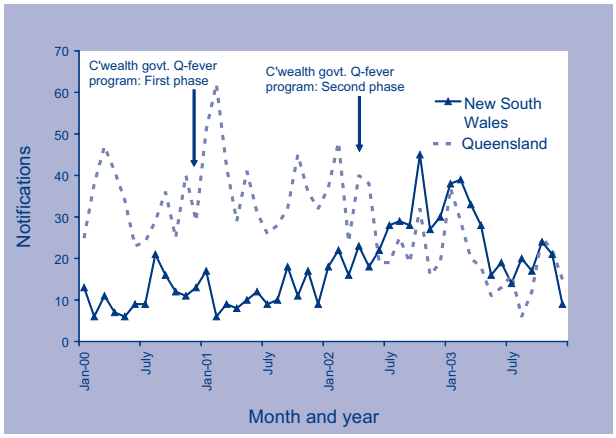
Figure 58. Notification rates of Q fever, Australia, 2003, by age group and sex



There were six clusters of Q fever reported in 2003. Five occurred in Queensland, four of which were in families (2–3 cases in each cluster) and one was a cluster of five cases associated with a goat farm. South Australia recorded a cluster of three cases also associated with occupational exposure.

Q fever has long been associated with work in the Australian stock industry and abattoir workers are an occupational group at high risk of infection. Since October 2000, abattoir workers and shearers have been eligible for free vaccination against Q fever, under an Australian Government funded program. The second phase of the Q fever vaccination program began in October 2001 to include workers in the beef, sheep and dairy industries (Figure 59). The initial increase in notifications in 2002 is likely to be due to identification of cases through screening from the program. The decline in notifications in 2003 may be the result of a combination of control program activities and the natural variability in the prevalence of Q fever in Australia.

Figure 59. Notifications of Q fever, New South Wales and Queensland, January 2000 to December 2003, by month of onset



Other bacterial infections

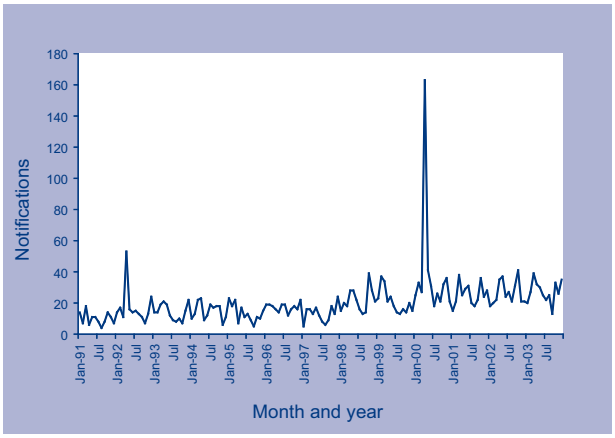
Legionellosis, leprosy, meningococcal infection and tuberculosis (TB) were notifiable in all states and territories in 2003 and classified as 'other bacterial infections' in NNDSS. A total of 1,826 notifications were included in this group in 2003, which accounted for 1.7 per cent of all the notifications to NNDSS, a similar total and proportion as in 2002 (1,980 notifications and 1.9% of total).

Legionellosis

Legionellosis includes notifications of infections caused by all *Legionella* species. There were 328 notifications of legionellosis reported in 2003 giving a national rate of 1.6 cases per 100,000 population.

The annual trend since 1991 (Figure 60) shows a marked increase in notifications in 2000, which included the Melbourne aquarium outbreak.[29] Between 1991 and 2000, there was a significant increase in the national legionellosis notification rate, even after excluding cases related to outbreaks.[30]

Figure 60. Trends in notifications of legionellosis, Australia, 1991 to 2003, by month of onset



In 2003, the highest rates of legionellosis were reported in South Australia (4.3 cases per 100,000 population) and Western Australia (3.3 cases per 100,000 population). Legionellosis notifications showed a peak in reports in autumn and spring.

Men accounted for 214/328 (65%) of all cases of legionellosis resulting in a male to female ratio of 1.9:1. Cases occurred in all age groups above 14 years, with the highest rates in the 70–74 year age group for men (12 cases per 100,000 population) and the 75–79 year age group for women (5.7 cases per 100,000 population; Figure 61).

Data on the causative species were available for 320 (98%) of the legionellosis cases. Of these, 131 (41%) cases were identified as *L. pneumophilia*, 185 (58%) were *L. longbeachae* and 4 (1%) were other species (*L. micdadei* and *L. bozemannii*, Table 18).

Data on the death or survival of legionellosis cases were available for 224 (68%) notifications. In all there were 13 deaths identified as due to legionellosis in Australia in 2003, giving a case fatality rate of 4 per cent. The break down of deaths by jurisdiction and infecting *Legionella* species is shown in Table 19. The

Figure 61. Notification rates of legionellosis, Australia, 2003, by age group and sex

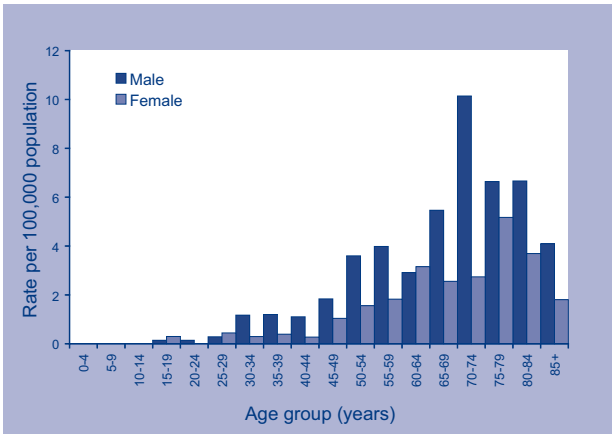


Table 18. Notifications of legionellosis, Australia, 2003, by species and state or territory

Species	State or territory								Total
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Legionella longbeachae	1	37	2	12	54	0	25	54	185
Legionella pneumophila	0	23	1	25	10	2	63	7	131
Other species*	0	0	0	0	1	0	3	0	4
Unknown species	0	0	0	2	0	0	2	4	8
Total	1	60	3	39	65	2	93	65	328

* Other includes species of *Legionella micdadei* and *Legionella bozemannii*.

Table 19. Deaths due to legionellosis by species, Australia, 2003, by species and state or territory

Species	State or territory								Total
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Legionella longbeachae	0	0	0	0	2	0	0	2	4
Legionella pneumophila	0	2	0	1	1	1	3	1	9
Other species*	0	0	0	0	0	0	0	0	0
Unknown species	0	0	0	0	0	0	0	0	0
Total	0	2	0	1	3	1	3	3	13

* Other includes species of *Legionella micdadei* and *Legionella bozemannii*.

case fatality rate for infections with *L. pneumophila* (9/131, 6.9%) was higher than for *L. longbeachae* infections (4/185, 2.2%) but this difference did not reach statistical significance.

There was an outbreak of legionellosis in South Australia in December 2003. Five cases and two deaths were reported in cases infected with *L. longbeachae* and four of the cases had exposure to potting mix.[31] Potting mixes in Australia have been identified as a source of infection with *L. longbeachae* for some years.[32]

The largest outbreak of legionellosis in Australia was in Melbourne in April 2000. A report into the investigation was recently published.[33] Risk factors for acquiring legionellosis in this outbreak identified current smoking as a dose-dependent risk, while underlying chronic illness and duration of exposure were not significant risks. The number of cases identified in this outbreak was possibly inflated by the large proportion of mild cases detected by the urinary antigen test.

Leprosy

Leprosy is a chronic infection of the skin and peripheral nerves with the bacterium *Mycobacterium leprae*. Leprosy is a rare disease in Australia, with the majority of cases occurring among Indigenous communities and migrants to Australia from leprosy-endemic countries.

In 2003, four leprosy cases were notified compared with three in 2002. The cases in 2003 occurred in New South Wales, Victoria and Western Australia. Two were male and two female and the age range was 21 to 42 years. Two cases were multibacillary (lepromatous, more than 5 skin lesions), two were paucibacillary (tuberculoid, less than 5 skin lesions) leprosy and one had evidence of neuritis at presentation.

The WHO has established the goal of eliminating leprosy from every country by 2005, which is defined as a reduction in the prevalence of leprosy to less than one case per 10,000 population. The Western Pacific Region, comprising 37 countries including Australia, reached this target in all but two countries in 2003.[34]

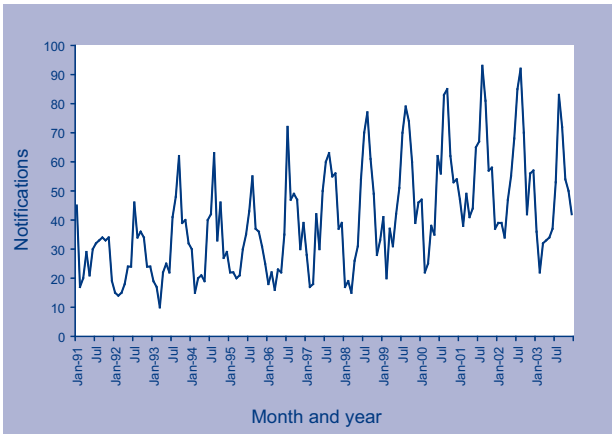
Leprosy transmission continues to occur in parts of Australia (such as the Kimberley region of Western Australia), despite the fact that Australia has a prevalence of leprosy well below the WHO elimination goal. Leprosy in Australia is most prevalent amongst Indigenous people[35] and among migrants to Australia from leprosy-endemic countries.

Invasive meningococcal disease

Meningococcal serogroups A, B, C, Y and W–135 are major human pathogens. In Australia, serogroups B and C are the major cause of invasive meningococcal disease.

In 2003, there were 550 notifications of invasive meningococcal disease in Australia: a decrease of 20 per cent on the 684 cases reported in 2002. The national notification rate was 2.8 cases per 100,000 population. The highest rates were reported from the Northern Territory (5.5 cases per 100,000 population). The largest number of cases occurred in winter and spring (Figure 62).

Figure 62. Trends in notification rates of meningococcal infection, Australia, 1991 to 2003, by month of onset



The highest age specific rate was in children aged 0–4 years (12.7 cases per 100,000 population) and in the 15–19 year age group (7.3 cases per 100,000 population). There was a small excess of cases among males (male to female ratio 1.1:1, Figure 63).

Of the 550 meningococcal notifications, 465 (84.5%) were serogrouped. Of these 289 (62%) were serogroup B, 158 (34%) were serogroup C, 18 (4%) were serogroup W135 or serogroup Y and there was a single case of serogroup A (Table 20).

In 2003 there were 35 deaths due to meningococcal disease giving a crude case fatality rate of 6.4 per cent. The breakdown of deaths by jurisdiction and serogroup are shown in Table 21. The case fatality rate for infections with meningococcal group C (21/158, 13.3%) was more than three times higher than for meningococcal group B infections (11/289, 3.8%, Chi = 12.4, $p<0.001$).

Table 20. Notifications of meningococcal infection, Australia, 2003, by serogroup, and state or territory

Species	State or territory								Total
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Serogroup B	3	100	10	54	26	9	54	33	289
Serogroup C	9	46	0	39	3	10	45	6	158
Other serogroups*	1	7	1	2	2	0	4	1	18
Unknown serogroup	0	45	0	10	1	1	22	6	85
Total	13	198	11	105	32	20	125	46	550

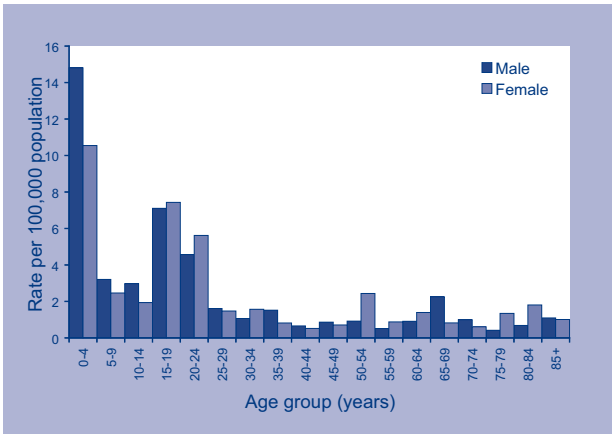
* Other includes serogroups A, Y and W135.

Table 21. Deaths due to meningococcal infection by serogroups, Australia, 2003, by serogroup, and state or territory

Species	State or territory								Total
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Serogroup B	0	6	1	0	4	0	0	0	11
Serogroup C	0	6	0	9	0	0	6	0	21
Other serogroups*	0	0	0	0	0	0	0	0	0
Unknown serogroup	0	2	0	1	0	0	0	0	3
Total	0	14	1	10	4	0	6	0	35

* Other includes serogroups A, Y and W135.

Figure 63. Notification rates of meningococcal infection, Australia, 2003, by age and sex



In response to community concerns about increases in meningococcal disease in Australia, the Commonwealth Government approved the National Meningococcal C vaccination program, which commenced in January 2003.[36]

In 2003, examination of *Neisseria meningitidis* carriage in nasopharyngeal and tonsil swabs and saliva found a low prevalence of the meningococci in saliva and concluded that salivary contact is unlikely to transmit meningococcal disease.[37] The Communicable Diseases Network Australia is revising the *Guidelines for the early clinical and public health management of meningococcal disease in Australia* to take into account these new findings.

Laboratory-based meningococcal surveillance

The Australian Meningococcal Surveillance Programme was established in 1994 for the purpose of monitoring and analysing isolates of *Neisseria meningitidis* from cases of invasive meningococcal disease in Australia. The program is undertaken by a network of reference laboratories in each state and territory, using agreed standard methodology to determine the phenotype (serogroup, serotype and serosubtype) and the susceptibility of *N. meningitidis* to a core group of antibiotics. The results of the surveillance in 2003 have recently been published.[38]

In 2003, a total of 303 isolates of *N. meningitidis* were analysed by the program, a decrease from the 393 isolates analysed in the previous year. Consistent with routine surveillance data, Serogroup B continues to be the predominant strain for the disease (183 isolates, 60.4%) nationally, followed by serogroup C (102 isolates, 33.6%). However, there was mix in the phenotypes circulating in the different states and territories. Serogroup B strains predominated in all jurisdictions except the Australian Capital Territory where all isolates were serogroup C, and Tasmania and Victoria where equal numbers of serogroup B and C were isolated.

The pattern of age distribution for meningococcal infection varied by the phenotype. Serogroup B was more frequently reported in the 0–4 age group (42.5%), while the largest proportion of serogroup C occurred in the 15–19 age group (20.6%).

In 2003, about two-thirds of all the isolates showed decreased susceptibility to the penicillin group of antibiotics (MIC 0.06 to 0.5 mg/L). All isolates tested were susceptible to third generation cephalosporins and ciprofloxacin. Two isolates were resistant to the prophylactic antibiotic, rifampicin.

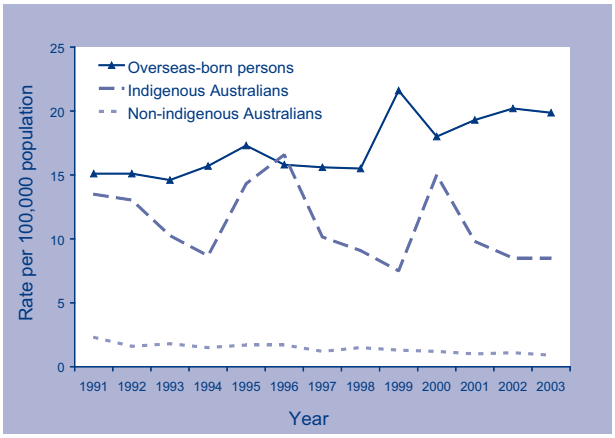
Tuberculosis

While Australia has one of the lowest rates of tuberculosis in the world, the disease remains a public health problem in the overseas-born and Indigenous communities. In 2003, 944 tuberculosis (TB) notifications were received by NNDSS, a rate of 4.7 cases per 100,000 population; a similar number and rate to 2002. The notification rates of TB were lower than the national average in Queensland, South Australia, Tasmania and Western Australia, as in previous years. The highest rate was reported in the Northern Territory (14.6 cases per 100,000 population).

In 2003, the male to female ratio was 1.1:1. TB cases occurred in all age groups, with the highest age-specific rates reported in the 80–84 year age group (12.0 cases per 100,000 population). The highest incidence was reported in people born overseas (19.9 cases per 100,000 population) and Indigenous Australians (8.5 cases per 100,000 population). By contrast the rate in the non-Indigenous Australian-born population was 0.9 cases per 100,000 population (Figure 64).

Detailed analyses of tuberculosis in Australia have recently been published.[39]

Figure 64. Trends in tuberculosis notification rates, Australia, 1991 to 2003, by Indigenous status and country of birth.



Other communicable disease surveillance

Laboratory Virology and Serology Reporting Scheme

The Laboratory Virology and Serology Reporting Scheme (LabVISE) is a passive surveillance scheme based on voluntary reports of infectious agents from sentinel virology and serology laboratories around Australia. LabVISE provides data on diagnoses of a number of infectious viruses, parasites and fungi. Interpretation of data from LabVISE is limited by uncertainties regarding its representativeness, lack of denominator data to calculate positivity rates, variable reporting coverage over time and lack of consistent case definitions. LabVISE has an important role in supplementing information of diseases under surveillance in NNDSS and in monitoring infectious agents that are not reported by other surveillance systems.

In 2003, a total of 13 laboratories reported 23,160 infectious agents to LabVISE. This represents a 12 per cent decline in the number of reports received in 2002 (Table 22). The largest number of reports were from Queensland (28%), South Australia (26%) and New South Wales (17%, Table 22).

Sixty-four per cent of the 14,755 reports received by LabVISE were viral infectious agents, and the remaining 36 per cent (8,405) were bacterial or other infectious agents. Among viruses, ortho/paramyxoviruses (influenza, parainfluenza and respiratory syncytial virus) were the most commonly reported (30%; 4,570) followed by herpesviruses (29%; 4,295) (Figure 65). Among non-viral infectious agents, *Chlamydia trachomatis* (4,296, 51%), *Treponema pallidum* (1,165, 14%) and *Mycoplasma pneumoniae* (1,146, 13%) were the most commonly reported pathogens.

Figure 65. Reports of viral infections to the Laboratory Virology and Serology Reporting Scheme, 2003, by viral group

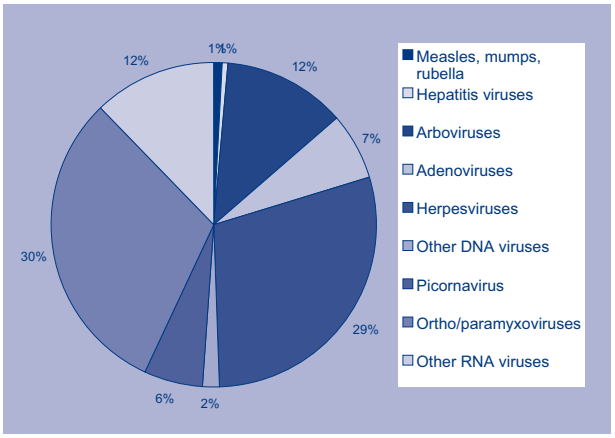


Table 22. Infectious agents reported to the Laboratory Virology and Serology Reporting Scheme, 2003, by state or territory

Organism	State or territory								Total 2003	Total 2002
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA		
Measles virus	–	7	1	5	24	–	33	1	71	16
Mumps virus	–	1	–	2	2	–	1	4	10	16
Rubella virus	–	2	–	13	4	–	4	3	26	92
Hepatitis A virus	1	2	6	17	12	–	4	45	87	71
Hepatitis D virus	–	–	–	–	2	–	10	7	19	7
Ross River virus	2	56	48	1,016	19	–	7	90	1,238	423
Barmah Forest virus	–	52	8	336	2	–	1	9	408	203
Sindbis virus	–	–	–	–	–	–	1	–	1	–
Dengue	–	3	6	–	1	–	1	28	39	168
Murray Valley encephalitis virus	–	–	1	–	–	–	–	–	1	7
Flavivirus (unspecified)	–	–	1	110	–	–	11	–	122	43
Adenoviruses	1	192	13	72	412	2	111	159	962	1,069
Herpesviruses	51	444	97	1,540	1,313	9	220	621	4,295	4,650
Other DNA viruses	1	8	–	77	9	–	84	100	279	–
Picornaviruses	2	441	10	17	21	5	30	304	830	1,372
Ortho/paramyxoviruses	4	1,371	39	399	1,594	47	472	644	4,570	6,289
Other RNA viruses	3	425	15	2	508	16	486	342	1,797	2,555
Chlamydia trachomatis	20	585	55	1,528	1,025	47	46	991	4,296	3,874
Chlamydia pneumoniae	3	6	1	–	–	–	–	5	15	32
Chlamydia psittaci	–	2	–	1	3	–	110	2	118	62
Mycoplasma pneumoniae	5	170	9	376	281	28	239	38	1,146	1,234
Mycoplasma hominis	–	9	–	–	–	–	–	–	9	2
Coxiella burnetii	4	11	2	53	82	–	16	10	178	251
Rickettsia spp	–	–	1	–	–	–	3	6	10	2
Streptococcus group A	22	12	6	315	–	–	135	–	490	526
Streptococcus group B	72	3	–	–	–	–	–	–	75	129
Yersinia enterocolitica	–	11	–	1	–	–	–	–	12	9
Brucella abortus	–	1	–	–	2	–	2	–	5	2
Brucella species	–	3	–	4	–	–	–	–	7	5
Bordetella pertussis	15	82	2	75	146	12	174	13	519	944
Legionella pneumophila	1	3	–	–	8	–	115	3	130	120
Legionella longbeachae	1	2	1	–	18	–	22	40	84	78
Legionella species	–	–	–	–	–	–	18	–	18	15
Cryptococcus species	–	1	–	9	16	–	–	–	26	30
Leptospira species	–	1	–	15	8	–	–	2	26	18
Treponema pallidum	–	125	95	478	448	–	11	8	1,165	1,400
Entamoeba histolytica	–	1	–	2	–	–	4	7	14	28
Toxoplasma gondii	1	14	–	6	9	–	8	3	41	28
Echinococcus granulosus	–	–	–	–	19	–	2	–	21	30
Total	209	4,046	417	6,469	5,988	166	2,381	3,485	23,160	25,800

– No reports received.

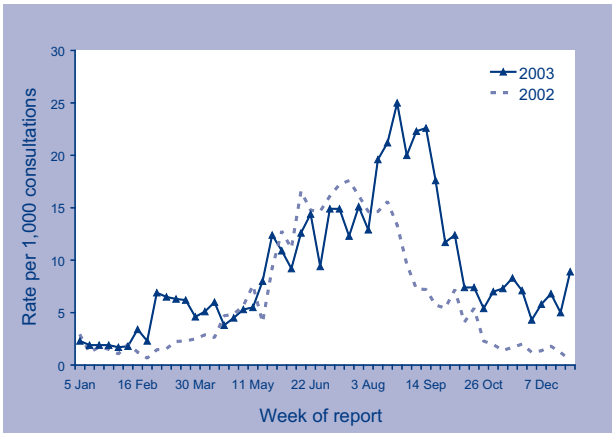
Australian Sentinel Practice Research Network

The Research and Health Promotion Unit of the Royal Australian College of General Practitioners operates the Australian Sentinel Practice Research Network (ASPREN). ASPREN is a national network of general practitioners that report each week on a number of conditions selected annually. The data provide an indicator of the burden of disease in the primary care setting and allows trends in consultation rates to be detected.

In 2003, influenza-like illnesses (ILI), gastroenteritis, and varicella infections (chickenpox and shingles) were the communicable diseases reported to ASPREN. Each week an average of 47 general practitioner practices (range 32 to 62 practices) provided information on an average of 4,962 consultations per week.

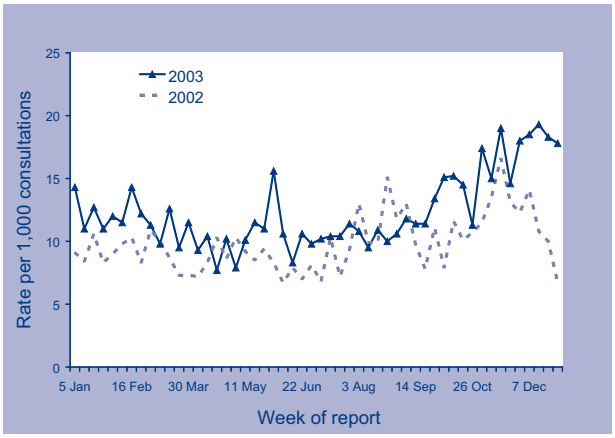
Influenza-like illness reports showed a typical seasonal pattern with a peak in mid-August at 24 cases per 1,000 consultations. This was a higher peak rate than in 2002 (18 cases per 1,000 consultations) and occurred later in the year. Unlike other years however, reports of ILI continued to be reported at above base-line levels through the remainder of the year (Figure 66).

Figure 66. Consultation rates for influenza-like illness, ASPREN, 2003, by week of report



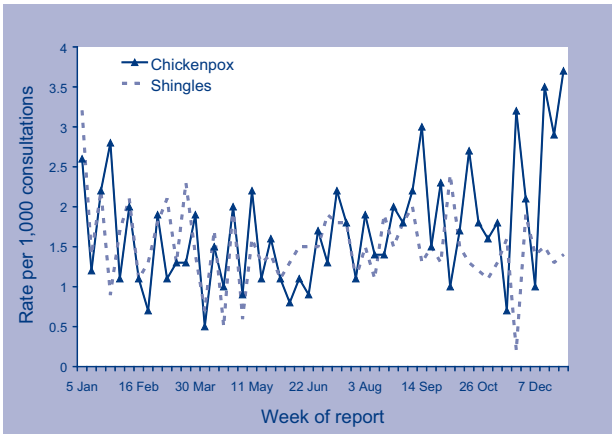
Consultations for gastroenteritis peaked as in previous years in the summer months (December, Figure 67).

Figure 67. Consultation rates for gastroenteritis, ASPREN, 2003, by week of report



Reports of varicella infections were recorded at a lower rate than in 2002. Rates of chickenpox exceeded those for shingles in most weeks and there was a suggestion of higher rates of chickenpox in spring and early summer (Figure 68).

Figure 68. Consultation rates for varicella infections, ASPREN, 2003, by week of report



Appendices

Appendix 1. Mid-year estimate of Australian population, 2003, by state or territory

	ACT	NT	NSW	Qld	SA	Tas	Vic	WA	Aust
Male	159,401	104,177	3,321,964	1,893,287	755,870	235,268	2,423,399	976,872	9,871,642
Female	163,449	94,174	3,364,680	1,903,488	771,551	241,826	2,493,995	975,408	10,009,827
Total	322,850	198,351	6,686,644	3,796,775	1,527,421	477,094	4,917,394	1,952,280	19,881,469

Appendix 2. Mid-year estimate of Australian population, 2003, by state or territory and age group

Age	ACT	NT	NSW	Qld	SA	Tas	Vic	WA	Aust
0–4	20,361	17,440	429,509	248,364	89,709	30,677	304,023	124,316	1,264,661
5–9	21,233	16,900	445,635	266,215	97,049	32,394	323,272	133,352	1,336,305
10–14	22,242	16,106	458,254	274,665	100,930	34,251	331,038	140,681	1,378,444
15–19	24,370	14,615	452,486	269,467	104,012	34,200	333,999	143,466	1,376,787
20–24	27,899	15,778	452,155	267,319	99,968	29,551	345,463	138,550	1,376,836
25–29	25,426	17,185	462,199	259,140	94,939	26,764	343,352	132,638	1,361,783
30–34	25,760	18,485	512,932	286,097	108,059	31,707	385,882	148,098	1,517,217
35–39	24,325	16,610	488,096	274,851	109,451	32,278	367,164	145,536	1,458,527
40–44	24,958	16,010	514,449	290,981	117,809	36,899	376,499	153,634	1,531,460
45–49	23,493	13,707	467,224	265,400	109,522	34,745	343,322	142,846	1,400,484
50–54	22,589	12,367	433,829	251,310	104,649	33,024	319,154	132,641	1,309,774
55–59	18,668	8,943	386,390	224,801	93,587	29,771	280,277	111,389	1,153,945
60–64	12,206	5,895	293,787	167,114	70,438	23,302	214,176	82,590	869,605
65–69	8,997	3,310	248,318	132,302	60,154	19,241	181,219	66,473	720,072
70–74	7,179	2,197	220,674	111,858	54,846	16,756	160,702	55,637	629,877
75–79	6,149	1,409	189,108	93,163	49,863	14,107	138,859	45,312	537,980
80–84	4,109	769	130,060	64,109	34,776	9,708	94,062	30,587	368,189
85–89	1,960	375	67,470	33,216	18,172	5,230	48,766	15,756	190,953
90–94	713	166	26,289	12,762	7,390	1,935	20,027	6,697	75,981
95–99	183	49	6,459	3,045	1,736	476	5,116	1,759	18,823
100 and over	30	35	1,321	596	362	78	1,022	322	3,766
Total	322,850	198,351	6,686,644	3,796,775	1,527,421	477,094	4,917,394	1,952,280	19,881,469

Appendix 3. Completeness of National Notifiable Diseases Surveillance System data, received from states and territories, 2003

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Total notifications	1,847	26,555	4,923	26,246	7,431	2,147	23,434	12,373	104,956
Sex									
Number unknown	2	54	2	21	0	2	379	16	476
% complete	99.9	99.8	100.0	99.9	100.0	99.9	98.4	99.9	99.5
Age									
Number missing	0	0	0	0	0	8	33	16	57
% complete	100.0	100.0	100.0	100.0	100.0	99.6	99.9	99.9	99.9
Indigenous status									
Number unknown	1,805	19,158	421	17,923	1,157	2,138	12,224	5,137	59,963
% complete	3.4	27.9	91.5	32.7	84.5	1.4	47.9	58.5	43.1

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Composition of Australian Influenza Vaccine for the 2005 season

The Australian Influenza Vaccine Committee on Influenza Vaccines met on 5 October 2004 and agreed to adopt the September World Health Organization (WHO) recommendations.

The Committee decided that the influenza vaccine components for the 2005 Southern Hemisphere Season should contain the following.

A H1N1 strain:	an A/New Caledonia/20/99(H1N1)-like strain A/New Caledonia/20/99 (IVR-116) is also recommended as a suitable vaccine strain.	15 µg HA per dose
A H3N2 strain:	an A/Wellington/1/2004 (H3N2)-like strain A/Wellington/1/2004 (IVR-139) is also recommended as suitable vaccine strain.	15 µg HA per dose
B Strain:	a B/Shanghai/361/2002-like strain B/Jiangsu/10/2003 is also recommended as a suitable vaccine strain.	15 µg HA per dose

Surveillance of antibiotic resistance in *Neisseria gonorrhoea*e in the World Health Organization Western Pacific Region, 2003

The WHO Western Pacific Gonococcal Antimicrobial Surveillance Programme

Abstract

The World Health Organization Western Pacific Region Gonococcal Antimicrobial Surveillance Programme examined over 11,000 isolates of *Neisseria gonorrhoeae* from 13 countries for resistance to antibiotics in 2003. Very high rates of resistance to penicillins and quinolones were again present in most centres, but little resistance to spectinomycin was detected. Several centres once more reported the presence of gonococci with decreased susceptibility to third generation cephalosporins. Treatment options for gonococcal disease acquired in the Region are increasingly limited. *Commun Dis Intell* **2005;29:62–64.**

Keywords: annual reports; antibiotics; Neisseria gonorrhoeae, *penicillin; quinolone; spectinomycin*

Introduction

Attempts to treat and control gonorrhoea are compromised by the emergence and spread of antibiotic-resistant *Neisseria gonorrhoeae*. Surveillance of antimicrobial resistance in prevalent gonococci assists in the optimisation of standard treatment regimens by identifying those antibiotics that remain effective in a particular region or country. The close relationship between laboratory measures of *in vitro* resistance in gonococci and in the clinical response to antibiotic treatment provides the basis for use of data derived from antimicrobial resistance surveillance in *N. gonorrhoeae*. The World Health Organization Western Pacific Gonococcal Antimicrobial Surveillance Programme (WHO WPR GASP) has monitored resistance in gonococci isolated in the WPR since 1994, and in that time has reported the significant decline in usefulness of several agents, most notably quinolone antibiotics.[1,2] This report provides an analysis of surveillance of antimicrobial resistance in *N. gonorrhoeae* conducted in the WHO WPR in 2003.

Methods

The methods used by the WHO WPR GASP have been published[2] and provide full details of the source of isolates, sample populations, laboratory test methods and quality assurance programs used to generate data. These methods were unaltered in 2003. Most isolates were collected from symptomatic STD clinic patients. As a guide to the interpretation of the following data, a WHO expert committee has recommended that treatment regimens be altered once resistance to a particular antibiotic reaches 5 per cent.[3]

Results

About 11,250 gonococcal isolates were examined for susceptibility to one or more antibiotics in 13 participating countries (listed in the acknowledgements) in 2003.

Quinolone antibiotics

Table 1 shows the distribution of quinolone resistant *N. gonorrhoeae* (QRNG) in 11 countries that examined a total of 10,600 isolates in 2003. With the exception of Papua New Guinea, QRNG were present in all centres and the proportion of all isolates ranged between 5.7 per cent in New Caledonia to greater than 90 per cent in China, Hong Kong and Korea. Japan had a rate of 85 per cent. With only some slight variation, the percentage of QRNG observed in reporting centres in 2003 was similar to that recorded in 2002, and most resistance was at higher level MICs (ciprofloxacin MIC ≥ 1 mg/L) that are associated with high rates of treatment failure.

Cephalosporins

From 2000 onwards, a small number of isolates with altered susceptibility to third generation cephalosporins has been reported in WHO WPR

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Table 1. Quinolone resistance in 10,629 strains of *Neisseria gonorrhoeae* isolated in 11 countries in the World Health Organization Western Pacific Region in 2003

Country	Tested	Less susceptible		Resistant		All QRNG	
	n	n	%	n	%	n	%
Australia	3,772	77	2.0	452	12.0	529	14.0
Brunei	50	5	10.0	31	62.0	36	72.0
China	1,254			1,171	93.4	1,171	93.4
Hong Kong SAR	3,378	165	4.9	3,167	93.7	3,332	98.6
Japan	200	17	12.8	154	77.0	171	85.5
Korea	212	39	18.4	166	78.3	205	96.7
New Caledonia	53	0	0.0	3	5.7	3	5.7
New Zealand	1,113	31	2.8	96	8.6	127	11.4
Papua New Guinea	286	0	0.0	0	0.0	0	0.0
Philippines	111	11	9.9	62	55.9	73	65.8
Singapore	200	9	4.5	103	51.5	112	56.0

QRNG Quinolone-resistant *Neisseria gonorrhoeae.*

surveys. In 2003, these were again detected in small numbers of isolates from Australia, New Zealand, China, Korea and Brunei.

Spectinomycin

A small number of spectinomycin resistant strains were reported from China. Only very small numbers of spectinomycin resistant gonococci have been reported in recent years in WPR GASP surveys.

Penicillins

Resistance to penicillins has been widespread and at high levels for many years in the WPR, and is mediated by a combination of mechanisms (Table 2). Little change was seen in 2003 from the generally high levels seen in 2002 except for Papua New Guinea where rates of penicillinase-producing *N. gonorrhoeae* (PPNG) fell from 82 per cent to 46 per cent of strains tested. Exceptionally high rates of resistance to this group of antibiotics were again observed in Laos, China and the Philippines.

Tetracyclines

These antibiotics are still widely available in the WPR. About 7,000 isolates were examined for one particular form of resistance, namely, that high-level plasmid-mediated form referred to as TRNG (Table 3). Again rates of resistance, expressed as a percentage of all isolates tested, were similar to those found in 2002. Singapore, China and the Philippines had rates between 25 per cent and 59 per cent, those in Australia and New Zealand approximated 10 per cent and elsewhere the rates were less than 5 per cent.

Discussion

There was little change in patterns of gonococcal resistance to antibiotics in the WHO WPR in 2003. However these rates remained generally high and the use of many cheap oral agents such as ciprofloxacin and penicillins remains contraindicated in most centres. The challenge to find suitable alternative agents is made more difficult by their high cost or the need to use injectable antibiotics. The continuing detection of isolates with decreased susceptibility to third generation cephalosporins, albeit in small numbers, remains a matter of interest and concern. Spread of these strains beyond the WHO WPR has been documented as has their resistance to multiple antibiotics.[4]

Although the total number of isolates examined in the program in 2003 was similar to that in 2002, the number of participating centres declined. Continuation of surveillance is essential for local, regional and international efforts for control of gonorrhoea.

Acknowledgments

The following members of the WHO Western Pacific Gonococcal Antimicrobial Surveillance Programme supplied data for the WPR GASP in 2003:

Members of the Australian Gonococcal Surveillance Programme throughout Australia; Haji Mohamad Haji Kassim, Brunei Darussalam; Yin Yue Ping and Su Xiaohong, Nanjing, China; P Kumar and S Singh, Suva, Fiji; KM Kam, Hong Kong; Yuko Watanabe, Kanagawa, and Masatoshi Tanaka, Fukuoka, Japan; K Lee and Y Chong, Seoul, Korea; T Phouthavane, Vientiane, Lao PDR; B Garin, Noumea, New

Table 2. Penicillin resistance in 11,246 strains of *Neisseria gonorrhoeae* isolated in 13 countries in the WHO WPR in 2003

Country	Tested	PPNG		CMRNG		All penicillin-resistant	
	n	n	%	n	%	n	%
Australia	3,772	306	8.0	333	9.0	639	17.0
Brunei	49	27	55.0	0	0.0	27	55.0
China	1,254	445	35.5	374/409	91.5		92.5
Fiji	565	17	3.0	NT			
Hong Kong	3,378	852	25.2	1,287	38.1	2,139	63.3
Japan	200	3	1.5	69	34.5	165	77.8
Korea	212	35	16.5	130	61.3	165	77.8
Lao	52	22/28	78.6	6/28	21.4	52	100.0
New Caledonia	53	5	9.4	NT			
New Zealand	1,113	31	2.8	30	2.7	61	5.5
Papua New Guinea	286	132	46.2	0	0.0	132	46.2
Philippines	112	88	78.6	13	11.6	101	90.1
Singapore	200	89	44.5	14	7	103	51.5

PPNG Penicillinase-producing *Neisseria gonorrhoeae.*

CMRNG Chromosomally mediated resistance in *Neisseria gonorrhoeae.*

NT Not tested.

Table 3. High-level tetracycline resistance in 7,055 strains of *Neisseria gonorrhoeae* isolated in 9 countries in the WHO WPR in 2003

Country	Tested	TRNG	
	n	n	%
Australia	3,772	411	11.0
China	1,254	403	32.1
Japan	53	2	3.8
Korea	212	4	1.9
New Caledonia	53	0	0.0
New Zealand	1,113	92	8.3
Papua New Guinea	286	1	0.3
Philippines	112	29	25.9
Singapore	200	117	58.5

TRNG Tetracycline resistant *Neisseria gonorrhoeae*

Caledonia; M Brokenshire, Auckland, New Zealand; C Manesikia, Port Moresby, Papua New Guinea; CC Carlos, D Agdamag, Manila, Philippines; Cecilia Ngan, Singapore.

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Sentinel Chicken Surveillance Program in Australia, July 2003 to June 2004

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Abstract

Detection of flavivirus seroconversions in sentinel chicken flocks located in four Australian states are used to provide an early warning of increased levels of Murray Valley encephalitis virus (MVEV) and Kunjin virus (KUNV) activity in the region. During the 2003–2004 season low levels of flavivirus activity were detected in northern Australia with both MVEV and KUNV virus activity detected in the Kimberley and Pilbara regions of Western Australia and in the Northern Territory. A single case of Murray Valley encephalitis was reported from Central Australia. MVEV activity was also detected at Minindee in western New South Wales for the first time since 2000–2001. No activity was detected in Victoria. *Commun Dis Intell* 2005;29:65–70.

Keywords: disease surveillance; flavivirus; Kunjin virus; Murray Valley encephalitis virus

Introduction

The Sentinel Chicken Surveillance Program is used to provide an early warning of increased flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVEV) and Kunjin (KUNV) viruses. MVEV causes the disease Murray Valley encephalitis (formerly known as Australian encephalitis), a potentially fatal disease in humans. Encephalitis is less frequent in cases of Kunjin virus infection and these encephalitis cases have a lower rate of severe sequelae. Both viruses are enzootic in the Kimberley region of Western Australia and in the Top End of the Northern Territory and possibly in Far North Queensland (Western Cape and Gulf country). They are epizootic in the Pilbara, Gascoyne, Murchison and Mid-west regions of Western Australia, Central Australia and in western and central Queensland. MVEV is also responsible for occasional epidemics of encephalitis in south-eastern Australia, the most recent occurring in 1974.

In the northern areas of Australia, MVEV and KUNV presence varies depending on the extent and location of wet season rainfall and flooding in the region. MVEV and KUNV activity is monitored in Australia by detecting seroconversions in sentinel chicken flocks.[1] During the 2003–2004 season sentinel flocks were located in Western Australia, the Northern Territory, New South Wales and Victoria. The sentinel program was not funded in Queensland during the 2003–2004 season. These sentinel programs are funded by the state health departments and each state has a contingency plan, which will be implemented if one or more chickens in a flock seroconverts to one of these viruses. From 1992 to 2001 the results of the state sentinel chicken programs were reported bimonthly in *Communicable Diseases Intelligence*. From 2002 onwards, important results were posted either on the Communicable Disease Australia website or more recently on the National Arbovirus and Malaria website. Each state provides a brief summary of the results obtained from their state program.

During the 2003-2004 season, 29 flocks were maintained in the north of Western Australia, eight in the Northern Territory, six in New South Wales and 10 in Victoria. The flocks in Western Australia and the Northern Territory were sampled and tested all year round but those in New South Wales and Victoria were tested only in the summer months, during the main MVEV risk season. Additional information on the Australian sentinel chicken surveillance program has also been presented earlier.[1]

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Summary of recent flavivirus activity in Australia

MVEV and KUNV activity is detected in Western Australia and the Northern Territory in most years. Activity in other areas is less regular. Record rainfall was recorded in the north of Australia during the 1999–2000 wet season and cases of Murray Valley encephalitis were reported from the Northern Territory, Central Australia and Western Australia. Above average rainfall was recorded in central Australia in 2000–2001 and cases were again reported from the region. A single case was also reported from central Queensland. In 2000–2001 MVE activity was detected in New South Wales for the first time since 1974 but no human cases were reported. KUNV activity was also detected in New South Wales and Victoria in 2000–2001.

MVEV and KUNV activity was low in 2001–2002 with activity recorded only in Western Australia and the Northern Territory. Two cases of Murray Valley encephalitis were reported from Western Australia. Kunjin virus activity was reported from Western Australia, the Northern Territory and northern Queensland. Low levels of activity of both viruses were again detected during the 2002–2003 season.

Activity this year was limited to Western Australia and the Northern Territory.

Flavivirus activity in the 2003–2004 season

Western Australia

Serum samples from the Western Australian sentinel chicken flocks are tested by the Arbovirus Surveillance and Research Laboratory at the University of Western Australia in Perth.

Although there was above average summer rainfall (December to March) in most areas of the Kimberley and Pilbara regions, MVEV and KUNV activity was low and, similar to 2002–2003, began later than usual in Western Australia. Activity was again restricted to the Kimberley and Pilbara regions. No human cases were reported.

Table 1 shows a summary of MVEV and KUNV seroconversions in Western Australia from January to June 2004. Results are discussed in the next section.

MVEV activity

MVE activity was first detected in March 2004 at Kununurra in the north-east Kimberley and activity in this region continued at a low level until June 2004. Activity was detected in the west Kimberley at Fitzroy Crossing and Broome in May. The Western Australian Department of Health (DOH) issued health warnings to residents and visitors to the Kimberley and Pilbara regions in April and June 2004. An additional localised warning was issued via the Kimberley Public Health Unit to the Kalumburu community in the far north of Western Australia in May 2004.

MVEV activity was only detected at two sites in the Pilbara (Harding Dam and Tom Price) in April and May.

KUNV activity

KUNV activity was more widespread than MVEV activity in the 2003–2004 season. KUNV activity was first detected in February at Kununurra in the north-east Kimberley and at Fitzroy Crossing, Derby and Broome in the west Kimberley from April to June. KUNV activity was first detected in the Pilbara region in March at Ophthalmia Dam (Newman) and activity persisted in the region well into the dry season.

The majority of flavivirus activity in the Pilbara region was focused at the two major dams (Harding and Ophthalmia) suggesting that these permanent water sources can prolong and perhaps maintain a focus of both MVEV and KUNV activity.

Northern Territory

MVEV activity is usually initiated later in the Northern Territory than in Western Australia. The flocks are funded and organised by the Northern Territory Department of Health and Community Services, while veterinary officers of the Department of Business Industry and Resource Development and volunteers maintained and bled the flocks monthly, and staff of the Arbovirus Surveillance and Research Laboratory in Perth tested the serum samples.

MVEV activity in the Northern Territory during the 2003–2004 wet season was low and equals the low level of last year. KUNV activity was relatively high compared to MVEV, and similar to the higher activity over the last two years (Table 2).

Table 1. Summary of Murray Valley encephalitis virus and Kunjin virus seroconversions in Western Australia, January to June 2004*

Location	Jan		Feb		Mar		Apr		May		Jun		Total	
	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	Bled (n)	Positive (+ve)
Kimberley														
Kalumburu	20	0			20	0	10	4 2MK, 2M	13	1 1M	12	1 1K	75	6
Wyndham			9	0			20	0	9	1 1M	17	1 1M	55	2
Kununurra	24	0	11	1 1K	18	1 1M	9	1 1M	3	0	12	0	77	4
Halls Creek	11	0	22	0	22	0	11	0	21	0	11	0	98	0
Fitzroy Crossing	20	0	20	0	20	0	10	3 3K	7	2 2M	4	3 3K	81	9
Derby site 1	19	0	20	0	18	0	8	0	8	0			73	0
Derby site 2	20	0	19	0	20	0	10	1 1K	9	1 1K			78	2
Broome – Roebuck	21	0	11	0	12	0	30	0	8	2 2K	14	3 2K	96	7
Broome – Town	14	0	9	0	8	0	20	1 1K	4	1 1M	7	2 2K	62	4
Pilbara														
Port Hedland	24	0	11	0	12	0	24	0	11	0	11	0	93	0
Karratha	12	0	24	0	12	0	24	0	12	0	12	0	96	0
Harding Dam 1	20	0	18	0	9	0	14	1 1MK	14	0	8	1 1K	83	4
Harding Dam 2	20	0	20	0	9	0	16	0	21	2 2K	7	1	93	3
Marble Bar	24	0	23	0	36	0	12	0	12	0	23	1 1K	130	1
Nullagine	8	0	6	0			4	0	6	0			24	0
Tom Price	12	0	12	0	34	0	12	0	22	2 1M, 1K	9	0	101	3
Paraburdoo	9	0			10	0	9	0	10	0	10	0	48	0
Onslow	18	0	16	0	9	0	17	0	9	0	17	0	86	0
Ophthalmia	24	0	24	0	24	1 1K	22	2 2K	14	2 2K	18	2 2K	126	7
Newman Shire	24	0	24	0	24	0	24	0	12	0	36	0	144	0
Exmouth	11	0	22	0	22	0	22	0	33	0	33	0	143	0
Gasgoyne														
Carnarvon	5	0			12	0	11	0	10	0	17	0	55	0
Mid-west/Wheatbelt/ Goldfields														
Three Springs	24	0	12	0	35	0	24	0	34	0	24	0	153	0
Geraldton	7	0	6	0	5	0							18	0
Dongara	9	0	9	0									18	0
Gingin	24	0	24	0	35	0	12	0	24	0	24	0	143	0
York	10	0	23	0	33	0	22	0	22	0	22	0	132	0
Bindoon	12	0	12	0	12	0	12	0	12	0			60	0
Leonora	19	0	8	0	15	0	10	0	19	0	10	0	81	0

* Sentinel flocks tested for infection with Murray Valley encephalitis and Kunjin viruses, sampled fortnightly from December to May ('wet' season) and monthly from June to November ('dry' season). Previous (or repeat) positive chickens are not recorded on this summary.

N Number of samples.

+ve Number of Murray Valley encephalitis virus and Kunjin virus positive samples.

M Murray Valley encephalitis virus antibodies.

K Kunjin virus antibodies.

MK Murray Valley encephalitis virus and Kunjin virus antibodies.

Table 2. Summary of Murray Valley encephalitis virus and Kunjin virus seroconversions in the Northern Territory, 1993 to 2003

Location	Flock established	Virus	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	+ ve totals
Howard Springs*	January 1992	MVE	7	5					1	1	1	1	1	17
		KUN	3	2	1	2				1	2	3	3	17
Leanyer†	September 1992	MVE	1	10	1			1	1	3		3		20
		KUN		1	1			1	3	2		4		12
CPRS*	July 1993	MVE		13		4	4		5	3	3	1		33
		KUN				4		1			1	2		8
Nhulunbuy	January 1992‡	MVE							1	4			1	6
		KUN						2	3				2	7
Katherine	June 1993	MVE		12			3	1	2	3	2	4		27
		KUN				1	1	1		1	4	1	2	11
Tennant Creek	February 1995	MVE			7		7		10	11	12	6		53
		KUN					3	3		2			1	9
Alice Springs§	November 1996	MVE					7			5	8	2		22
		KUN								1	2			3
Totals		MVE	8	40	8	4	21	2	20	30	26	17	2	
		KUN	3	3	2	7	4	8	6	7	9	10	8	

* Darwin rural.

† Darwin urban.

‡ Data in this table are from 1997/98 onwards due to non–continuous sampling before this period.

§ Arid Zone Research Institute.

CPRS Coastal Plains Research Station (Fogg Dam) Adelaide River.

MVE Murray Valley encephalitis virus.

KUN Kunjin virus.

MVEV activity

Seroconversions to MVEV were detected in March in the Darwin area and in April at Katherine (Table 3). There was one case of Murray Valley encephalitis virus reported from Central Australia in April in a community between Tennant Creek and Alice Springs. The lack of activity in the Alice Springs area is in accord with the risk indicator of summer rainfall below 100 mm.[2] The Department of Health and Community Services (Northern Territory) issued media warnings for the whole of the Northern Territory in April and early June 2004.

KUNV activity was detected in July in Nhulunbuy and in August in Katherine, but this was probably a continuation of the previous season's activity (Table 3).

KUNV activity was detected in Tennant Creek in December, April and May, and in the Darwin area (Leanyer, Howard Springs and Coastal Plains Research Station) in November, March, May and June (Table 3). KUNV activity in the Northern Territory over a 10 year period has been highest in the months of April and May, with most in May. The November activity in Darwin (Leanyer) was unusual as KUNV has not been detected anywhere in the Northern Territory in October or November in the last 10 years.

New South Wales

Samples from sentinel chicken flocks were tested weekly for flavivirus antibodies in New South Wales (Westmead Hospital) from December 2003 to April 2004. There was one seroconversion to MVEV in the Minindee flock in December 2003. This is the first indication of MVEV activity in New South Wales since the 2000–2001 season and this activity occurred in the absence of seroconversions in northern Australia. It was previously thought that MVEV was most probably introduced into New South Wales, after heavy rainfall, from areas of northern Australia where the virus is enzootic. However, this result suggests that it is more likely that MVEV exists in small enzootic foci in this region and activity was reactivated after rainfall in late 2003. Additional studies are required to confirm this.

Victoria

Samples from sentinel chicken flocks were tested weekly for flavivirus antibodies at the Veterinary Research Institute from October 2003 to March 2004. No MVEV or KUNV activity was detected in this region.

Acknowledgements

The sentinel chicken programs in each state are funded by the State Health Departments.

The following people have contributed to the Australian sentinel chicken program and I thank them for their help with this report. I apologise if I have missed anyone.

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The following laboratories were responsible for testing sentinel chicken sera:

Arbovirus Surveillance and Research Laboratory, Discipline of Microbiology, University of Western Australia

Veterinary Research Institute, Victoria

Virology Department, Westmead Hospital, New South Wales

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2. Whelan PI, Jacups SP, Melville L, Broom AK, Currie BJ, Krause VL, *et al.* Rainfall and vector mosquito numbers as risk indicators for mosquito-borne disease in Central Australia. *Commun Dis Intell* 2003;27:110–116.

Table 3. Annual summary of the Northern Territory sentinel chicken program, July 2003 to June 2004*

Location	Jul		Aug		Sept		Oct		Nov		Dec		Jan		Feb		Mar		Apr		May		Jun		Total	
	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve	n	+ve
Alice Springs (Arid Zone Research Institute)	12	0	12	0	12	0	12	0	12	0	12	0		–	11	0	12	0	12	0	12	0	12	0	131	0
Alice Springs (Ilpara)	12	0	12	0	12	0	11	0		12	0	–		–	12	0	11	0	11	0	11	0	11	0	115	0
Howard Springs	7	0	7	0	7	0	7	0	7	0	7	0	6	0	6	0	6	0	6	0	17	1 1K†	12	0	95	1
Leanyer	9	0	9	0	9	0	9	0	9	1 1K	8	0	8	0	8	0	8	2 1M,1MK	6	5	13	0	11	0	107	8
Katherine	6	0	6	1 1K	5	0	5	0	5	0	5	0	17	0	11	0	11	0	11	1 1M	8	0	8	0	98	2
CPRS	10	0	10	0	10	0	10	0	10	0	8	0	17	0	11	0	11	0	10	1	9	0	9	2 1K	125	2
Tennant Creek		–	9	0	6	0	6	0		–	18	1 1K†	12	0	12	0	12	0	12	1 1K	11	2 1K,1K†	9	0	107	4
Nhulunbuy	9	1 1K		–	8	0	8	0		–	7	0		–	8	0	8	0		–	7	0	7	0	62	1

* Sentinel chicken flocks are tested for antibodies to Murray Valley encephalitis and Kunjin viruses.

† Not confirmed (no second sample sent).

– No samples were sent.

CPRS Coastal Plains Research Station (Fogg Dam) Adelaide River.

M Murray Valley encephalitis virus antibodies.

K Kunjin virus antibodies.

MK Murray Valley encephalitis virus and Kunjin virus antibodies.

Influenza surveillance in Victoria, 2004

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Abstract

Influenza activity during the traditional Victorian influenza season from May to October 2004 was low with no well-defined peak. Surveillance was based on sentinel general practice influenza-like illness (ILI) notification with laboratory confirmation, locum service ILI notification and laboratory reporting of influenza detections. Eight hundred and fifteen consultations for ILI were reported from 38 general practices and 216 consultations for ILI were reported from the locum service. The average weekly rate of influenza-like-illness from sentinel surveillance was 5.4 cases per 1,000 consultations, representing normal seasonal activity. Influenza A (H3N2) was the predominant circulating sub-type, 88 per cent of which were identified as A/Fujian/411/2002-like and 12 per cent as A/Wellington/1/2004. All influenza B was B/Shanghai/361/2002-like. There was some mismatch with the 2004 influenza vaccine, which contained A/New Caledonia/20/99(H1N1)-like virus, A/Fujian/411/2002(H3N2)-like virus, and B/Hong Kong/330/2001-like virus. *Commun Dis Intell* 2005;29:71–76.

Keywords: disease surveillance; influenza; Victoria

Introduction

Influenza surveillance in Victoria comprises sentinel general practice (GP) surveillance for influenza-like illness (ILI) with laboratory confirmation of selected cases, surveillance of laboratory-confirmed influenza and surveillance of ILI through a metropolitan medical locum service. Laboratory-confirmed influenza in Victoria is a group B notifiable disease in accordance with the Health (Infectious Diseases) Regulations 2001.[1]

The objectives of the influenza surveillance system are to identify the onset, duration and relative magnitude of annual influenza seasons in Victoria; to characterise the circulating influenza strains in the community; and to assist with the early detection of influenza epidemics to facilitate the implementation of public health measures. This report describes influenza surveillance in Victoria for 2004, including some comparisons with previous years.

Methods

General practice sentinel surveillance

The Victorian Department of Human Services (DHS) introduced general practice sentinel surveillance into Victoria in 1995. Laboratory confirmation of the diagnosis of influenza in sentinel surveillance patients commenced in 1998 as a joint initiative of the Victorian Infectious Diseases Reference Laboratory (VIDRL) and DHS.[2] General practice sentinel surveillance was conducted in Victoria for 23 weeks between 26 April and 3 October 2004 (weeks 18–40 inclusive).

Recruitment of general practitioners (GPs) aimed for approximately one sentinel practice for every 200,000 population in metropolitan Melbourne and one practice for every 100,000 population in rural areas.[3] GPs were rewarded for participation with Continuing Professional Development (CPD) points from the Royal Australian College of General Practitioners. The allocation of these points was dependent on the submission of five swabs from patients with an ILI throughout the season, regular weekly submission of tally sheets and the completion of an evaluation questionnaire.

GPs were required to report weekly on the number of patients presenting with ILI and their total number of consultations. ILI was defined according to the case definition of fever (or history of feverishness), cough and fatigue/malaise.[4] A standard data collection form was used to record age, sex and vaccination status.

Rates for ILI were analysed on a weekly basis, with ILI calculated per 1,000 consultations. Overall ILI activity for the year was described using a set of threshold values. Normal baseline yearly activity was <2.5 ILI cases per 1,000 patients/week; normal seasonal activity was between 2.5–15; higher than normal was >15–35 and epidemic activity was above >35.[5]

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In addition to ILI data collection, each GP was asked to send respiratory specimens (nose and throat swab collected into viral transport medium) from patients who presented within three days of onset of ILI symptoms. GPs were required to send in a minimum of five specimens during the influenza season. These specimens were transported to VIDRL by a dedicated courier from metropolitan practices and through a network of commercial pathology laboratories from regional and rural practices. Data on age, vaccine status, date of illness onset and the GP's clinical impression of the likelihood of influenza (almost certain, probable or less likely) were forwarded with each sample.

Specimens were tested at VIDRL using an in-house respiratory multiplex polymerase chain reaction (PCR). In previous years the assay identified influenza A (H3N2 and H1N1), influenza B, adenovirus, picornavirus (enterovirus and rhinovirus), respiratory syncytial virus (RSV) and parainfluenza viruses.[6] In 2004, oligonucleotide primers to detect all known influenza viruses replaced primers aimed specifically at currently circulating H1 and H3 sub-types. Aliquots of all specimens positive for influenza were forwarded to the WHO Collaborating Centre for Reference and Research on Influenza, Parkville, Melbourne, for virus strain typing.

Melbourne Medical Locum Service Surveillance

ILI surveillance using data from the Melbourne Medical Locum Service (MMLS) commenced in 2003. MMLS provides a 24-hour, seven days a week medical locum service to patients within an approximate 40-kilometre radius of metropolitan Melbourne. Data are collected on cases with a final diagnosis reference to 'flu' or 'influenza'. For MMLS surveillance, data were collected all year and ILI rates were calculated per 1,000 consultations with the total number of call-outs per week as the denominator.

Laboratory diagnosed influenza

Sentinel surveillance data from the community were supplemented with weekly reports of laboratory-confirmed influenza from The Royal Children's Hospital, Monash Medical Centre and The Alfred Hospital. Diagnostic specimens other than specimens tested as part of surveillance at VIDRL were also included. These four laboratories undertake all laboratory diagnoses of influenza in Victoria and report all confirmed cases of influenza identified by virus isolation, direct detection of viral antigen or detection of viral RNA by nucleic acid assays.

Data collation and reporting

All data from sentinel surveillance, laboratories and MMLS were collected and collated weekly. ILI surveillance data were forwarded to the Commonwealth Department of Health and Ageing weekly and summary reports were prepared fortnightly and on an annual basis. Reports were widely distributed to interested health professionals, participating GPs and state and commonwealth departments of health. They were also posted on the VIDRL web site (http://www.vidrl.org.au).

Pilot study of influenza among patients in the paediatric Emergency Department.

This year, additional specimens (combined nose/throat swabs) for laboratory testing were collected from patients presenting to the Royal Children's Hospital (RCH) Emergency Department (ED) as part of a pilot study examining influenza in children. The aims of this study were to determine the extent of, and risk factors for, influenza among children attending the ED of the RCH and to collect data to enable health related costs of influenza in children to be estimated.

The RCH Human Research Ethics Committee granted ethics approval for the study. Provision of informed consent by participants was necessary to comply with requirements of the ethics committee. Patients were eligible to participate if they presented at the ED with a respiratory illness and were assigned triage category 1 to 4 (1 is the most serious illness) and aged between 6 months and 16 years. A one page clinical history and presentation questionnaire was completed for all ED participants. Nose and throat swabs collected from ED participants were sent directly to VIDRL and tested by multiplex respiratory PCR, and for human coronavirus OC43, 229E and metapneumovirus by separate PCR assays.

Results

Participating sentinel practices

In 2004, 76 general practitioners (GPs) from 15 metropolitan and 23 rural practices were recruited for sentinel ILI surveillance (Figures 1a and 1b). On average, 35 reports (92% of participating sites) were received each week. There were 166,626 consultations of which 815 (0.5%) were for ILI. The average weekly ILI consultation rate for the season was 5.4 per 1,000 cases: 5.8 per 1,000 cases in metropolitan sites and 4.9 per 1,000 cases in rural sites (Figure 2). The male to female ratio for ILI in 2004 was 1:1.2 (372:441).

Figure 1a. Distribution of sentinel surveillance sites in metropolitan Victoria

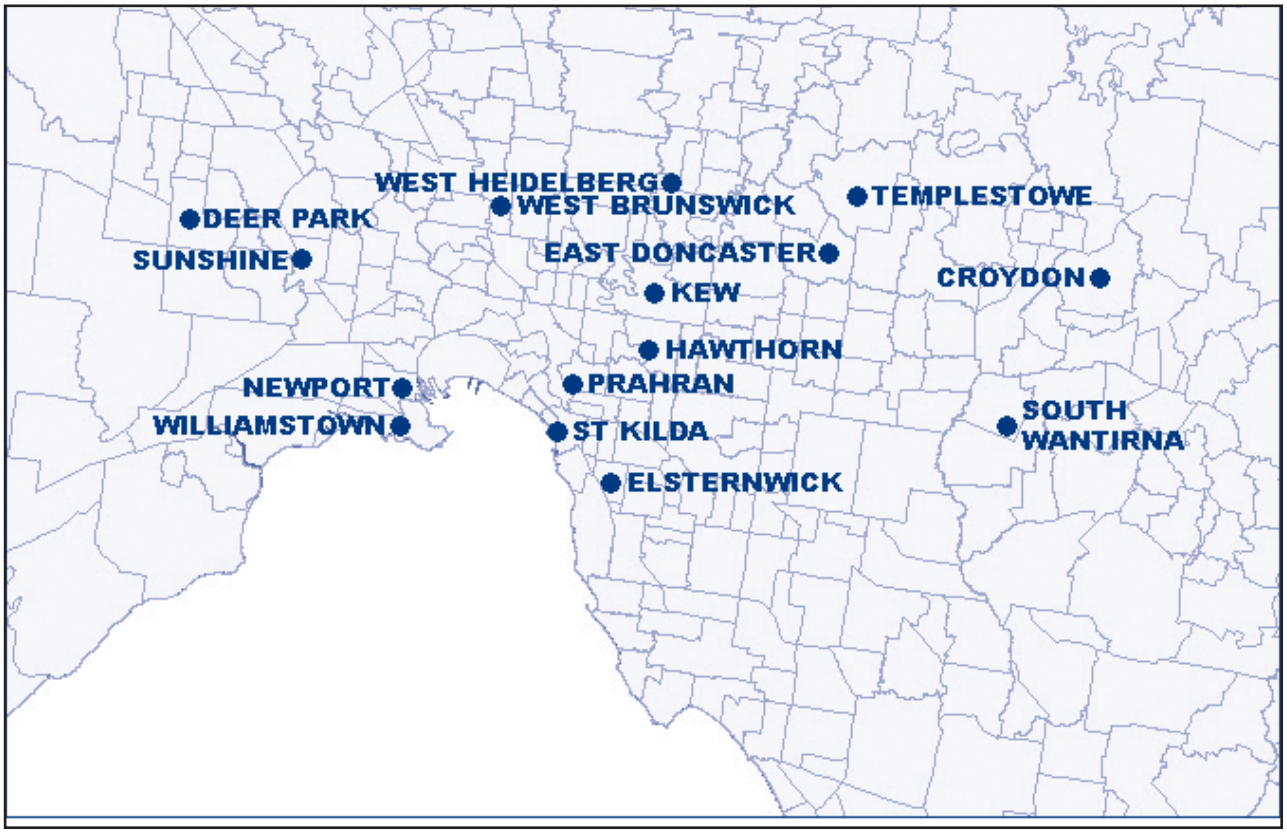


Figure 1b. Distribution of sentinel surveillance sites in rural Victoria

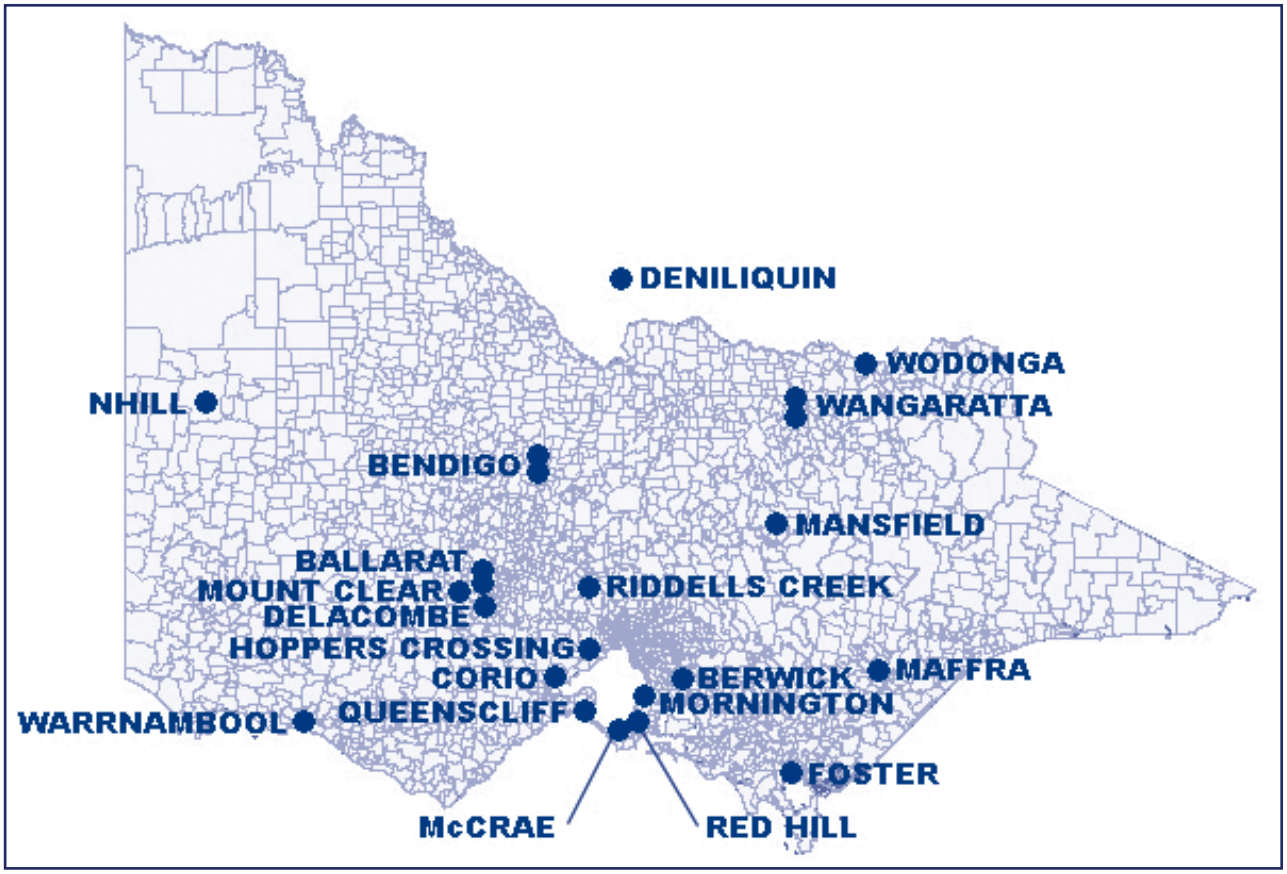
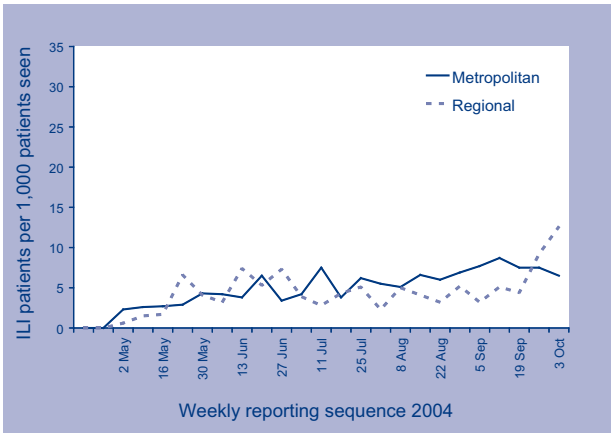
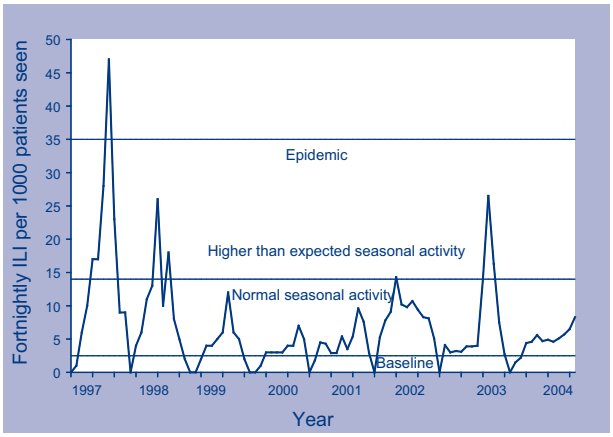


Figure 2. Weekly reporting of ILI from metropolitan and rural sentinel sites



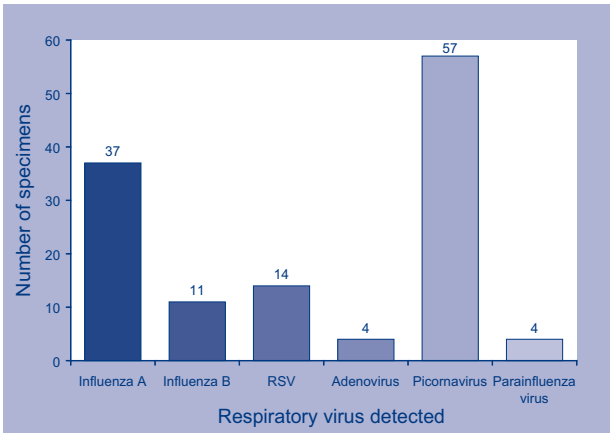
In comparison to previous years, influenza activity in 2004 was low with no distinct peak (Figure 3). Activity was at baseline from week 18 to 20 in 2004 before rising marginally to reach a weekly consultation rate peaking at 8.5 cases per 1,000 cases, which coincides with normal seasonal activity. Surveillance was extended for an additional week (week 40) in response to continued influenza activity interstate and ongoing low-level circulation in Victoria.

Figure 3. Fortnightly consultation rates for influenza-like illness, Victoria, 1997 to 2004



A total of 283 specimens were sent to the laboratory from patients with ILI. Sixteen were inhibitory to the assay and were not included in further analysis. Of the 267 specimens remaining, influenza A was detected in 37 (13.9%) and influenza B in 11 (4.1%) specimens. Aliquots of positive influenza samples were sent to the WHO Collaborating Centre for Influenza for virus strain typing. Eighty-eight per cent of influenza A samples were A/Fujian/411/2002-like and 12 per cent were A/Wellington/1/2004. All influenza B samples tested were B/Shanghai/361/2002-like. Of the specimens received from sentinel surveillance 79 (30%) were positive for other respiratory viruses. The most common viruses detected were picornavirus and RSV (Figure 4).

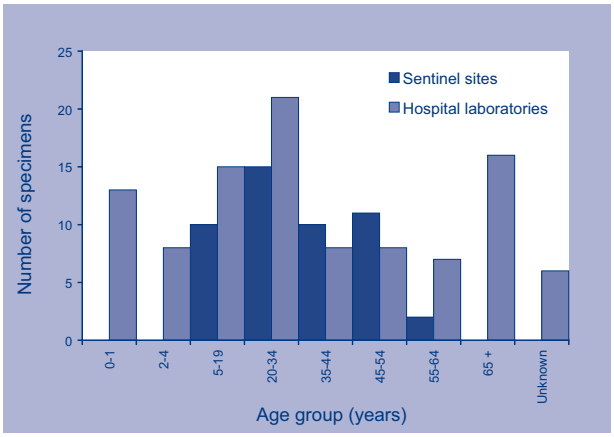
Figure 4. Polymerase chain reaction results of sentinel surveillance of influenza-like illness, 2004



Laboratory surveillance of hospitalised patients

During the 2004 surveillance season 102 cases of laboratory-confirmed influenza were reported from the three hospital laboratories and VIDRL diagnostic specimens. Influenza A was identified in 66 (65%) and influenza B in 36 (35%) patients. Sentinel surveillance data and hospital data demonstrated differences in the age groups of positive cases detected (Figure 5). Children and the elderly were more likely to be identified from hospital-based surveillance whereas young adults, not requiring hospitalisation, were more likely to be identified through sentinel surveillance as through hospital-based surveillance.

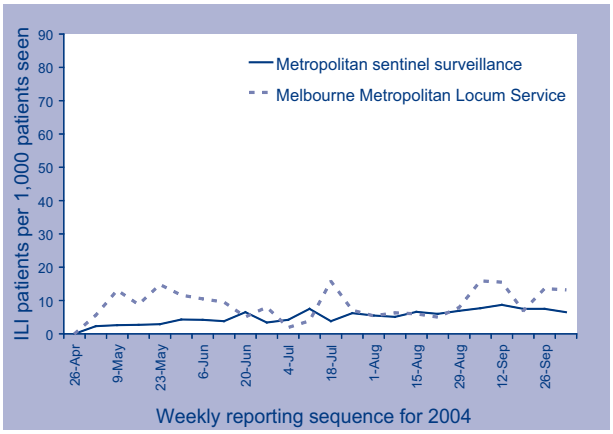
Figure 5. Age range of influenza detection from sentinel surveillance and hospital-based laboratories



Melbourne Medical Locum Service

During the surveillance period from week 18 to 40, MMLS recorded a total of 23,470 consultations of which 216 (1%) were for an ILI. The average rate of ILI per 1,000 consultations was 9.2 cases. The pattern of ILI was similar between metropolitan sentinel GP surveillance and MMLS data (Figure 6). MMLS surveillance continued all year and demonstrated a decline in ILI to 2.3 ILI per 1,000 consultations by week 45.

Figure 6. Comparison of metropolitan sentinel surveillance and Melbourne Metropolitan Locum Service surveillance, 2004



Influenza among patients in the paediatric Emergency Department

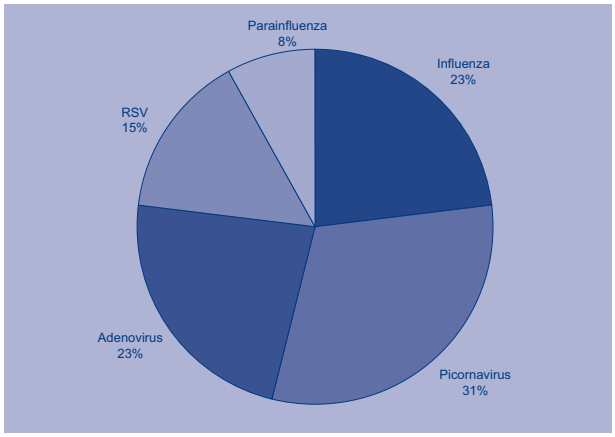
A total of 21 specimens were collected from children aged 0–12 years presenting with respiratory symptoms to the RCH ED. Influenza was detected from 3/21 (14%) specimens; one Influenza A and two influenza B. An alternative respiratory virus was detected in an additional 10 (48%) specimens, giving a total virus detection rate of 62 per cent (Figure 7). No patients were positive for human metapneumovirus or any coronaviruses. Cost of illness was not estimated for the few patients in the pilot study.

Discussion

Influenza activity during the traditional influenza season from May to October 2004 was low with no clearly defined peak. The predominant circulating influenza was sub-type A (H3N2), most of which were identified as A/Fujian/411/2002-like. This strain had circulated extensively in Victoria during the 2003 season prompting its inclusion in the 2004 vaccine. In addition, the influenza vaccine for 2004 contained A/New Caledonia/20/99(H1N1)-like virus and B/Hong Kong/330/2001-like virus.[7] However there was some vaccine mismatch with circulating strains, with the emergence of A/Wellington/1/2004 (H3N2)-like strain later in 2004 and all of the influenza B cases being due to B/Shanghai/36112002-like strains, which had not been included in the vaccine. The A/Wellington and B/Shanghai strains have both been recommended for the 2005 influenza vaccine, which will also include an A/New Caledonia/20/99 (H1N1)-like strain.[8]

The data received from MMLS reflected that of metropolitan sentinel surveillance with no seasonal peak. MMLS data included any diagnosis of influenza or flu and, although not consistent with the national case definition for ILI, provided timely supplementary surveillance. Data could be accessed daily from a password protected section of the MMLS website, providing up-to-date ILI figures, whereas sentinel surveillance data were obtained weekly for the previous week. MMLS data are currently used as a supplementary source of surveillance data but have the potential to replace sentinel general practice surveillance, given the consistency of retrospective and prospective comparisons.[9] However, sentinel general practice patients will continue to provide a sample of circulating influenza strains, which contribute to deliberations about annual vaccine composition.

Figure 7. The distribution of respiratory viruses detected in the samples collected from the Emergency Department, Royal Children's Hospital



To comply with the ethics committee informed consent requirements in the pilot study at RCH, a three-page plain language statement and two-page signed consent form had to be completed by each patient or patient's guardian. Several families, when faced with these forms, declined to participate. The ED nursing staff found the length of time needed to discuss the content of the forms and obtain consent inappropriate to manage within their routine duties.

Moreover it was thought that the difficulties associated with these forms were likely to be exacerbated during a season of high influenza activity. An alternative approach to continue this study is being developed.

It is important to gather Australian data on influenza in children, given that there is ecological evidence from Japan that vaccinating children against influenza protects the wider community[10] and that United States of America authorities have recently recommended annual influenza vaccination of children aged 6–23 months.[11] It is possible to gather such data in the context of ongoing routine influenza surveillance.

Acknowledgements

The sentinel influenza surveillance program would not be possible without the ongoing support of the participating general practitioners and their practice staff. Staff of the Viral Identification Laboratory at VIDRL performed all PCR testing. We thank the three metropolitan hospitals for their cooperation and contribution of laboratory diagnosed influenza data and the WHO Collaborating Centre for provision of influenza strain identification. Our thanks also go to the Melbourne Medical Locum Service for sharing their data with us. We also acknowledge the private pathology providers who facilitate transport of respiratory specimens from rural and regional general practices. The influenza surveillance program is partially supported by the Department of Human Services, Victoria. The study of influenza in patients in the paediatric Emergency Department was made possible through a research grant funded by the Medicines Australian Vaccine Industry Group and the support of RCH ED staff.

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A preventable illness? Purulent pericarditis due to *Streptococcus pneumoniae* complicated by haemolytic uraemic syndrome in an infant

Joanna HP Yong, Bob K Fonseca, Emma J Best, Tamsin Holland, Maria E Craig

Abstract

A previously healthy eight-month-old infant presented with shortness of breath and pyrexia. He was found to have purulent pericarditis due to *Streptococcus pneumoniae,* complicated by acute renal failure due to haemolytic uraemic syndrome. He received peritoneal dialysis and recovered with normalisation of renal function. This case highlights two important complications of pneumococcal infection in one individual and illustrates the need for rapid diagnosis and treatment of invasive pneumococcal disease. It is anticipated that introduction of the conjugate pneumococcal vaccination to the Australian Standard Vaccination Schedule from 2005 will reduce the incidence of pneumococcal infection and its associated morbidity and mortality. *Commun Dis Intell* 2005;29:77–79.

Keywords: haemolytic uraemic syndrome; pericarditis; pneumococcal infection; Streptococcus pneumoniae

Streptococcus pneumoniae (pneumococcus, *S. pneumoniae*) colonises the oropharynx of 5 to 10 per cent of healthy adults and 20 to 40 per cent of healthy children.[1] Invasive pneumococcal disease (IPD) is defined as the isolation of *S. pneumoniae* from a normally sterile site such as blood, cerebrospinal or pleural fluid. Based on surveillance data from 2002, the incidence of IPD in Australia across all ages was 11.5 per 100,000 population with the highest incidence among children aged less than five years.[2] Children with IPD are most likely to present with bacteraemia, meningitis or pneumonia[2,3,4] and most of those aged less than five years do not have an identifiable risk factor (such as prematurity or chronic illness).[2] An unusual presentation of IPD of an infant with infective pericarditis, complicated by haemolytic uraemic syndrome (HUS), is described below. To date, the combination of pneumococcal pericarditis and HUS has not been reported in one individual.

A previously healthy eight-month-old boy of Pacific Island descent presented to the emergency department with a three day history of fever and increasing shortness of breath. Intake of formula and solids was significantly reduced. He was born at full term by normal delivery, was fully immunised according to the routine schedule and had achieved age-appropriate developmental milestones. On examination he weighed 11.6 kg (>97th centile) and was pyrexial at 38.4 degrees Celsius. He was moderately dehydrated with dry mucous membranes, and was lethargic but alert. Heart rate was 195 beats per minute, blood pressure 120/70 mmHg, he was well perfused and did not have a cardiac murmur or peripheral oedema. Respiratory rate was 75 breaths per minute, he had marked intercostal recession and chest was clear to auscultation.

Initial investigations demonstrated thrombocytopenia (platelets 40 x 10^9/l), with impaired renal function (sodium 130 mmol/L, normal range (NR) 135–145 mmol/L, potassium 4.6 mmol/L (NR 3.8–5.2 mmol/L), creatinine 62 umol/L (NR 20–50 umol/L), urea 10.3 mmol/L (NR 2.9–7.1 mmol/L)) and hyperbilirubinaemia at 78 umol/L (NR 0–15 umol/L). Proteinuria (>300 mg/dl) and haematuria were found on urinalysis. C-reactive protein was elevated at 256 mg/L (NR <3 mg/L) and creatinine kinase was normal. Chest X-ray demonstrated gross cardiomegaly and a small left pleural effusion (Figure 1). ECG demonstrated sinus tachycardia with ST elevation in V2–V6 and a large pericardial effusion with fibrin strands was seen on echocardiogram (Figure 2). Intravenous ceftriaxone (50 mg/kg/dose) was commenced empirically and the infant was transferred to the paediatric intensive care unit of a tertiary children's hospital. The pericardial effusion was drained by echocardiogram guided pericardiocentesis via sternotomy incision. Two sets of blood cultures taken on presentation grew a penicillin sensitive *S. pneumoniae* within 12 hours (subsequently found to be serotype 14). No organisms were cultured from the pericardial effusion, but histological examination

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Figure 1. Chest X-ray showing gross cardiomegaly and a small left pleural effusion

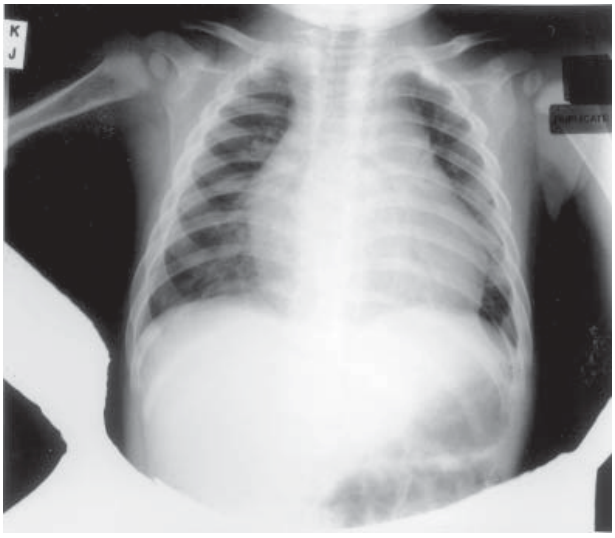
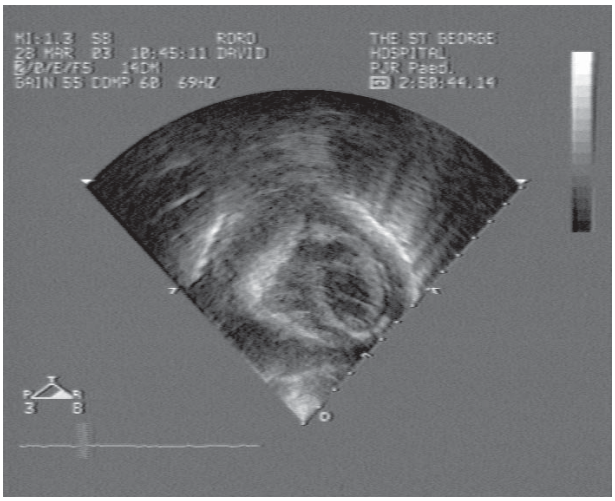


Figure 2. Echocaridiogram showing a large pericardial effusion with fibrin strands



of the pericardial biopsies contained Gram positive cocci and fibropurulent exudate. Polymerase chain reaction was negative for *Mycobacterium tuberculosis*. High dose intravenous benzylpenicillin (50 mg/kg/dose, 4 hourly) was commenced and ceftriaxone ceased.

The infant's condition deteriorated over the subsequent 12 hours. He became anuric, oedematous, hypotensive and tachycardic. Further investigations demonstrated thrombocytopenia, anaemia, elevated D-dimers and a microangiopathic blood film in association with acute renal failure. Haemoglobin and platelet count decreased to 49 g/L and 13 x $10^{9/1}$ respectively, while creatinine and urea increased to 383 umol/L and 41.8 mmol/L. Findings were consistent with a diagnosis of HUS secondary to IPD. Direct Coombs test was positive, complement and immunoglobulin levels were normal and human immunodeficiency virus 1/2 antibodies were negative. Renal ultrasound demonstrated large bilateral echogenic kidneys with no pelvicalyceal dilatation or perinephric collection.

Management consisted of blood and platelet support and peritoneal dialysis, which was continued for 12 days. The infant remained in the intensive care unit for one week, his deranged liver function tests normalised over 10 days, and he was discharged home after four weeks with a creatinine of 57 umol/L. Renal function normalised over the next two weeks. He received four weeks of intravenous benzylpenicillin in total, in view of evidence of pneumococcal pericarditis on biopsy. He also received the 7-valent pneumococcal conjugate vaccine (7vPCV) before discharge and a further dose two months later.

S. pneumoniae is now the most common bacterial pathogen causing sepsis in infants less than two years. The incidence of IPD in children aged less than two years was more than 160 per 100,000 per year in the United States of America,[5] whereas reported rates in Australia in this age group range from 96.4 per 100,000 in New South Wales[6] to 193.4 per 100,000 in the Australian Capital Territory.[4] A higher incidence has been reported in Maori and Pacific Islanders[7] and the risk IPD was more than 10-fold higher in Aboriginal children aged less than four years in Central Australia.[8]

Pneumococcal pericarditis is a rare but recognised presentation of IPD and pneumococcal infection is a rare cause of purulent pericarditis.[9,10,11] Management involves a combination of early surgical drainage due to the acute life threatening nature of the illness, along with appropriate antimicrobial therapy. Based on empirical evidence the duration of intravenous therapy is at least three to four weeks.

Non-diarrhoeal HUS is a rare but severe complication of IPD. Its pathophysiology differs from the classical form of diarrhoeal associated HUS, which is most commonly associated with *Escherichia coli* 0157. It is associated with a higher rate of mortality and morbidity in contrast to diarrhoeal HUS.[12] In a retrospective series of 12 children with IPD and HUS, pneumonia and meningitis were the most common precipitating illnesses.[12] Children were significantly younger, were more likely to require dialysis and had a longer duration of hospitalisation than those with diarrhoeal HUS. Long term follow-up was available for seven children; two progressed to end stage renal failure and five had normal renal function. Based on data from the Australian Paediatric Surveillance Unit, non diarrhoeal HUS occurred in 14/98 cases of HUS reported over a four year period, of which three were associated with pneumococcal infection.[13]

Serotype 14, identified in this case, is more likely to be associated with IPD in children.[14] The 7vPCV containing capsular polysaccharide is now an effective immunisation for children as it is immunogenic from six weeks of age. Indeed, this child received the 7vPCV despite this episode of IPD as prophylaxis towards other vaccine strains of *S. pneumoniae.* In 2000, the 7vPCV was introduced to the routine childhood vaccination schedule for infants over one year of age in the United States of America. Following its introduction the incidence of IPD due to vaccine serotypes declined by 78 per cent, and the greatest decrease was in children under two years.[15] The 7vPCV has been licensed in Australia since 2001 and has recently been included on the Australian Standard Vaccination Schedule for all children aged less than two years. Clearly, a reduction in the incidence of IPD and its associated morbidity and mortality is an important goal of this vaccine.

Pneumococcal disease remains an important public health problem in Australian children. This case illustrates the importance of rapid diagnosis and prompt treatment of suspected IPD, and emphasises the importance of recognising the serious complications of IPD. Children with IPD and severe haematological or renal abnormalities should be investigated for evidence of HUS. International evidence continues to support the efficacy of this vaccine in reducing the incidence of IPD. Surveillance measures by laboratory notification are already in place in Australia enabling monitoring of the impact of the new vaccine on the incidence of IPD due to non-vaccine serotypes.

Statement of competing interests: none identified.

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An outbreak of measles in Adelaide

James E Fielding,[1,2] on behalf of the outbreak investigation team[1]

Sporadic outbreaks of measles continue to occur throughout Australia that require considerable expenditure of time and resources to control.[1–6] We report an outbreak investigation by the Communicable Disease Control Branch (CDCB), Department of Health, South Australia in late 2003 that utilised methods and identified issues that may be relevant to future investigations of measles outbreaks.

Measles cases were defined in accordance with the *Interim Surveillance Case Definitions for the Australian National Notifiable Diseases Surveillance System*.[7] A confirmed case was a case that had laboratory definitive evidence, *or* clinical evidence and epidemiological evidence. The *Guidelines for the control of measles outbreaks in Australia* was used in the investigation of this outbreak.[8] Later in the outbreak, the CDCB provided advice to general practitioner surgeries and hospital emergency departments so that contact tracing for potential exposures in these settings could be managed by the institutions themselves.

The index case, a 22-year-old male, was notified to the CDCB on 20 September 2003 following rash onset on 17 September and positive IgM serology. During his infectious period the case worked at a supermarket, attended a concert at a hotel, visited several retail outlets and spent time in a hospital emergency department.

The index case acquired his infection from a 19-year-old female Adelaide resident who had travelled in New Zealand from 9 to 19 August 2003. On 3 September she presented to her local GP with a rash, fever and sore throat. A diagnosis of viral infection was made and a specimen taken for measles, rubella and cytomegalovirus serology at a private pathology laboratory. Measles serology was IgM equivocal and IgG negative. The laboratory recommended repeat testing and additional specimens were taken on 15 September that were IgM and IgG positive for measles. The GP notified the results on 22 September, no laboratory notification was received by the CDCB. During her infectious period, the case had worked at the same supermarket as the index case.

A further 20 cases with dates of onset between 26 September and 22 October were notified in the following four weeks (Figure 1). All cases were confirmed by both laboratory definitive evidence, and by clinical and epidemiological evidence. Four cases, both in workers and customers, resulted from exposures in supermarkets. The index case was also responsible for infecting seven others at a concert in a popular hotel, including a bartender who in turn exposed four patrons at the same venue when she became infectious two weeks later. One of the hotel patrons infected by the bartender was a hospital cleaner who worked in the labour and delivery ward at a major hospital while infectious but did not transmit the virus to any others. Additional settings where transmission occurred included a hospital emergency department and ward, a shopping centre and among family members (Figure 2).

For the 21 cases where the exposure was known, the median incubation period was 12 days (range 8 to 17 days). The median age of cases was 23 years (range 9 months to 36 years). Fifteen cases (68%) were aged between 22 and 36 years, one was aged 9 months and another two years. Two cases were hospitalised. Thirteen cases (60%) were not vaccinated and another six (27%) had documented evi-

Figure 1. Notifications of confirmed measles, Adelaide, August to October 2003, by date of onset

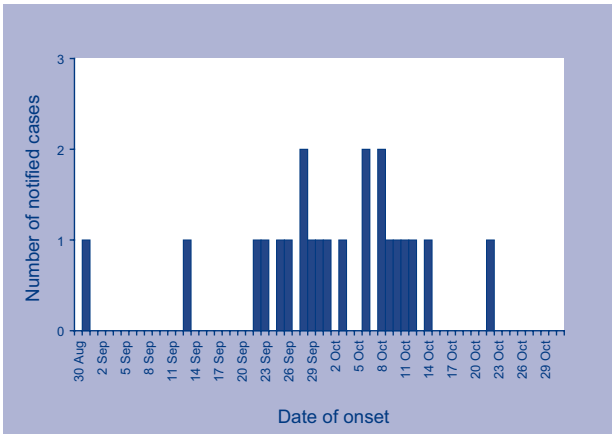

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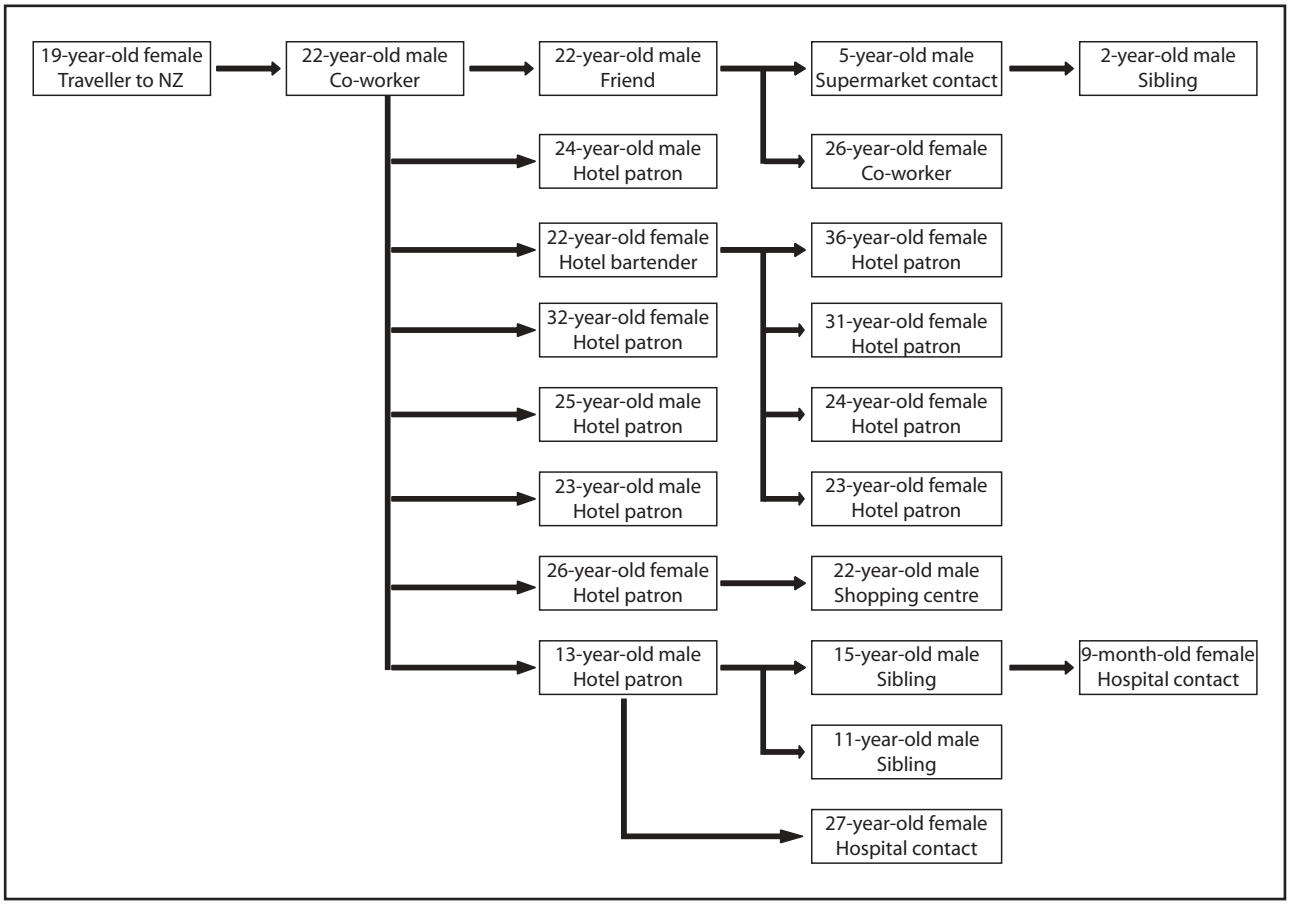
Figure 2. Schema of measles outbreak in Adelaide



dence of receipt of one dose of measles-containing vaccine. Among the seven cases born since 1982, two were conscientious objectors and the remainder were not vaccinated.

As per the national guidelines, approximately 3,060 contacts were followed up indirectly. Twenty-four workplaces or social organisations and one school distributed measles information letters. Contact tracing was done by seven GP surgeries and three hospital infection control departments. A total of 782 contacts were followed up directly by the CDCB, including all passengers of an interstate flight on which a case had travelled during her infectious period. Among the contacts followed up directly, 20 were advised to have measles vaccination and 35 to have normal human immunoglobulin (NHIG).

Five contacts (or their parent/s) who received information about measles (symptoms and appropriate isolation if symptoms developed) became cases; two transmitted measles to others. One transmitted measles to a co-worker and a customer in a supermarket, and the other infected a hospital contact as he was admitted to a ward on the same floor from which that person was being discharged.

A number of important lessons have emerged from this outbreak investigation. Firstly, management of measles cases in healthcare settings is an important aspect of measles control,[6,9] highlighted in this outbreak by two cases who acquired their infections in hospitals. Furthermore, neonates were placed at risk by a cleaner who worked during her infectious period. Ongoing vigilance in healthcare settings, particularly in hospitals, is needed to ensure that staff are fully vaccinated and suspected cases are properly managed to prevent the infection of others who are vulnerable.

The investigation identified a discrepancy between the *Australian Immunisation Handbook* (8th edition) and the national guidelines on recommendation of NHIG. The handbook states that NHIG is not required if the person has received one or more measles-containing vaccines, whereas the guidelines say those who are susceptible (which includes individuals over four years of age and born since 1966 with documented evidence of only one measles vaccination) should be advised to get NHIG. The CDCB recommended NHIG as specified by the guidelines.

Delegation of contract tracing for cases of measles in GP surgeries and hospitals to the institutions themselves was an effective way of easing the burden on investigators and engaging others in the public health response. Strict adherence to the national guidelines, especially contact tracing, during outbreaks is time consuming and frequently compromises other routine disease surveillance and investigation activities. It is also difficult to address all control measures in the guidelines for every case when a large number of cases are being followed up.

The investigation also prompted debate about the effectiveness of contact tracing for potential measles exposures on aircraft. One study indicated that the risk of measles transmission after an exposure on an international flight was low.[10] However, the risk of transmission on each flight is likely to be different due to multiple factors including the age profile of passengers, how far from the case susceptible persons are sitting, the extent and effectiveness of air circulation and filtration systems within the cabin and the extent of sharing of restricted spaces such as toilets. National consensus on this issue is particularly important given its multi-jurisdictional nature.

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A cluster of *Salmonella* Typhimurium phage type U307 associated with a restaurant

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On 8 May 2003 the Queensland OzFoodNet epidemiologist was notified of a cluster of six cases of *Salmonella* Typhimurium phage type U307. A further nine cases were identified the following day. *S.* Typhimurium phage type U307 is rare in Australia. Only 133 isolations from human sources have occurred since 1996 (National Enteric Pathogens Surveillance Scheme data) and there has only been one recorded outbreak in Australia.[1] Hypothesis generating interviews were conducted, with three cases identified as having eaten roast pork at a particular Sunshine Coast restaurant 1-2 days prior to onset of illness, as a common exposure.

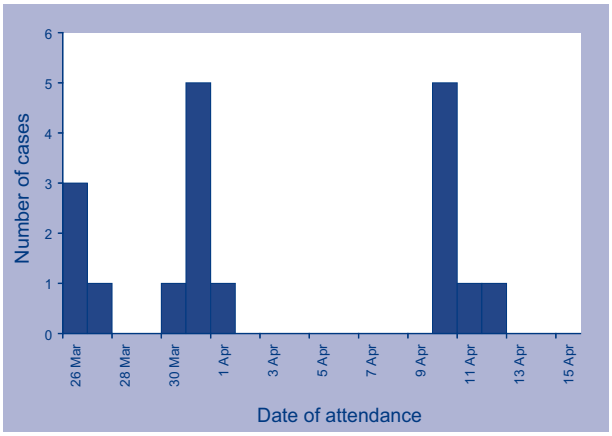
A case control study was conducted. A probable case was defined as a person who attended the Sunshine Coast restaurant between 26 March and 30 April 2003 and suffered a gastrointestinal illness within 5 days of eating at the restaurant. A gastrointestinal illness was defined as three or more loose bowel motions within a 24 hour period, with or without vomiting. A confirmed case was a probable case with a laboratory confirmed diagnosis of *S.* Typhimurium phage type U307 infection. Persons who attended the restaurant with a confirmed case were also sought for interviewing. Those who had not developed a gastrointestinal illness were recruited as controls.

The investigation identified 13 laboratory confirmed and six probable cases, These persons had dined at the restaurant between 26 March and 12 April 2003. The date of onset of symptoms in cases occurred over a 20 day period and followed three time-clusters of restaurant visits over a 16 day period (Figure). Sixteen cases were female (84%) and the median age was 45 years (range 2-75 years). Common symptoms included diarrhoea (100%), abdominal cramps (83%), fever (75%), fatigue (76%) and nausea (76%).

A total of 12 cases (8 confirmed and 4 probable) and 10 controls were recruited for the study. Both roast pork (OR=12.0, 95% CI=1.6-91.1, P=0.03) and apple sauce (OR=18.0, 95% CI=1.7-196.3, P=0.01) were significantly associated with illness. Consumption of these items was reported by 75 per cent (roast pork) and 67 per cent (apple sauce) of cases. No diners consumed apple sauce without roast pork. Cases who consumed roast pork all dined at the restaurant between 26 March and 10 April. In comparison, cases who consumed meals other than roast pork and apple sauce all dined at the restaurant between 10 and 12 April 2003.

Seven environmental swabs and 20 food samples were collected on 12 May 2003. These were all negative for *Salmonella* sp. Ninety-two per cent of staff submitted stool specimens for testing and these were also all negative for *Salmonella* sp.

Figure. Cases of gastrointestinal illness associated with dining at the restaurant, between 26 March and 15 April 2003, by date of attendance



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An additional inspection of the restaurant was conducted on 21 May 2003. Problems documented by the Environmental Health Officer included lack of temperature monitoring facilities in place for food during receipt, storage and processing and the absence of a food safety plan.

This study has identified a significant association between illness and the consumption of roast pork or apple sauce. This was unable to be supported by microbiological evidence; however, roast pork has been implicated as the vehicle for infection in a number of *S*. Typhimurium outbreaks.[2,3,4]

No food handling problems during processing were observed during the environmental inspection of the implicated premises; however, evidence from the outbreak suggests that cross contamination during food preparation also contributed to the outbreak. This is supported by the following findings:

- The restaurant reported a high turnover of both pork and apple sauce, and repeated contamination of these products at the supplier level seems unlikely.
- Those cases that did not report consumption of either roast pork or apple sauce, attended the restaurant towards the end of the outbreak.
- The head chef and several other food handling staff failed a food handling course several months after the outbreak.

This investigation highlights the challenge faced by Environmental Health Officers to systematically scrutinize food handling practices as part of the investigation of a potential foodborne outbreak. Identification of problems during food processing is more likely to occur during observation of staff at peak times, despite the inconvenience for investigators and the premises. Compliance with the recently developed national Food Safety Standard of Practice[5] will assist investigators to undertake inspections in a rigorous and systematic manner.

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OzFoodNet: enhancing foodborne disease surveillance across Australia: Quarterly report, October to December 2004

Introduction

The Australian Government established the OzFoodNet network in 2000 to collaborate nationally to investigate foodborne disease. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease. This quarterly report documents investigations occurring in Australia into outbreaks of gastrointestinal illness and disease potentially related to food.

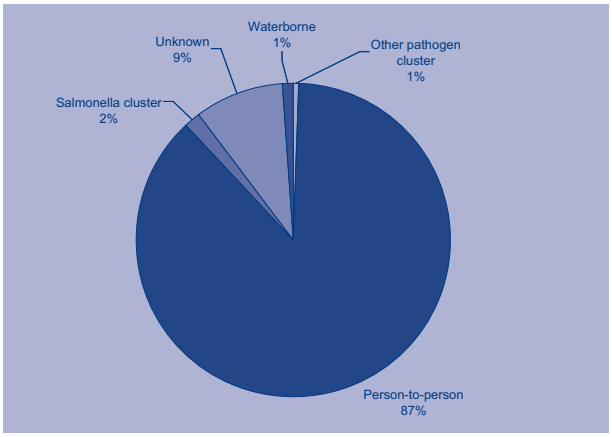
This report summarises the occurrence of foodborne disease outbreaks and cluster investigations between October and December 2004. Data were received from OzFoodNet epidemiologists in all Australian states and territories and a sentinel site in the Hunter region of New South Wales. The data in this report are provisional and subject to change, as the results of outbreak investigations can take months to finalise. We would like to thank the investigators in the public health units and state and territory departments of health as well as public health laboratories and local government environmental health officers who collected data used in this report.

Foodborne disease outbreaks

During the fourth quarter of 2004, OzFoodNet sites reported 192 outbreaks of foodborne or enteric illness. As usual, the vast majority of these (76%, n=145) resulted from person-to-person spread of infection. The Figure shows the proportion of the different modes of transmission. In total, 4,467 people were affected with 71 people hospitalised. Three deaths were reported. All three of the deaths occurred in aged care facilities during outbreaks caused by unknown pathogens. During the quarter, there were three outbreaks of cryptosporidiosis linked to swimming pools in Queensland (2) and South Australia (1). Queensland also reported a cluster of *Salmonella* Litchfield after two children at a scout camp swam in a pool filled from a nearby dam.

There were 25 outbreaks of illness where food was suspected or proven to be the primary mode of transmission (Table). This compares with 24, 37 and 25 outbreaks in the first, second and third quarters of 2004, respectively. *Salmonella* Typhimurium was the causative agent for five outbreaks, while norovirus was responsible for three outbreaks and *Campylobacter* for two outbreaks. Of the remaining outbreaks, one each was caused by *Clostridium perfringens*, Ciguatera toxin, *Salmonella* Chester and scombroid poisoning. An aetiological agent was not identified for 14 of the outbreaks.

Figure. Mode of transmission for outbreaks of gastrointestinal illness reported by OzFoodNet sites, October to December 2004



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All data are reported using the date the report was received by the health agency.

Table. Outbreaks of foodborne disease reported by OzFoodNet sites,* October to December 2004

State	Setting category	Agent responsible	Number exposed	Number affected	Evidence	Responsible vehicles
NSW	Other	Unknown	1070	33	D	Unknown
	Restaurant	Unknown	20	7	A	Chicken sandwiches
	Other	Unknown	48	12	D	Unknown
	Restaurant	Unknown	17	12	D	Unknown
	Commercial caterer	Unknown	74	42	D	Unknown
	Restaurant	*Salmonella* Typhimurium 135	6	3	D	Crab
	Restaurant	Unknown	105	13	D	Unknown
	Private residence	Unknown	26	5	D	Unknown
	Restaurant	*Salmonella* Chester	3	3	D	Unknown
	Restaurant	Unknown	180	7	D	Unknown
	Takeaway	Unknown	7	6	D	Unknown
	Restaurant	*Campylobacter jejuni*	34	21	D	Unknown
Qld	Commercial Caterer	Unknown	94	8	D	Unknown
	Private Residence	Norovirus	17	13	D	Unknown
SA	Institution	Norovirus II	31	9	D	Unknown
	Aged care facility	*Salmonella* Typhimurium 126var	154	17	D	Unknown
	Community	*Salmonella* Typhimurium 8	Unknown	9	D	Unknown
	Restaurant	Norovirus II	96	36	D	Unknown
Vic	Commercial caterer	Unknown	72	33	D	Unknown
	Commercial caterer	Suspected scombroid poisoning	12	9	D	Rudderfish
	Commercial caterer	Unknown	Unknown	7	D	Redfin
	Commercial caterer	Unknown	445	20	A	Chicken vol-au-vents
	Commercial caterer	*Salmonella* Typhimurium 170	112	48	D	Unknown
	Self catered function	Unknown	160	75	D	Unknown
	Aged care facility	*Campylobacter*	>40	7	D	Suspected waterborne

* No foodborne outbreaks reported from Tasmania, Western Australia, the Northern Territory or the Australian Capital Territory.

D Descriptive evidence implicating the suspected vehicle or suggesting foodborne transmission.

A Analytical epidemiological association between illness and one or more foods.

M Microbiological confirmation of agent in the suspect vehicle and cases.

Eight of the outbreaks were associated with meals served in restaurants and another seven with commercial caterers. Two outbreaks were associated with food served in private residences and two with aged care facilities. Six of the outbreaks occurred in October, six in November and 12 in December. One of the outbreaks occurred in September, but was not reported in the previous quarterly report.

To investigate these outbreaks, sites conducted 12 cohort studies and two case control studies. For 10 outbreaks, only descriptive data were collected and in one outbreak no individual case data was collected. In two outbreaks, investigators obtained analytical epidemiological evidence linking a food vehicle to illness. For the remaining outbreaks, investigators obtained descriptive epidemiological evidence implicating the food vehicle or suggesting foodborne transmission.

In New South Wales, there were 12 outbreaks of foodborne illness. One small outbreak affecting two people infected with *Salmonella* Typhimurium 135 was suspected to be caused by salt and pepper crab served at a seafood restaurant. Undercooked chicken is believed to have been the cause of an outbreak of *Campylobacter jejuni* which affected six people after eating at a restaurant. *Salmonella* Chester was also responsible for an outbreak following a meal a restaurant that affected six people. For the other nine outbreaks, no causative agent was identified. Four of these occurred in restaurants and two in private residences and one, which affected 42 people, involved a commercial caterer. In one outbreak, illness was associated with the consumption of cold chicken sandwiches. No food vehicle was identified in the other outbreaks.

Victoria reported seven outbreaks of foodborne disease. One outbreak of *Salmonella* Typhimurium 170 at a dinner catered by a commercial caterer, affected 48 people with four admitted to hospital. There were two outbreaks associated with the consumption of fish provided by commercial caterers. In the first outbreak, nine people were ill with suspected scombroid poisoning after eating rudderfish. Some patients also reported oily stools, which are characteristic of indigestible wax in the flesh of these fish.[1] In the second outbreak seven people were ill and three hospitalised with an unidentified illness, after eating redfin caught by amateur fishermen. Patients affected by this outbreak exhibited a mixture of gastrointestinal and neurological symptoms, but no aetiological agent was identified. A toxin was suspected as the cause and public warnings not to eat the fish were issued.[2]

Seven cases were associated with an outbreak of campylobacteriosis in an aged care facility. The outbreak was possibly waterborne since the facility used untreated drinking water. There was an outbreak of illness associated with a commercial caterer that affected 33 people, four of whom were hospitalised. In another outbreak involving a commercial caterer, illness among 20 people was epidemiologically associated with eating chicken vol au vents. The median incubation period and the pattern of illness suggested *Clostridium perfringens* infection and this organism was isolated from faecal samples from three of the cases.

In Queensland, there were two outbreaks of foodborne illness investigated during the quarter. Thirteen people were ill and one hospitalised with norovirus following a function at a private residence. Transmission is believed to have been due to contamination by an ill foodhandler. The remaining outbreak involved eight people who became ill following a wedding reception catered by a commercial caterer but no food vehicle or pathogen was identified.

A total of four outbreaks were investigated in South Australia during the quarter. Two of these involved different phage types of *Salmonella* Typhimurium. Two of the outbreaks were caused by *S*. Typhimurium 126var, one in an aged care facility affected 17 residents and is believed to have potentially involved multiple modes of transmission. There were three further cases of this infection in the community close to the aged care facility. No source was identified for this outbreak. The second outbreak was caused by *S.* Typhimurium 8 and affected eight people of mostly Italian and Greek ethnicity, although a food vehicle was not identified. The remaining two outbreaks were caused by norovirus, one in an institution where nine people were infected and the other in a restaurant. Thirty-six people became ill in the restaurant outbreak, where it was thought that contamination of food may have been caused by an ill staff member.

Comments

During the quarter there was a high number of outbreaks where no food vehicle was implicated, despite over half of the investigations involving analytical studies. In this quarter, there was an outbreak of *S*. Typhimurium 126 var in South Australia. *S.* Typhimurium 126 outbreaks have previously been associated with poultry and eggs.[3] The *S.* Typhimurium 126var is the same as the *S.* Typhimurium 126 var4, which was responsible for an outbreak in Victoria recently (personal communication, Barry Combs, South Australia, February 2005).

The outbreak of histamine poisoning occurring following a meal of rudderfish highlights ongoing concerns about this fish.[1,4] Histamine poisoning occurs when histamine compounds build up in the fish flesh after it is poorly handled during catching and processing. Symptoms may include headache, dizziness, numbness of the tongue, flushing, vomiting, diarrhoea and shortness of breath. Rudderfish is often an incorrect name for escolar which has a high concentration of indigestible wax esters in the flesh that has resulted in outbreaks where people consuming the fish have experienced profuse oily stools. In the outbreak of histamine poisoning there was a mixture of symptoms of histamine poisoning and oily stool, which have been observed by other investigators.[5] Of more concern is the misnaming of this fish, which has resulted in its continued use in catering and restaurant settings.[1]

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A Report from the Communicable Diseases Network Australia October – December 2004

The Communicable Diseases Network Australia (CDNA) consists of communicable disease authorities from various Australian Government agencies and state and territory health authorities, in addition to expert bodies and individuals in the specific areas of communicable disease epidemiology, clinical management, disease control and laboratory diagnosis. The CDNA provides national public health leadership and co-ordination on communicable disease surveillance, prevention and control, and offers strategic advice to governments and other key bodies on public health actions to minimise the impact of communicable diseases in Australia and the region.

Summary of major CDNA activities for the period October to December 2004

During this quarter, CDNA identified several projects/areas to be addressed including:

- consideration and endorsement of the National HIV/AIDS and STI Strategy 2005 – 2008 and the National Hepatitis C Strategy 2005 – 2008;
- advising the Australian Technical Advisory Group on Immunisation on Japanese encephalitis vaccination for travellers to Papua New Guinea;
- responding to the high incidence of an unidentified desquamating rash in methadone users;
- consideration of the implications of recommendations made in the *Improving Indigenous Identification in Communicable Disease Systems* report; and
- providing input to the Australian Government's response to public health issues related to the Asian Tsunami.

National HIV/AIDS and STI Strategy 2005 – 2008 and National Hepatitis C Strategy 2005 – 2008

The Intergovernmental Committee on AIDS, Hepatitis and Related Diseases (IGCAHRD) submitted the draft National HIV/AIDS and STI Strategy 2005 – 2008 and the draft National Hepatitis C Strategy

2005 – 2008 to CDNA for endorsement. These strategies form the overarching framework and direction for policy and program design and implementation in Australia's response to these infections and they are scheduled to take effect from 1 July 2005.

The CDNA and Public Health Laboratory Network (a sub-committee of CDNA), offered comments relating to:

- laboratory testing;
- laboratory policy and quality assurance mechanisms;
- drug access issues; and
- implementation issues.

Advice on Japanese encephalitis vaccination for travellers to Papua New Guinea

The Australian Technical Advisory Group on Immunisation (ATAGI) sought CDNA advice in relation to the recommendations for vaccination against Japanese encephalitis virus for Australians travelling to Papua New Guinea for a month or more, especially in the wet season. CDNA members resolved to accept the ATAGI recommendation to amend the *Australian Immunisation Handbook* 8th edition to recommend Japanese encephalitis virus vaccination to such travellers.

Response to the unidentified desquamating rash in methadone users

In October 2004, a desquamating rash was identified in intravenous drug users receiving methadone. By November 2004, 421 cases had been reported, mostly in western Sydney. Due to a lack of laboratory evidence, a recall of suspect batches of methadone was rejected by the Therapeutic Goods Administration and the manufacturer. At this stage, as an interim precautionary measure CDNA (with agreement from the Commonwealth Chief Medical Officer) advised all states and territories to withdraw and quarantine suspect batches of methadone. CDNA is currently awaiting a final report on the epidemiological investigation conducted by the NSW Department of Health, before advising states and territories on the destruction of quarantined batches of methadone.

Response to the Improving Indigenous Identification in Communicable Disease Systems Report

The *Improving Indigenous Identification in Communicable Disease Systems Report* is the result of over four years collaboration between the Australian Government Department of Health and Ageing (DoHA), the Improving Indigenous Identification Communicable Disease Reporting Project Steering Committee and various stakeholders. This report will inform policy relating to Indigenous health and its recommendations will be implemented over the next four to six years. A CDNA working group was established in December 2004 to develop a response to the report's recommendations by mid to late 2005.

Response to the Asian Tsunami

In response to the Asian Tsunami on 26 December 2004, the CDNA held two emergency teleconferences to discuss public health aspects of the Australian Government response, through providing input to the Australian Health Disasters Management Policy Committee directly and representation on its Public Health sub-committee. The CDNA Tsunami Protocols Working Group was formed to develop fact sheets to provide information for relief workers travelling to and returning from tsunami affected areas. These were posted on the DoHA website in January 2005.

Surveillance systems reported in *Communicable Diseases Intelligence*, 2005

This article describes the surveillance schemes that are routinely reported on in *Communicable Diseases Intelligence* (*CDI*).

In Australia, communicable diseases surveillance systems exist at national, state and local levels. State and local surveillance systems are crucial to the timely and effective detection and management of outbreaks and in assisting in the effective implementation of national policies. The national surveillance system combines some of the data collected from state and territory-based systems to provide an overview at a national level. Specific functions of the national surveillance system include: detection and management of outbreaks affecting more than one jurisdiction; monitoring of the need for and impact of national control programs; guidance of national policy development and resource allocation; and description of the epidemiology of rare diseases for which there are only a few notifications in each jurisdiction. National surveillance also assists in quarantine activities and facilitates international collaborations such as reporting to the World Health Organization.

Surveillance has been defined by the World Health Organization as the 'continuing scrutiny of all aspects of the occurrence and spread of disease that are pertinent to effective control'. It is characterised by 'methods distinguished by their practicability, uniformity, and frequently by their rapidity, rather than complete accuracy.'[1] Although some surveillance schemes aim for complete case ascertainment, others include only a proportion of all cases of the conditions under surveillance, and these samples are subject to systematic and other biases. Results generated from surveillance schemes must be interpreted with caution, particularly when comparing results between schemes, between different geographical areas or jurisdictions and over time. Surveillance data may also differ from data on communicable diseases gathered in other settings.

The major features of the surveillance schemes for which *CDI* publishes regular reports are described below.

Other surveillance schemes for which *CDI* publishes annual reports include tuberculosis notifications (*Commun Dis Intell* 2004;28:464–473), the Australian Mycobacterium Reference Laboratory Network (*Commun Dis Intell* 2004;28:474–480), invasive pneumococcal notifications (*Commun Dis Intell* 2004;28:441–454) and laboratory surveillance (*Commun Dis Intell* 2004;28:455–464), and the Australian Rotavirus Surveillance Program (*Commun Dis Intell* 2004;28:481–484).

National Notifiable Diseases Surveillance System

National compilations of notifiable diseases have been published intermittently in a number of publications since 1917.[2] The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the Communicable Diseases Network Australia (CDNA).

The system coordinates the national surveillance of more than 60 communicable diseases or disease groups endorsed by the CDNA. Under this scheme, notifications are made from doctors and laboratories to state or territory health authorities under the provisions of the public health legislation in their jurisdiction. Computerised, de-identified unit records of notifications are supplied to the Australian Government Department of Health and Ageing for collation, analysis and reporting in *CDI*.

Data provided for each notification include a unique record reference number, state or territory, disease code, date of onset, date of notification to the relevant health authority, sex, age, Indigenous status and postcode of residence. Additional data now being collected includes infecting organism and subtype, the diagnosis method, full details of vaccination where appropriate, resident location as defined in the National Localities Index, dates of onset, specimen collection, notification and date when notification was received by health authorities, indigenous status defined as per the Australian Bureau of Statistic's format, outbreak reference number, how the case was found, whether the case was confirmed, and whether the case was imported from overseas.

Aggregated data are presented on the *Communicable Diseases Australia* Internet site every fortnight (www.health.gov.au/cda). Data are published in *CDI* every quarter and in an annual report. The reports include numbers of notifications for each disease by state or territory, and totals for Australia for the current period, the year to date, and for the corresponding period of the previous year. The national total for each disease is compared with the average number of notifications over the previous five years in the same period. A commentary on the notification data

is included with the tables in each issue of *CDI* and graphs are used to illustrate important aspects of the data.

HIV infection and AIDS notifications are not included in this section of *CDI*. Surveillance for these conditions is conducted separately by the National Centre for HIV Epidemiology and Clinical Research and is reported in the HIV and AIDS surveillance reports (see below).

Australian Sentinel Practice Research Network

The Royal Australian College of General Practitioners and the Department of General Practice at the University of Adelaide operate the Australian Sentinel Practice Research Network (ASPREN). ASPREN is a national network of general practitioners who report presentations of defined medical conditions each week. The aim of ASPREN is to provide an indicator of the burden of disease in the primary health care setting and to detect trends in consultation rates.

There are currently about 40 general practitioners participating in the network from most states. Seventy-five per cent of these are in metropolitan areas and the remainder are rural. Between 3,000 and 4,000 consultations are recorded each week.

The list of conditions is reviewed annually by the ASPREN Director and an annual report is published. In 2005, six conditions are being monitored; four are related to communicable disease issues. These include influenza, gastroenteritis, varicella and shingles. Data for communicable diseases are published in *CDI* every quarter. Data are presented in graphic format as the rate of reporting per 1,000 consultations per week. The conditions are defined as follows:

Influenza

There are two definitions for influenza in 2005. A patient may be coded once or twice depending on their symptoms. The definition for influenza 1 will include more individuals.

Influenza 1

Must have the following: cough, fatigue and fever. (Note there is no time frame to these symptoms).

Influenza 2

(a) Viral culture or serological evidence of influenza virus infection; or

(b) influenza epidemic, plus four of the criteria in (c); or

(c) six of the following:

1. sudden onset (within 12 hours);
2. cough;
3. rigors or chills;
4. fever;
5. prostration and weakness;
6. myalgia, widespread aches and pains;
7. no significant respiratory physical signs other than redness of nasal mucous membrane and throat;
8. influenza in close contacts.

Gastroenteritis

Intestinal disease – presumed or proven to be infective in origin.

Varicella/chickenpox

Any consultation at which varicella/chickenpox is diagnosed on clinical or other grounds.

Shingles

Any consultation at which shingles is diagnosed on clinical or other grounds.

HIV and AIDS surveillance

National surveillance for HIV and AIDS is coordinated by the National Centre in HIV Epidemiology and Clinical Research (NCHECR), in collaboration with state and territory health authorities, the Australian Government Department of Health and Ageing, the Australian Institute of Health and Welfare and other collaborating networks in surveillance for HIV/AIDS.

Cases of HIV infection are notified to the National HIV Database on the first occasion of diagnosis in Australia, either by the diagnosing laboratory (Australian Capital Territory and Tasmania), by doctor notification (Western Australia) or by a combination of laboratory and doctor sources (New South Wales, Northern Territory, Queensland, South Australia and Victoria). 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.

Currently, two tables presenting the number of new diagnoses of HIV infection, AIDS and deaths following AIDS are published in each issue of *CDI*. The tabulations are based on data available three

months after the end of the reporting period, to allow for reporting delay and to incorporate newly available information.

Each year from 1997, the NCHECR has published the *HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia Annual Surveillance Report*. The annual surveillance report, available from http://www.med.unsw.edu.au/nchecr/, provides a comprehensive analysis and interpretation of surveillance data on HIV/AIDS, viral hepatitis and sexually transmissible infections in Australia.

National Influenza Surveillance Scheme

Influenza surveillance in Australia is based on several schemes collecting a range of data that can be used to measure influenza activity.

- Since 2001, laboratory-confirmed influenza has been a notifiable disease in all Australian states and territories (except the Australian Capital Territory and South Australia) and reported in the National Notifiable Diseases Surveillance System (see above).
- In 2005, five sentinel general practitioner schemes contribute reports of influenza-like illness: the Australian Sentinel Practice Research Network, the Tropical Influenza Surveillance from the Northern Territory, the New South Wales Sentinel General Practice Scheme, the Victorian Sentinel General Practice Scheme and Western Australian sentinel general practices.
- The Virology and Serology Laboratory Reporting Scheme laboratory reports of influenza diagnoses including virus type.

The results of each of the schemes are published together fortnightly throughout the year on the *Communicable Diseases Australia* Website as the National Influenza Surveillance Scheme.

Annual reports on influenza in Australia are published in *CDI* each year (*Commun Dis Intell* 2004; 28:160–168). These reports include the above data as well as absenteeism data from a major national employer, hospitalisation and mortality data and influenza typing data from the WHO Collaborating Centre for Influenza Reference and Research.

Sentinel Chicken Surveillance Program

The Sentinel Chicken Surveillance Program is used to provide an early warning of increased flavivirus activity in Australia. The main viruses of concern are Murray Valley encephalitis (MVEV) and Kunjin viruses. MVEV causes the disease Murray Valley encephalitis (formerly known as Australian encephalitis), a potentially fatal disease in humans. Encephalitis is less frequent in cases of Kunjin virus infection and these encephalitis cases have a lower rate of severe sequelae.

These viruses are enzootic in parts of the north-east Kimberley region of Western Australia and the Top End of the Northern Territory but are epizootic in other areas of the Kimberley, Pilbara, Gascoyne Murchison and Mid-west regions of Western Australia, in north Queensland and in Central Australia. MVEV is also responsible for occasional epidemics of encephalitis in eastern Australia. The most recent was in 1974 when there were 13 fatalities and cases were reported from all mainland states. Since then, 72 clinical cases of MVEV have been reported, 63 from the north of Australia and nine from Central Australia. Since 1974 there have been 20 cases of Kunjin virus reported.

Since 1974, a number of sentinel chicken flocks have been established in Australia to provide an early warning of increased MVEV activity. These programs are supported by individual state health departments. Each State has a contingency plan which will be implemented if one or more chickens in a flock seroconverts to MVEV.

Currently, 30 flocks are maintained in the north of Western Australia, nine in the Northern Territory, seven in New South Wales and 10 in Victoria. There are no flocks in Northern Queensland in 2004–05. The flocks in Western Australia and the Northern Territory are tested all year round but those in New South Wales and Victoria are tested only in the summer months, during the main MVEV risk season. Results will be posted on the National Arbovirus Surveillance Website by state representatives. A yearly summary is presented in *CDI*.

Australian Gonococcal Surveillance Programme

The Australian Gonococcal Surveillance Programme (AGSP) is a continuing program to monitor antimicrobial resistance in *Neisseria gonorrhoeae* and includes the reference laboratories in all states and territories. These laboratories report data on sensitivity to an agreed core group of antimicrobial agents on a quarterly basis and provide an expanded analysis as an annual report in *CDI* (*Commun Dis Intell* 2004;28:187). The antibiotics which are currently routinely surveyed are the penicillins, ceftriaxone, ciprofloxacin and spectinomycin, all of which are administered as single dose regimens. One main purpose of the AGSP is to help define standard protocols for antibiotic treatment of gonococcal infection. When *in vitro* resistance to a recommended agent is demonstrated in five per cent or more of isolates, it is usual to reconsider the inclusion of that agent in current treatment schedules. 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 resistance to the tetracyclines and intermittent surveys of azithromycin resistance are conducted. Comparability of data is achieved by means of a standardised system of MIC testing and a program-specific quality assurance process.

Australian Meningococcal Surveillance Programme

The reference laboratories of the Australian Meningococcal Surveillance Programme report data of laboratory-confirmed cases confirmed either by culture or by non-culture 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 is reported annually and quarterly in *CDI*. Data 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, including phenotyping and antibiotic susceptibility data are published annually (*Commun Dis Intell* 2004;28:194–206).

Virology and Serology Laboratory Reporting Scheme

The Virology and Serology Laboratory Reporting Scheme (LabVISE) began operating in 1977. The scheme currently comprises 17 laboratories from all states and the Australian Capital Territory. Contributors submit data fortnightly on the laboratory identification of viruses and other organisms. Each record includes mandatory data fields (laboratory, specimen collection date, a patient identifier code, and organism), and optional fields (patient's sex, date of birth or age, postcode of residence, specimen source, clinical diagnosis, and the method of diagnosis). Reports are collated, analysed and published quarterly in *CDI*. Each report includes summary tables of total numbers of organisms identified by state or territory and numbers of reports by month and participating laboratory. Monthly updates of LabVISE data are also published on the *Communicable Diseases Australia* website.

LabVISE data should be interpreted with caution. The number and type of reports received is subject to a number of biases. These include the number of participating laboratories, which has varied over time. The locations of participating laboratories also create bias, as some jurisdictions are better represented than others. Also changes in diagnostic practices, particularly the introduction of new testing methodologies, may affect laboratory reports. The ability of laboratory tests to distinguish acute from chronic or past infection must also be considered in interpretation of the data. Although changes in incidence cannot be determined with precision from this data, general trends can be observed, for example with respect to seasonality and the age-sex distribution of patients. See review in *Commun Dis Intell* 2002;26:323–374).

Australian Paediatric Surveillance Unit

The Australian Paediatric Surveillance Unit (APSU) conducts national, active surveillance of uncommon conditions of childhood, including infectious, genetic, mental health, and vaccine preventable diseases and childhood injuries. Communicable diseases currently under surveillance through the APSU include: acute flaccid paralysis; congenital cytomegalovirus infection; congenital rubella; HIV infection; AIDS and perinatal exposure to HIV; neonatal herpes simplex virus infection; and hepatitis C virus infection.

The primary objectives of the APSU are to document the number of Australian children under 15 years, newly diagnosed with specified conditions, their geographic distribution, clinical features, current management and outcome. Contributors to the APSU are clinicians known to be working in paediatrics and child health in Australia. In 2002, over 1,000 clinicians participated in the surveillance of 14 conditions through the APSU, with an overall monthly response rate of 96 per cent. APSU is a unit of the Royal Australasian College of Physicians, funded by the Department of Health and Ageing and the Faculty of Medicine, University of Sydney. For further information please contact the APSU Director, Associate Professor Elizabeth Elliott on telephone: +61 2 9845 2200, facsimile +61 2 9845 3005 or email: apsu@chw.edu.au

National Enteric Pathogens Surveillance System

Since 1980, the National Enteric Pathogens Surveillance System (NEPSS) has collected, analysed and disseminated data on human enteric bacterial infections diagnosed in Australia. These pathogens include *Salmonella, Escherichia coli, Vibrio, Yersinia, Plesiomonas, Aeromonas* and *Campylobacter*.

Communicable Diseases Intelligence NEPSS quarterly reports include only *Salmonella*. Data are based on reports to NEPSS from Australian laboratories of laboratory-confirmed human infection with *Salmonella*. *Salmonella* are identified by

reference laboratories to the level of serovar and, if applicable, phage-type. Infections apparently acquired overseas are included. Multiple isolations of a single *Salmonella* serovar/phage-type from one or more body sites during the same episode of illness are counted once only. The date of the case is the date the primary diagnostic laboratory isolated a *Salmonella* from the clinical sample.

Communicable Diseases Intelligence NEPSS 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 is operated by the Microbiological Diagnostic Unit — Public Health Laboratory, Department of Microbiology and Immunology, University of Melbourne; and is overseen by a Steering Committee of state, territory and commonwealth stakeholders. Contact NEPSS at Microbiological Diagnostic Unit, or 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.

Australian Childhood Immunisation Register

Accurate information on the immunisation status of children is needed at the community level for program management and targeted immunisation efforts. A population-based immunisation register can provide this need. The Australian Childhood Immunisation Register (ACIR) commenced operation on 1 January 1996 and is now an important component of the *Immunise Australia Program*. It is administered and operated by the Health Insurance Commission (HIC). The Register was established by transferring data on all children under the age of seven years enrolled with Medicare from the HIC to the ACIR. This constitutes a nearly complete population register, as approximately 99 per cent of children are registered with Medicare by 12 months of age. Children who are not enrolled in Medicare are added to the Register when a recognised immunisation provider supplies details of an eligible immunisation. Immunisations are generally notified to the HIC either by electronic means, the Internet or by paper ACIR notification forms. Immunisations recorded on the Register must have been given in accordance with the guidelines for immunisation determined by the National Health and Medical Research Council.

From the data finally entered onto the ACIR, the HIC provides regular quarterly coverage reports at the national and state level. Coverage for these reports is calculated using the cohort method described in *Commun Dis Intell* 1998;22:36–37. With this method, a cohort of children is defined by date of birth in three-month groups. This birth cohort has the immunisation status of its members assessed at the three key milestones of 12 months, 24 months and 6 years of age. Analysis of coverage is undertaken three months after the due date for completion of each milestone, so that time is available for processing notifications and the impact on coverage estimates of delayed notification to the ACIR is minimised. Only children enrolled with Medicare are included in order to minimise inaccuracies in coverage estimates due to duplicate records.

The HIC coverage reports for the three milestones are published in *CDI* every quarter. Coverage estimates are provided for each state and territory and Australia as a whole and for each individual vaccine assessed at each milestone. Changes in 'fully immunised' coverage from the previous quarter are also included in the tables.

A commentary on ACIR immunisation coverage estimates is included with the tables in each issue and graphs are used to provide trends in immunisation coverage.

OzFoodNet: enhanced foodborne disease surveillance

The Australian Government Department of Health and Ageing established the OzFoodNet network in 2000 to collaborate nationally in the investigation of foodborne disease. OzFoodNet conducts studies on the burden of illness and coordinates national investigations into outbreaks of foodborne disease.

OzFoodNet reports quarterly on investigations of gastroenteritis outbreaks and clusters of disease potentially related to food. Annual reports have been produced and published in *CDI* since 2002. Data are reported from all Australian jurisdictions.

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2. Hall R. Notifiable diseases surveillance, 1917 to 1991. *Commun Dis Intell* 1993;226–236.

Communicable Diseases Intelligence instructions for authors

Communicable Diseases Intelligence (*CDI*) is published quarterly (March, June, September and December) by the Surveillance Section, Biosecurity and Disease Control Branch, Australian Government Department of Health and Ageing. The aim of *CDI* is to disseminate information about the epidemiology and control of communicable disease in Australia. *CDI* invites contributions dealing with any aspect of communicable disease epidemiology, surveillance or prevention and control in Australia. Submissions can be in the form of original articles, short reports, surveillance summaries, reviews or correspondence.

Manuscripts for submission

Manuscripts submitted to *CDI* must be offered exclusively to the journal. All manuscripts should be accompanied by a covering letter that should include:

- a list of all authors;
- confirmation that the manuscript content (in part or in full) has not been submitted or published elsewhere; and
- whether the manuscript is being submitted as an article, short report, surveillance summary, outbreak report or case report.

In addition, manuscripts should include a title page that should contain the following information:

- title (e.g. Prof, Dr, Ms, Miss, Mrs, Mr), full name including middle initial, position held, and institution at the time the article was produced, of each author;
- name of corresponding author, including current postal address, telephone, facsimile and email; and
- word count of the main text and of the abstract.

On receipt of a manuscript, authors will be sent a brief acknowledgment. Accepted manuscripts are edited for style and clarity and final proofs are returned to the corresponding author for checking prior to printing.

Authorship

Authorship should be based on substantial contribution to the article. Each author should have participated sufficiently to take public responsibility for the article. Others contributing to the work should be recognised in the acknowledgments.

Types of manuscript

Articles

The text of articles must be structured to contain an abstract, introduction, methods, results, discussion, acknowledgments and references. Structured abstracts are not acceptable . Manuscripts submitted as articles must be 3,000 words or less and are peer-reviewed. Occasionally, reports of urgent public health importance may be published immediately, at the discretion of the Editor.

Short reports

Short reports are not subject to peer review and should be of less than 2,000 words. Types of short reports include:

Surveillance summaries

A report of 1,000 words or less which briefly reports on changes in the local epidemiology of communicable disease, changes in surveillance systems, or new interventions, such as implementing vaccination in an at-risk group. Surveillance summaries should provide a brief description of the setting and a discussion of the significance of the events, changes or interventions.

Outbreak reports

Unstructured reports of communicable disease outbreaks of 500 to 1,000 words will be considered for publication based on their public health significance. Reports should include details of the investigation, including results of interventions and the significance of the outbreak for public health practice. More comprehensive reports on outbreaks should be submitted as articles.

Case reports

Brief unstructured reports of 500 to 1,000 words on unique cases of communicable disease will be considered based on their public health significance. Authors must note the instructions on the protection of patient's right to privacy (see Ethics committee approvals and patient's right to privacy below). Some discussion of the significance of the case for communicable disease control should be included.

Letters to the Editor

The editors welcome comments on articles published in *CDI* in the form of letters to the Editor. Letters should normally be less than 500 words, include no more than a single chart and less than six references.

Document preparation

Authors are asked to provide an electronic copy of the manuscripts. Microsoft Word for Windows 2003 or an earlier version is preferred. Alternatively files should be saved as Rich Text Format (rtf).

In addition:

- Arial font is preferred but if not available use Times New Roman.
- Abstracts should not exceed 250 words. Do not cite references in abstracts.
- Include up to 10 keywords.
- Avoid too many abbreviations. Use standard abbreviations, do not make up abbreviations.
- Do not use numbered paragraphs.
- Do not use page numbering.
- Do not use headers or footers.

Final manuscripts should not include any field codes such as automatic numbering for references. Electronic referencing software (e.g. Endnote) field codes should be embedded before submission of the final version.

Tables

- Tables and table headings should be provided in the manuscript at the end of the text and should be referred to within the results section.
- Information in tables should not be duplicated in the text.
- Headings should be brief.
- Simplify the information as much as possible, keeping the number of columns to a minimum.
- Separate rows or columns are to be used for each information type (e.g. percentage and number should be in separate columns rather than having one in parentheses in the same column).
- If abbreviations are used these should be explained in a footnote.
- Footnotes should use the following symbols in sequence: * † ‡ § || ¶ ** †† ‡‡
- Do not use borders, or blank rows or blank columns for spacing.

Figures and illustrations

Figures and illustrations, including headings, should be provided in the manuscript at the end of the text and should be referred to within the results section. In addition, they should also be provided as a separate in accordance with the following requirements.

Figures

- Use Microsoft Excel for Windows.
- Each figure should be created on a separate worksheet rather than as an object in the datasheet (use the 'as new sheet' option for chart location).
- The numerical data used to create each figure must be included on a separate worksheet.
- Worksheets should be appropriately titled to distinguish each graph.
- Do not include the graph heading on the Excel worksheet.

Illustrations

- Electronic copies of computer-generated illustrations should be saved in Adobe Photoshop, or similar graphic software in one of the following graphic formats: JPEG, EPS, GIF, or TIFF.
- Electronic versions of photos need to be at least 300 dpi. Black and white illustrations or photographs can be included if required.
- Use a sans serif font for and figures, symbols, lettering and numbering should be clear and large enough to be legible when reduced.

References

References should be identified consecutively in the text by the use of superscript numbers without brackets. Any punctuation should precede the reference indicators.

The accuracy of references is the responsibility of authors. Use the Vancouver reference style (see International Committee of Medical Journal Editors. Uniform requirements for manuscripts submitted to biomedical journals. *Ann Intern Med* 1997;1126:36-47 available from: http://www.nlm.nih.gov/bsd/uniform_requirements.html) and abbreviate journal names as in Medline (e.g. *Commun Dis Intell*). The Medline journal database is available from: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals. Include the surnames and initials of all authors (or only the first six authors, *et al*, if there are more than six). Cite the first and last page numbers in full, and specify the type of reference (e.g. a letter, an editorial, an abstract, or supplement).

Cite personal communications and unpublished papers in the text, not in the reference list, with the exception of material that has been accepted for publication (in press). Obtain written permission from people cited, and include their title, position and affiliation.

Ethics committee approvals and patients' rights to privacy

All investigations on human subjects must include a statement that the subjects gave their written informed consent, unless data collection was covered by public health legislation or similar studies have been considered by a relevant ethics committee and a decision made that its approval was not required. The name of the ethics committee that gave approval for the study should be included in the text. Alternatively, if approval is not required a statement to this effect should appear in the manuscript.

When informed consent has been obtained this should be included in the text.

Ethical approval and patient consent may also be required for case reports. Identifying details about patients should be omitted if they are not essential, but data should never be altered or falsified in an attempt to attain anonymity.

Review process

Articles provisionally accepted for publication undergo a peer review process. Manuscripts are reviewed by two experts in the topic area. Authors may be asked to revise articles as a result of the review process before the final decision about publication is made by the Editor. Revised articles are to be returned with a covering letter addressing each comment made by each reviewer.

Occasionally, reports of urgent public health importance may be published immediately without peer review, at the discretion of the Editor. Articles may also be rejected without peer review.

Short reports are not subject to peer review.

Copyright

All authors are asked to transfer copyright to the Commonwealth before publication. A copyright form will be sent to the corresponding author. All authors are required to sign the copyright release. The Commonwealth copyright will be rescinded if the article is not accepted for publication.

Submission of manuscripts

Manuscripts should be provided electronically by email to: cdi.editor@health.gov.au

Requests for further information can be obtained either by telephone to (02) 6289 8245, by facsimile: (02) 6289 7791 or by email to the address above.

Errata

Communicable Diseases Surveillance data— Table 3. Notification rates of diseases by state or territory, 1 July to 30 September 2004. (Rate per 100,000 population)*, continued* (*Commun Dis Intell* 2004;28:540)

The second page of the Communicable diseases surveillance data Table 3 incorrectly contained data for the previous quarter incorrect data. The corrected table is reproduced below. The Editors apologise for the error.

	State or territory								
Disease*	**ACT**	**NSW**	**NT**	**Qld**	**SA**	**Tas**	**Vic**	**WA**	**Australia**
Bloodborne diseases									
Hepatitis B (incident)	1.2	0.2	4.0	1.2	0.8	5.0	2.9	2.9	1.5
Hepatitis B (unspecified)	18.6	59.7	NN	21.5	19.4	7.5	30.2	18.8	35.8
Hepatitis C (incident)	1.2	0.0	NN	NN	3.4	0.8	1.6	7.8	1.8
Hepatitis C (unspecified)	57.0	87.6	108.9	77.9	36.7	76.3	60.3	56.5	71.5
Hepatitis D	0.0	0.3	0.0	0.4	0.0	0.0	0.1	0.0	0.2
Gastrointestinal diseases									
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Campylobacteriosis†	99.1	NN	112.9	113.7	139.3	102.3	117.1	90.4	113.7
Cryptosporidiosis	1.2	1.3	42.3	7.1	6.0	9.2	6.1	4.3	4.8
Haemolytic uraemic syndrome	0.0	0.1	0.0	0.0	0.3	0.0	0.0	0.0	0.1
Hepatitis A	1.2	1.7	0.0	0.7	0.5	0.0	1.7	2.9	1.5
Hepatitis E	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Listeriosis	1.2	0.3	0.0	0.1	0.5	0.0	0.3	0.6	0.3
Salmonellosis (NEC)	18.6	15.8	139.1	38.5	19.6	12.6	18.8	26.4	23.4
Shigellosis	0.0	1.0	32.3	1.2	1.0	0.0	1.8	3.1	1.7
SLTEC, VTEC‡	0.0	0.0	0.0	0.2	2.1	0.0	0.0	0.0	0.2
Typhoid	0.0	0.2	0.0	0.3	0.3	0.0	0.7	0.0	0.3
Quarantinable diseases									
Cholera	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.1
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
Smallpox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tularemia	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	182.1	144.9	717.9	237.0	135.1	128.3	148.2	208.0	174.7
Donovanosis	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.2	0.1
Gonococcal infection	7.4	15.2	679.6	38.0	12.6	5.9	21.6	65.2	32.1
Syphilis (unspecified)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Syphilis < 2 years duration	2.5	3.6	42.3	2.0	1.0	0.0	1.4	1.6	2.6
Syphilis > 2 years duration	0.0	16.6	64.5	5.0	0.0	0.0	7.4	2.9	9.3
Syphilis - congenital	0.0	0.0	2.0	0.2	0.0	0.0	0.0	0.0	0.1

Disease*	State or territory ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
Vaccine preventable diseases									
Diphtheria	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haemophilus influenzae type b	0.0	0.1	2.0	0.2	0.3	0.0	0.1	0.0	0.1
Influenza (laboratory confirmed)	0.0	25.3	38.3	47.9	0.8	1.7	9.1	13.9	21.8
Measles	0.0	0.1	0.0	0.0	0.8	0.0	0.4	0.4	0.2
Mumps	1.2	0.8	0.0	0.3	0.0	0.0	0.1	0.6	0.4
Pertussis	31.0	65.6	0.0	27.9	65.5	8.4	13.2	159.6	52.1
Pneumococcal disease (invasive)	21.1	20.4	66.5	25.7	12.6	15.1	11.0	17.4	18.5
Poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella	0.0	0.2	0.0	0.3	0.0	0.0	0.0	0.0	0.1
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	0.0	0.0	0.0	0.0	0.0	0.0
Vectorborne diseases									
Barmah Forest virus infection	1.2	3.9	10.1	10.0	0.8	0.0	0.2	2.7	3.7
Dengue	1.2	0.4	6.0	1.4	0.3	0.0	0.2	0.4	0.6
Flavivirus infection (NEC)	0.0	0.2	0.0	1.1	0.0	0.0	0.1	0.0	0.3
Japanese encephalitis virus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kunjin virus	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Malaria	2.5	1.9	8.1	7.2	0.8	1.7	1.4	2.3	2.8
Murray Valley encephalitis virus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ross River virus infection	0.0	2.3	34.3	6.0	0.8	0.8	0.2	3.9	2.8
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	0.0	0.0	1.1	0.0	0.0	0.1	0.0	0.2
Leptospirosis	0.0	0.5	0.0	2.0	0.0	0.0	0.1	0.4	0.6
Lyssavirus unspecified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ornithosis	0.0	1.5	0.0	0.1	0.0	0.0	1.7	0.0	0.9
Q fever	0.0	3.3	0.0	1.9	1.6	0.0	0.7	0.2	1.8
Other bacterial infections									
Legionellosis	0.0	0.7	2.0	1.4	2.4	0.0	1.5	2.3	1.3
Leprosy	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meningococcal infection	5.0	2.5	2.0	2.9	1.0	7.5	1.7	3.3	2.5
Tuberculosis	2.5	4.2	12.1	1.2	0.0	3.4	5.7	3.3	3.6

* 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* (SLTEC/VTEC).

NN Not notifiable.

NEC Not elsewhere classified.

National Serology Reference Laboratory, Australia

22nd NRL Workshop on Serology
2–5 August 2005, Hilton Adelaide, South Australia

The National Serology Reference Laboratory Workshop is now an established feature of the Australian annual scientific meetings calendar. We are grateful to the sponsors who support our workshop and offer firm prospects for another successful event in August 2005.

We now invite your participation in this important workshop for all laboratory scientists interested in quality and new developments. The Workshop offers an opportunity for laboratory scientists, manufacturers and distributors of diagnostic kits and reagents, regulators, quality assurers, students and others to interact and discuss advances and difficulties in laboratory science. Those who are in diagnostic laboratories, blood safety, regulatory or other laboratories should treat this workshop as a 'MUST DO'.

The 2005 Workshop will build on the strengths developed in previous conferences. The poster and oral presentations format and breakout sessions will once again provide a relaxed but informative environment for exchanging information and ideas. Participants can expect to be part of a vibrant learning and networking experience, through interactive sessions promoting discussion and debate on the issues that surround *in vitro* diagnostics. We ask managers to encourage eligible scientists to apply for the Young Scientist Awards in 2005.

The Workshop will again feature prominent international speakers including two statistical consultants, Zoe C Brooks ART, who teaches for the University of Medicine and Dentistry in New Jersey, USA and Dan Tholen, MS, based in Michigan, USA. Zoe will be speaking on Quality Control in Serology and Nucleic Acid Testing. Dan will be speaking on Uncertainty of Measurement.

Discussions will concentrate on clinical serology, performance driven quality controls, measurement of uncertainty and the new regulatory framework for *in vitro* diagnostics, with these new regulations validation of laboratory tests will assume new importance.

Workshop Secretariat

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2nd announcement – Program, registration and accommodation details – April 2005

Further information is available on the National Reference Laboratory website at: http://www.nrl.gov.au – *please check it regularly!*

Communicable diseases surveillance

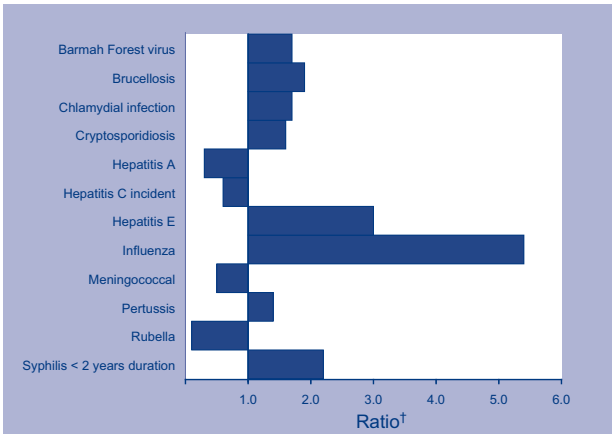
Highlights for fourth quarter, 2004

Communicable disease surveillance highlights report on data from various sources, including the National Notifiable Diseases Surveillance System (NNDSS) and several disease specific surveillance systems that provide regular reports to Communicable Diseases Intelligence. These national data collections are complemented by intelligence provided by State and Territory communicable disease epidemiologists and/or data managers. 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 disease notifications with an onset in the fourth quarter 2004 compared with a 5-year mean for the same period. The number of notifications received in the quarter was above the five year mean for Barmah Forest virus infection, brucellosis, chlamydial infection, cryptosporidiosis, hepatitis E, influenza, pertussis and syphilis (less than 2 years duration). The number of notifications received was below the five year mean for hepatitis A, hepatitis C (incident), meningococcal infections and rubella.

Figure 1. Selected* diseases from the National Notifiable Diseases Surveillance System, comparison of provisional totals for the period 1 October to 31 December 2004 with historical data†



* Selected diseases are chosen each quarter according to current activity.

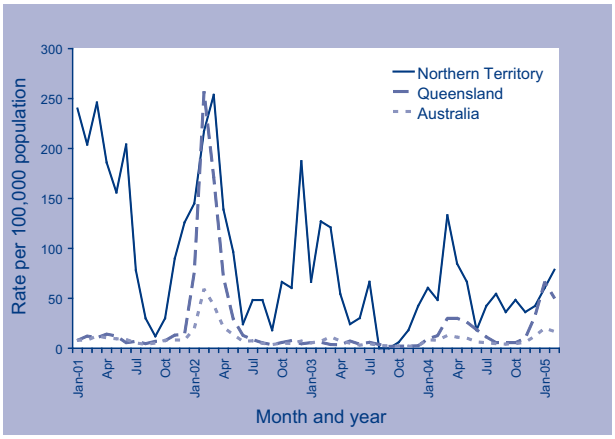
† Ratio of current quarter total to mean of corresponding quarter for the previous five years.

Gastrointestinal illness

Cryptosporidiosis

There were 443 notifications of cryptosporidiosis infections during the quarter. This was 60 per cent above the historical mean (Table 2). One hundred and ninety-two notifications (43% of the total for the quarter) were reported from Queensland, giving a rate of 19.8 cases per 100,000 population. Rates in the Northern Territory were also high in the quarter – 44 cases per 100,000 population (22 cases). Rates in the Northern Territory and Queensland from 2001 to 2004 by month of onset, compared with national notification rates are shown in Figure 2.

Figure 2. Notification rates of cryptosporidiosis, the Northern Territory, Queensland compared with national rates, 2001 to 2004, by month of onset



Hepatitis E

There were eight cases of hepatitis E infection in the quarter – two from New South Wales, three from Queensland, two from Victoria and one from Western Australia. This was three times the average number of cases reported in this period over the past five years. All cases are assumed to have acquired their infection overseas.

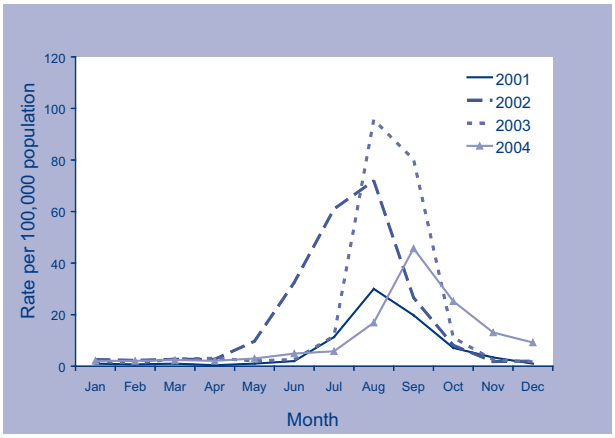
Vaccine preventable diseases

Influenza

There were 756 cases of laboratory-confirmed influenza in the fourth quarter of 2004. This was more than five times the average number of cases for this time of the year. Three hundred and fifty-eight cases (47% of total reports) were from New South Wales. A number of these cases may have been diagnosed on the basis of a single high titre of antibodies to influenza virus and may not have had influenza. The national surveillance case definition for influenza is currently under review.

The rates of influenza by month are shown in Figure 3. In 2004, the peak of influenza was significantly lower and later in the year than in previous years, while rates in the fourth quarter were higher than in the previous three years.

Figure 3. Notification rates of laboratory-confirmed influenza, Australia, 2001 to 2004, by month of notification



Measles

There were 15 cases of measles reported during the quarter, which was only half the five-year average for this quarter.

Gary Dowse of the Communicable Disease Control Branch, Health Department of Western Australia provided the following comments on the response to an outbreak of measles in the Pilbara region during the quarter. 'An outbreak of six cases of confirmed measles occurred in November, all in Aboriginal residents of the Pilbara region town of Port Hedland. Five cases were women ranging in age from 19 to 36 years, and the final case was a 7-month-old boy. None of the cases had travelled, and the source for the outbreak was not identified. Each of the cases had multiple visits to the outpatients department of the local hospital and/or to the Aboriginal Medical Service clinic, necessitating considerable contact tracing, and provision of post-exposure measles-mumps-rubella (MMR) vaccine or immunoglobulin where appropriate. Because of concerns about levels of measles immunity in young adults, and particularly among Aboriginal people, MMR vaccine was offered at a number of special community clinics in the town, including shopping centres, and through general practitioners, resulting in vaccination of around 1,000 adults.'

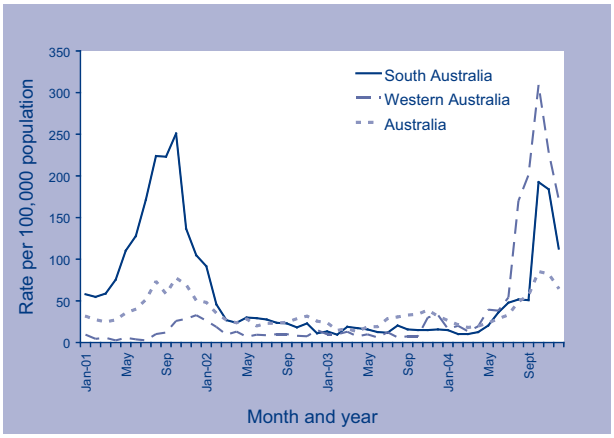
A measles case in a 25-year-old traveller, who travelled widely in northern Australia while infectious, was reported in the Northern Territory. Extensive follow-up of possible contacts did not identify any secondary cases.

In Victoria, a cluster of three cases of measles was reported in unvaccinated persons; two men aged 26 and 30 years and a two-year-old child.

Pertussis

There were 3,156 cases of pertussis reported in the fourth quarter most of which were reported from New South Wales (1,007 notifications), Queensland (445 notifications) and Western Australia (904 notifications). The notification rates were highest in Western Australia (182 cases per 100,000 population) and South Australia (103 cases per 100,000 population, Table 3). Trends in notification rates of pertussis in South Australia and Western Australia are shown against the national rates in Figure 4.

Figure 4. Rates of pertussis in South Australia and Western Australia compared with national rates, 2001 to 2004, by month of onset



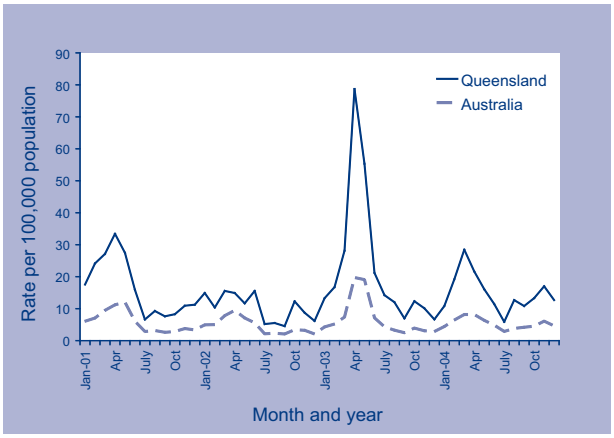
Vectorborne diseases

Barmah Forest virus infection

There were 257 notifications of Barmah Forest virus infection in the quarter, which was 70 per cent higher than the five year mean for the quarter. One hundred and thirty-nine notifications (54%) were from Queensland, which reported rates above 5-year mean in southern Queensland and Cairns.

Rates of Barmah Forest virus infection in Queensland are shown in Figure 5.

Figure 5. Notification rates of Barmah Forest virus infections, Queensland, compared to national rates, 2001 to 2004, by month of onset



Japanese encephalitis virus

A single case of Japanese B encephalitis was reported from Queensland. The case was probably exposed to Japanese encephalitis (JEV) on Thursday Island or in Papua New Guinea and had been vaccinated against JEV one year previously.

Zoonoses

Ornithosis

There were 48 cases of ornithosis during the quarter, 28 of which were from Victoria. In the fourth quarter of 2004, Victoria reported an outbreak of ornithosis in a poultry and game bird processing plant in Victoria.

Q fever

There were 101 cases of Q fever notified during the quarter. While New South Wales reported the largest number of cases (52), the highest rates were reported from South Australia (6.3 cases per 100,000 population; 24 cases).

An outbreak of Q fever occurred among persons attending sheep saleyards in rural South Australia in December 2004. In total, 23 persons were linked to this outbreak. An analytical study identified a statistically significant association between human illness and attendance at the saleyard. Intervention strategies including vaccination and dust control were implemented. Many of the cases were unvaccinated sheep and grain farmers.

Other bacterial infections

Meningococcal infections

There were 96 notifications of meningococcal infection during the quarter, which was half the average number reported in the quarter over the previous 5 years. Of the 96 cases, meningococcal serogroup data were available for 65 cases. There were 56 serogroup B (86%), eight serogroup C (12%) and a single case of serogroup W135.

With thanks to: Gary Dowse (Health Department of Western Australia) and Ingrid Tribe, Department of Health South Australia.

Tables

A summary of diseases currently being reported by each jurisdiction is provided in Table 1. There were 29,599 notifications to the National Notifiable Diseases Surveillance System (NNDSS) with a notification date between 1 October and 31 December 2004 (Table 2). The notification rate of diseases per 100,000 population for each State or Territory is presented in Table 3.

There were 6,541 reports received by the Virology and Serology Laboratory Reporting Scheme (LabVISE) in the reporting period, 1 October to 31 December 2004 (Tables 4 and 5).

Table 1. Reporting of notifiable diseases by jurisdiction

Disease	Data received from:
Bloodborne diseases	
Hepatitis B (incident)	All jurisdictions
Hepatitis B (unspecified)	All jurisdictions except NT
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
Shigellosis	All jurisdictions
SLTEC, VTEC	All jurisdictions
Typhoid	All jurisdictions
Quarantinable diseases	
Cholera	All jurisdictions
Plague	All jurisdictions
Rabies	All jurisdictions
Smallpox	All jurisdictions except ACT, Qld
Tularemia	All jurisdictions except Qld
Viral haemorrhagic fever	All jurisdictions
Yellow fever	All jurisdictions
Sexually transmissible infections	
Chlamydial infection*	All jurisdictions
Donovanosis	All jurisdictions
Gonococcal infection	All jurisdictions
Syphilis (unspecified)	All jurisdictions
Syphilis < 2 years duration	All jurisdictions
Syphilis > 2 years duration	All jurisdictions
Syphilis - congenital	All jurisdictions

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
Tetanus	All jurisdictions
Vectorborne diseases	
Barmah Forest virus infection	All jurisdictions
Flavivirus infection (NEC)‡	All jurisdictions
Dengue	All jurisdictions
Japanese encephalitis virus	All jurisdictions
Kunjin virus§	All jurisdictions except ACT
Malaria	All jurisdictions
Murray Valley encephalitis virus§	All jurisdictions except ACT
Ross River virus infection	All jurisdictions
Zoonoses	
Anthrax	All jurisdictions
Australian bat lyssavirus	All jurisdictions
Brucellosis	All jurisdictions
Leptospirosis	All jurisdictions
Lyssaviruses unspecified	All jurisdictions
Ornithosis	All jurisdictions
Q fever	All jurisdictions
Other bacterial infections	
Legionellosis	All jurisdictions
Leprosy	All jurisdictions
Meningococcal infection	All jurisdictions
Tuberculosis	All jurisdictions

* Only cases of congenital *Chlamydia* are reported in Western Australia.

† Laboratory confirmed influenza is not notifiable in the Australian Capital Territory or South Australia but reports are forwarded to NNDSS.

‡ Flavivirus (NEC) replaced Arbovirus (NEC) from 1 January 2004.

§ In the Australian Capital Territory, Murray Valley encephalitis virus and Kunjin virus are combined under Murray Valley encephalitis virus.

Table 2. Notifications of diseases received by State and Territory health authorities in the period 1 October to 31 December 2004, by date of onset*

Disease	State or territory								Total 4th quarter 2004†	Total 4th quarter 2003	Total 4th quarter 2003	Last 5 years mean 4th quarter	Year to date 2004	Last 5 years YTD mean	Ratio‡
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA							
Bloodborne diseases															
Hepatitis B (incident)	3	11	2	14	2	5	26	3	66	168	132	292	390.8	81.8	0.8
Hepatitis B (unspecified)	8	826	NN	226	73	12	371	110	1,626	3,538	3,374	6,762	8,509.0	2,092.6	0.8
Hepatitis C (incident)	2	13	NN	NN	11	10	3	32	71	216	234	348	513.4	127.6	0.6
Hepatitis C (unspecified)	41	1,551	80	704	124	60	734	278	3,572	7,444	7,826	15,033	20,430.2	4,872.6	0.7
Hepatitis D	0	3	0	2	0	0	1	0	6	20	12	28	27.8	5.0	1.2
Gastrointestinal diseases															
Botulism	0	0	0	0	0	0	0	0	0	0	0	1	0.4	1.5	0.0
Campylobacteriosis§	124	NN	47	1,140	559	204	1,905	512	4,491	7,420	8,122	15,513	14,253.4	3,916.6	1.1
Cryptosporidiosis‖	0	79	22	192	29	3	99	19	443	480	406	1,639	1,622.6	278.8	1.6
Haemolytic uraemic syndrome	0	3	0	1	2	0	0	0	6	12	12	18	16.8	6.0	1.0
Hepatitis A	0	28	3	10	2	0	15	2	60	140	218	314	872.8	185.4	0.3
Hepatitis E	0	2	0	3	0	0	2	1	8	10	8	31	14.8	2.7	3.0
Listeriosis	0	6	0	1	0	0	5	2	14	30	36	66	72.2	18.0	0.8
Salmonellosis (NEC)	14	539	89	707	156	38	267	153	1,963	2,356	3,320	7,906	7,553.8	1,720.4	1.1
Shigellosis	1	28	32	17	6	1	19	29	133	170	180	526	507.0	109.6	1.2
SLTEC, VTEC¶	0	1	0	1	12	0	0	0	14	24	22	48	49.8	13.0	1.1
Typhoid	0	14	0	1	0	0	1	0	16	32	26	74	76.6	14.4	1.1
Quarantinable diseases															
Cholera	0	0	0	0	0	0	0	0	0	3	0	6	3.8	1.0	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
Smallpox	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Tularemia	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 October to 31 December 2004, by date of onset,* *continued*

Disease	State or territory								Total 4th quarter 2004†	Total 4th quarter 2003	Total 4th quarter 2003	Last 5 years mean 4th quarter	Year to date 2004	Last 5 years YTD mean	Ratio‡
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA							
Sexually transmissible infections															
Chlamydial infection	159	2,375	402	2,264	594	209	1,921	1,111	9,035	17,588	15,612	35,997	21,564.4	5,323.2	1.7
Donovanosis	0	0	2	0	0	0	0	1	3	6	6	9	20.6	3.8	0.8
Gonococcal infection	14	296	366	300	100	9	272	383	1,740	3,372	3,322	7,194	6,622.6	1,545.0	1.1
Syphilis (unspecified)	2	0	0	0	1	0	0	0	3	10	180	141	1,586.8	339.4	0.0
Syphilis < two years duration	0	42	22	15	2	1	26	12	120	324	258	559	226.8	53.8	2.2
Syphilis > two years duration	0	221	40	24	0	7	82	36	410	966	846	1,854	807.8	221.8	1.8
Syphilis - congenital	0	0	2	0	0	0	0	0	2	4	4	9	12.4	3.5	0.6
Vaccine preventable disease															
Diphtheria	0	0	0	0	0	0	0	0	0	0	0	0	0.2	0.0	0.0
Haemophilus influenzae type b	0	2	0	0	0	0	0	0	2	12	8	15	32.6	6.2	0.3
Influenza (laboratory confirmed)‖	0	385	15	160	32	0	64	100	756	2,182	492	2,129	1,754.2	139.2	5.4
Measles	0	4	1	0	1	0	3	6	15	30	34	68	136.6	30.6	0.5
Mumps	0	21	0	7	3	0	0	3	34	48	60	108	158.8	30.8	1.1
Pertussis	43	1,007	15	445	395	6	341	904	3,156	6,086	3,688	8,651	6,976.2	2,212.4	1.4
Pneumococcal disease (invasive)‖	7	159	21	95	49	11	71	45	458	1,880	1,118	2,353	1,501.0	361.8	1.3
Poliomyelitis	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Rubella	0	1	0	4	1	0	1	3	10	18	4	43	296.4	95.8	0.1
Rubella - congenital	0	0	0	0	0	0	0	0	0	0	2	1	1.2	1.0	0.0
Tetanus	0	0	0	0	1	0	0	0	1	0	2	5	3.8	2.3	0.4
Vectorborne diseases															
Barmah Forest virus infection	1	85	4	139	2	0	6	20	257	388	326	1,094	1,015.6	155.6	1.7
Dengue	0	6	0	6	0	0	1	2	15	62	438	350	323.0	64.8	0.2
Flavivirus infection (NEC)	0	1	0	18	0	0	0	0	19	18	40	81	66.6	7.0	2.7
Japanese encephalitis virus‖	0	0	0	1	0	0	0	0	1	0	0	2	0.2	0.0	0.0
Kunjin virus‖	0	0	0	1	0	0	1	0	2	2	4	11	5.2	2.0	1.0
Malaria	5	26	24	62	7	6	16	9	155	272	278	564	774.8	159.0	1.0
Murray Valley encephalitis virus‖	0	0	0	0	0	0	0	0	0	0	0	1	2.8	0.0	0.0
Ross River virus infection	0	66	18	75	19	0	6	44	228	304	1,402	4,205	3,730.4	438.4	0.5

Table 2. Notifications of diseases received by State and Territory health authorities in the period 1 October to 31 December 2004, by date of onset,* ***continued***

Disease	State or territory								Total 4th quarter 2004†	Total 4th quarter 2003	Total 4th quarter 2003	Last 5 years mean 4th quarter	Year to date 2004	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	0.0	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	2	0	14	0	0	1	0	17	22	8	41	32.4	9.0	1.9
Leptospirosis	0	10	1	6	2	0	4	2	25	58	52	178	241.2	51.6	0.5
Lyssavirus unspecified‖	0	0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0
Ornithosis	0	18	0	1	0	0	28	1	48	98	132	226	146.4	37.2	1.3
Q fever	1	52	0	18	24	0	3	3	101	224	268	444	693.2	166.6	0.6
Other bacterial infections															
Legionellosis	0	17	0	16	12	0	20	14	79	122	198	337	357.2	85.6	0.9
Leprosy	0	0	0	0	0	0	0	0	0	2	0	3	6.2	2.7	0.0
Meningococcal infection	1	32	3	36	0	2	11	11	96	242	318	436	726.8	176.6	0.5
Tuberculosis	3	126	5	43	10	1	109	25	322	506	624	1,069	1,180.8	334.0	1.0
Total	429	8,058	1,216	6,769	2,231	585	6,435	3,876	29,599	56,909	53,652	116,783	105,920	25,508	1.2

* Date of onset = the true onset. If this is not available, the 'date of onset' is equivalent to the earliest of two dates: (i) specimen date of collection, or (ii) the date of notification to the public health unit. 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.

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

‖ Notifiable from January 2001 only. Ratio and mean calculations are based the last three years.

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

NN Not notifiable.

NEC Not elsewhere classified.

Table 3. Notification rates of diseases by state or territory, 1 October to 31 December 2004. (Rate per 100,000 population)

Disease*	State or territory								Australia
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
Bloodborne diseases									
Hepatitis B (incident)	3.7	0.7	4.0	1.4	0.5	4.1	2.1	0.6	1.3
Hepatitis B (unspecified)	9.9	49.1	NN	23.3	19.0	10.0	29.8	22.2	32.3
Hepatitis C (incident)	2.5	0.8	NN	NN	2.9	8.3	0.2	6.5	1.4
Hepatitis C (unspecified)	50.6	92.2	160.1	72.5	32.3	49.8	59.0	56.1	71.0
Hepatitis D	0.0	0.2	0.0	0.2	0.0	0.0	0.1	0.0	0.1
Gastrointestinal diseases									
Botulism	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Campylobacteriosis†	153.1	NN	94.0	117.5	145.7	169.3	153.2	103.3	89.3
Cryptosporidiosis	0.0	4.7	44.0	19.8	7.6	2.5	8.0	3.8	8.8
Haemolytic uraemic syndrome	0.0	0.2	0.0	0.1	0.5	0.0	0.0	0.0	0.1
Hepatitis A	0.0	1.7	6.0	1.0	0.5	0.0	1.2	0.4	1.2
Hepatitis E	0.0	0.1	0.0	0.3	0.0	0.0	0.2	0.2	0.2
Listeriosis	0.0	0.4	0.0	0.1	0.0	0.0	0.4	0.4	0.3
Salmonellosis (NEC)	17.3	32.0	178.1	72.8	40.7	31.5	21.5	30.9	39.0
Shigellosis	1.2	1.7	64.0	1.8	1.6	0.8	1.5	5.9	2.6
SLTEC, VTEC‡	0.0	0.1	0.0	0.1	3.1	0.0	0.0	0.0	0.3
Typhoid	0.0	0.8	0.0	0.1	0.0	0.0	0.1	0.0	0.3
Quarantinable diseases									
Cholera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Plague	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rabies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Smallpox	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tularemia	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	196.3	141.1	804.4	233.3	154.9	173.4	154.5	224.2	179.7
Donovanosis	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.2	0.1
Gonococcal infection	17.3	17.6	732.4	30.9	26.1	7.5	21.9	77.3	34.6
Syphilis (unspecified)	2.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1
Syphilis < 2 years duration	0.0	2.5	44.0	1.5	0.5	0.8	2.1	2.4	2.4
Syphilis > 2 years duration	0.0	13.1	80.0	2.5	0.0	5.8	6.6	7.3	8.2
Syphilis - congenital	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 3. Notification rates of diseases by state or territory, 1 October to 31 December 2004. (Rate per 100,000 population) , *continued*

Disease*	State or territory								Australia
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	
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	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Influenza (laboratory confirmed)	0.0	22.9	30.0	16.5	8.3	0.0	5.1	20.2	15.0
Measles	0.0	0.2	2.0	0.0	0.3	0.0	0.2	1.2	0.3
Mumps	0.0	1.2	0.0	0.7	0.8	0.0	0.0	0.6	0.7
Pertussis	53.1	59.8	30.0	45.9	103.0	5.0	27.4	182.4	62.8
Pneumococcal disease (invasive)	8.6	9.4	42.0	9.8	12.8	9.1	5.7	9.1	9.1
Poliomyelitis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rubella	0.0	0.1	0.0	0.4	0.3	0.0	0.1	0.6	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	0.0	0.3	0.0	0.0	0.0	0.0
Vectorborne diseases									
Barmah Forest virus infection	1.2	5.1	8.0	14.3	0.5	0.0	0.5	4.0	5.1
Dengue	0.0	0.4	0.0	0.6	0.0	0.0	0.1	0.4	0.3
Flavivirus infection (NEC)	0.0	0.1	0.0	1.9	0.0	0.0	0.0	0.0	0.4
Japanese encephalitis virus	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Kunjin virus	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Malaria	6.2	1.5	48.0	6.4	1.8	5.0	1.3	1.8	3.1
Murray Valley encephalitis virus	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ross River virus infection	0.0	3.9	36.0	7.7	5.0	0.0	0.5	8.9	4.5
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	1.4	0.0	0.0	0.1	0.0	0.3
Leptospirosis	0.0	0.6	2.0	0.6	0.5	0.0	0.3	0.4	0.5
Lyssavirus unspecified	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ornithosis	0.0	1.1	0.0	0.1	0.0	0.0	2.3	0.2	1.0
Q fever	1.2	3.1	0.0	1.9	6.3	0.0	0.2	0.6	2.0
Other bacterial infections									
Legionellosis	0.0	1.0	0.0	1.6	3.1	0.0	1.6	2.8	1.6
Leprosy	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Meningococcal infection	1.2	1.9	6.0	3.7	0.0	1.7	0.9	2.2	1.9
Tuberculosis	3.7	7.5	10.0	4.4	2.6	0.8	8.8	5.0	6.4

* 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* (SLTEC/VTEC).

NN Not notifiable.

NEC Not elsewhere classified.

Table 4. Virology and serology laboratory reports by state or territory* for the reporting period 1 October to 31 December 2004, and total reports for the year†

	State or territory								This period 2004	This period 2003	Year to date 2004[3]	Year to date 2003
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Measles, mumps, rubella												
Measles virus	–	2	1	–	1	–	4	6	14	21	35	71
Mumps virus	–	–	–	–	1	–	–	–	1	3	6	10
Rubella virus	–	–	–	2	2	–	–	4	8	7	19	26
Hepatitis virus												
Hepatitis A virus	–	2	–	6	2	–	2	2	14	23	50	87
Hepatitis D virus	–	–	–	–	1	–	–	–	1	4	8	19
Arboviruses												
Ross River virus	–	–	2	5	14	–	3	10	34	55	741	1,238
Barmah Forest virus	–	4	–	15	3	–	–	5	27	33	195	408
Alphavirus (unspecified)	–	–	1	–	–	–	–	–	1	–	1	–
Dengue type 3	–	–	–	–	–	–	–	1	1	–	1	2
Dengue not typed	–	–	2	–	–	–	–	1	3	4	10	31
Flavivirus (unspecified)	–	–	–	6	–	–	1	–	7	14	101	122
Adenoviruses												
Adenovirus type 40	–	–	1	–	–	–	–	14	15	4	31	32
Adenovirus not typed/ pending	3	47	–	12	105	3	51	29	250	171	1,042	926
Herpesviruses												
Herpes virus type 6	–	1	–	–	–	–	1	–	2	–	6	5
Cytomegalovirus	3	96	3	22	50	4	23	1	202	153	816	858
Varicella-zoster virus	–	28	8	206	122	4	11	146	525	449	2,042	1,713
Epstein-Barr virus	–	11	12	191	186	2	12	80	494	411	2,349	1,719
Other DNA viruses												
Molluscum contagiosum	–	–	–	–	–	–	–	3	3	4	6	15
Parvovirus	–	3	–	35	8	–	12	67	125	90	409	258
Picornavirus family												
Echovirus type 7	–	11	–	–	–	–	–	–	11	–	12	1
Echovirus type 9	–	2	–	–	3	–	–	–	5	–	9	11
Echovirus type 11	–	6	–	–	–	–	–	–	6	–	20	4
Echovirus type 18	–	10	–	–	–	–	–	–	10	1	15	1
Echovirus type 25	–	10	–	–	–	–	–	–	10	–	10	1
Echovirus type 30	–	1	–	–	–	–	–	–	1	–	7	1
Poliovirus type 1 (uncharacterised)	–	2	–	–	–	–	–	–	2	4	17	36
Poliovirus type 2 (uncharacterised)	–	8	–	–	–	–	–	–	8	3	21	12
Poliovirus type 3 (uncharacterised)	–	3	–	–	–	–	–	–	3	3	9	7
Rhinovirus (all types)	–	80	–	–	36	–	2	60	178	137	607	526
Enterovirus not typed/ pending	4	22	2	8	2	–	25	8	71	37	204	163

Table 4. Virology and serology laboratory reports by state or territory* for the reporting period 1 October to 31 December 2004, and total reports for the year,† *continued*

	State or territory								This period 2004	This period 2003	Year to date 2004[3]	Year to date 2003
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
Ortho/paramyxoviruses												
Influenza A virus	1	9	–	8	43	–	13	60	134	206	489	1,952
Influenza B virus	–	3	–	–	28	–	11	45	87	22	217	119
Influenza C virus	–	–	–	–	–	–	1	–	1	–	1	–
Parainfluenza virus type 1	–	–	–	–	9	–	–	2	11	9	142	44
Parainfluenza virus type 2	–	–	–	–	3	–	–	1	4	1	15	67
Parainfluenza virus type 3	–	32	2	7	63	–	27	87	218	222	645	627
Respiratory syncytial virus	–	19	1	36	24	3	10	14	107	180	2,591	1,759
Other RNA viruses												
HTLV-1	–	–	–	–	2	–	–	–	2	1	15	11
Rotavirus	–	108	2	–	328	30	28	107	603	722	1,223	1,298
Calicivirus	–	1	4	–	1	1	2	359	368	71	637	174
Norwalk agent	–	–	–	–	–	–	166	–	166	183	655	313
Other												
Chlamydia trachomatis not typed	8	145	1	408	380	11	20	245	1,218	896	5,233	4,296
Chlamydia pneumoniae	–	–	–	–	–	–	–	1	1	4	8	15
Chlamydia psittaci	–	–	–	–	–	–	33	–	33	31	171	118
Mycoplasma pneumoniae	1	5	3	73	112	3	106	19	322	242	1,364	1,146
Mycoplasma hominis	–	1	–	–	–	–	–	–	1	–	5	9
Coxiella burnetii (Q fever)	–	–	–	6	40	–	2	1	49	37	171	178
Rickettsia prowazeki	–	–	–	–	69	–	–	–	69	1	102	3
Rickettsia tsutsugamushi	–	–	–	–	44	–	–	–	44	2	66	4
Rickettsia- spotted fever group	–	–	–	–	83	2	–	–	85	2	135	2
Streptococcus group A	–	3	–	72	–	–	32	–	107	128	467	490
Yersinia enterocolitica	–	3	–	–	–	–	–	–	3	3	8	12
Brucella abortus	–	–	–	–	–	–	1	–	1	3	6	5
Brucella species	–	1	–	3	–	–	–	–	4	2	9	7
Bordetella pertussis	–	15	–	84	295	–	108	89	591	155	1,350	519
Legionella pneumophila	–	3	–	–	1	–	6	–	10	17	75	130
Legionella longbeachae	–	1	–	–	6	–	2	8	17	30	76	84
Legionella species	–	–	–	–	–	–	1	–	1	8	15	18
Cryptococcus species	–	–	–	1	5	–	–	–	6	6	38	26
Leptospira species	–	–	–	2	2	–	–	–	4	3	23	24
Treponema pallidum	–	27	–	98	95	–	1	5	226	207	1,136	1,165
Entamoeba histolytica	–	–	–	–	–	–	3	–	3	4	12	14
Toxoplasma gondii	–	3	–	–	4	–	2	2	11	9	38	41
Echinococcus granulosus	–	–	–	–	2	–	–	–	2	7	14	21
Total	20	728	45	1,306	2,175	63	722	1,482	6,541	5,045	25,951	22,994

* 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 October to 31 December 2004*

State or territory	Laboratory	October 2004	November 2004	December 2004	Total this period
Australian Capital Territory	The Canberra Hospital				
New South Wales	Institute of Clinical Pathology and Medical Research, Westmead	147	126	116	389
	New Children's Hospital, Westmead	72	43	34	149
	Repatriation General Hospital, Concord	–	–	–	–
	Royal Prince Alfred Hospital, Camperdown	12	25	6	43
	South West Area Pathology Service, Liverpool	103	34		137
Queensland	Queensland Medical Laboratory, West End	463	526	355	1,344
	Townsville General Hospital	–	–	–	–
South Australia	Institute of Medical and Veterinary Science, Adelaide	795	798	575	2,168
Tasmania	Northern Tasmanian Pathology Service, Launceston	33	13	12	58
	Royal Hobart Hospital, Hobart	–	–	–	–
Victoria	Monash Medical Centre, Melbourne	15	27	18	60
	Royal Children's Hospital, Melbourne	90	118	106	314
	Victorian Infectious Diseases Reference Laboratory, Fairfield	139	137	72	348
Western Australia	PathCentre Virology, Perth	720	706	–	1,426
	Princess Margaret Hospital, Perth	–	–	–	–
	Western Diagnostic Pathology	24	62	19	105
Total		2,613	2,615	1,313	6,541

* The complete list of laboratories reporting for the 12 months, January to December 2004, 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 Research and Health Promotion Unit of the Royal Australian College of General Practitioners operates the Australian Sentinel Practice Research Network (ASPREN). ASPREN is a network of general practitioners who report presentations of defined medical conditions each week. The aim of ASPREN is to provide an indicator of the burden of disease in the primary health setting and to detect trends in consultation rates.

There are currently about 50 general practitioners participating in the network from all states and territories. Seventy-five per cent of these are in metropolitan areas and the remainder are rural based. Between 4,000 and 6,000 consultations are recorded each week.

The list of conditions is reviewed annually by the ASPREN management committee and an annual report is published.

In 2004, nine conditions are being monitored, four of which are related to communicable diseases. These include influenza, gastroenteritis, varicella and shingles. There are two definitions for influenza for 2004. A patient may be coded once or twice depending on their symptoms. The definition for influenza 1 will include more individuals. Definitions of these conditions were published in Commun Dis Intell *2004;28:99–100.*

Data from 1 October to 31 December 2004 are shown as the rate per 1,000 consultations in Figures 6, 7, 8, and 9.

Figure 6. Consultation rates for influenza-like illness, ASPREN, 1 October to 31 December 2004, by week of report

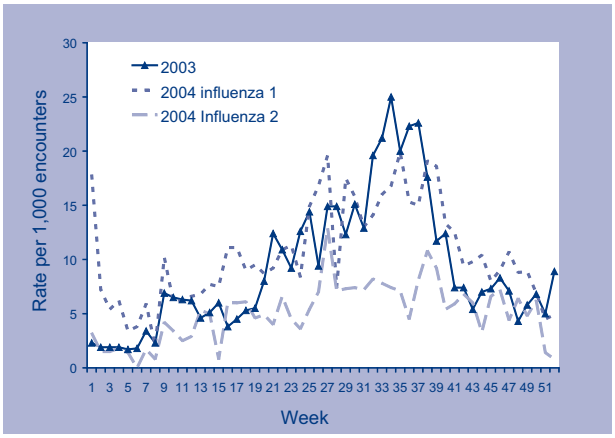


Figure 7. Consultation rates for gastroenteritis, ASPREN, 1 October to 31 December 2004, by week of report

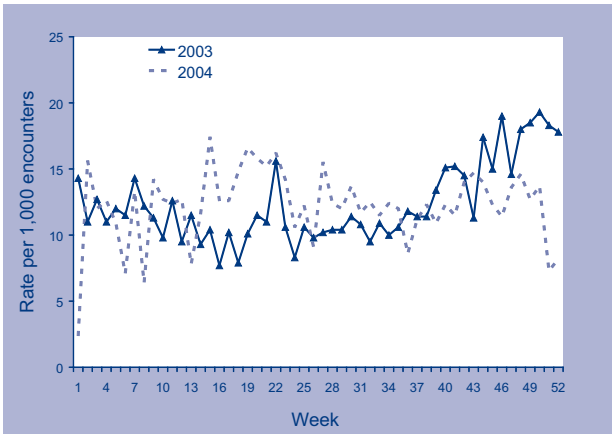


Figure 8. Consultation rates for varicella, ASPREN, 1 October to 31 December 2004, by week of report

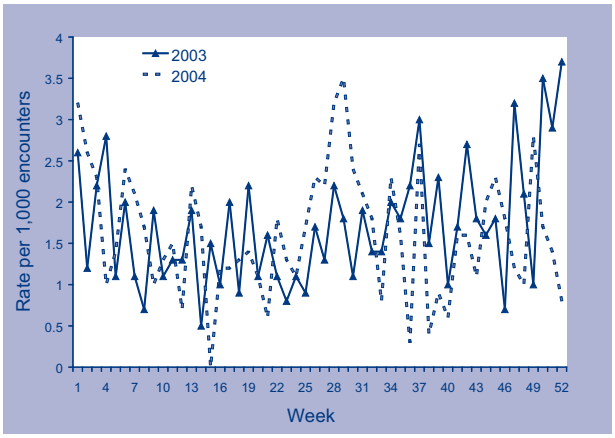
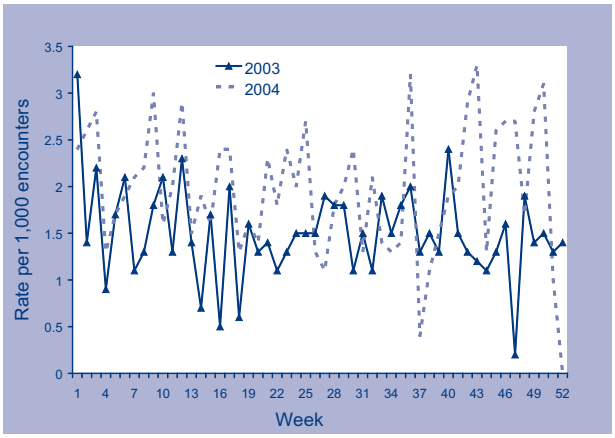


Figure 9. Consultation rates for shingles, ASPREN, 1 October to 31 December 2004, by week of report



Childhood immunisation coverage

Tables 6, 7 and 8 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 July and 30 September 2003, at 24 months of age for the cohort born between 1 July and 30 September 2002, and at 6 years of age for the cohort born between 1 July and 30 September 1998 according to the Australian Standard Vaccination Schedule.

For information about the Australian Childhood Immunisation Register see Surveillance systems reported in *CDI, published in* Commun Dis Intell *2004;28:102 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 on telephone: +61 2 9845 1256, or email: brynleyh@chw.edu.au.

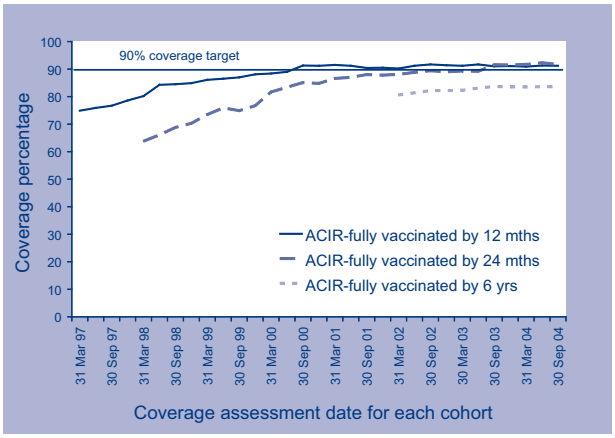
Immunisation coverage for children 'fully immunised' at 12 months of age for Australia decreased marginally from the last quarter by 0.1 percentage points to 91.2 per cent (Table 6). There was a substantial increase in 'fully immunised' coverage in Western Australia, with an increase of 2.9 percentage points, whilst all other jurisdictions experienced very little change in coverage. As expected, Western Australia also had increases in coverage for individual vaccines.

Coverage for children 'fully immunised' at 24 months of age for Australia decreased marginally from the last quarter by 0.6 percentage points to 91.7 per cent (Table 7). Coverage for individual vaccines decreased marginally in most jurisdictions with coverage greater than 95 per cent in almost all jurisdictions for all vaccines except *Haemophilus influenzae* type b.

Table 8 shows immunisation coverage estimates for 'fully immunised' and for individual vaccines at 6 years of age for Australia and by state or territory. 'Fully immunised' coverage at 6 years of age for Australia was unchanged overall, apart from increases in the Australian Capital Territory (+3.4%) and in the Northern Territory (+3.9%), also reflected in individual vaccines. Coverage for vaccines assessed at 6 years is at or near 85 per cent in the most jurisdictions, but Western Australia and Queensland remain below the average.

Figure 10 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 18 months for all age groups. Figure 10 shows that there have now been five consecutive quarters where 'fully immunised' coverage at 24 months of age has been greater than 'fully immunised' coverage at 12 months of age, following the removal of the requirement for 18 month DTPa vaccine.

Figure 10. Trends in vaccination coverage, Australia, 1997 to 2004, by age cohorts



Acknowledgement: These figures were provided by the Health Insurance Commission (HIC), to specifications provided by the Australian Government Department of Health and Ageing. For further information on these figures or data on the Australian Childhood Immunisation Register please contact the Immunisation Section of the HIC: telephone: +61 2 6124 6607.

Table 6. Percentage of children immunised at 1 year of age, preliminary results by vaccine and state or territory for the birth cohort 1 July to 30 September 2003; assessment date 31 December 2004

Vaccine	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Number of children	1,051	22,438	839	13,035	4,629	1,438	16,129	5,954	65,513
Diphtheria, tetanus, pertussis (%)	93.9	92.3	91.2	92.5	92.5	94.1	92.6	93.2	92.6
Poliomyelitis (%)	93.7	92.2	90.5	92.5	92.4	93.9	92.6	93.1	92.5
Haemophilus influenzae type b (%)	95.8	94.3	95.6	94.8	94.5	95.1	94.7	96.3	94.8
Hepatitis B (%)	95.7	95.1	96.1	94.9	95.0	95.2	94.4	96.0	95.0
Fully immunised (%)	92.8	90.7	89.8	91.4	91.0	93.0	91.3	91.7	91.2
Change in fully immunised since last quarter (%)	-0.7	-0.5	-0.7	-0.3	-0.7	+0.5	-0.4	+2.9	-0.1

Table 7. Percentage of children immunised at 2 years of age, preliminary results by vaccine and state or territory for the birth cohort 1 July to 30 September 2002, assessment date 31 December 2004

Vaccine	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Total number of children	1,078	22,056	882	13,007	4,538	1,523	16,122	6,192	65,398
Diphtheria, tetanus, pertussis (%)	95.2	94.9	96.4	94.5	95.9	96.1	95.6	93.9	95.0
Poliomyelitis (%)	95.1	94.8	96.4	94.4	95.9	95.9	95.6	93.8	95.0
Haemophilus influenzae type b (%)	93.5	93.1	94.7	93.4	94.7	94.4	93.9	91.7	93.4
Measles, mumps, rubella (%)	95.2	93.0	95.7	93.5	95.0	94.2	94.3	92.3	93.6
Hepatitis B(%)	96.2	95.3	97.3	94.7	96.0	96.6	96.0	94.4	95.4
Fully immunised (%)†	92.0	91.1	93.8	91.6	93.3	92.9	92.6	89.8	91.7
Change in fully immunised since last quarter (%)	-0.7	-0.7	-0.0	-0.7	+0.3	-0.9	-0.5	-0.8	-0.6

* The 12 months age data for this cohort was published in *Commun Dis Intell* 2004;28:119.

† These data relating to 2-year-old children should be considered as preliminary. The proportions shown as 'fully immunised' appear low when compared with the proportions for individual vaccines. This is at least partly due to poor identification of children on immunisation encounter forms.

Table 8. Percentage of children immunised at 6 years of age, preliminary results by vaccine and state or territory for the birth cohort 1 July to 30 September 1998; assessment date 31 December 2004*

Vaccine	State or territory								
	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Aust
Total number of children	1,084	22,538	772	13,716	4,847	1,689	16,511	6,797	67,954
Diphtheria, tetanus, pertussis (%)	88.9	85.5	87.3	83.0	85.7	85.7	87.3	82.1	85.2
Poliomyelitis (%)	89.5	85.6	87.7	83.1	86.0	85.6	86.8	82.3	85.2
Measles, mumps, rubella (%)	88.2	84.9	87.8	82.9	85.2	84.6	87.0	82.0	84.8
Fully immunised (%)[1]	87.2	83.7	86.7	81.6	84.3	83.4	85.7	80.6	83.6
Change in fully immunised since last quarter (%)	+3.4	+0.6	+3.9	-2.1	+0.5	-0.1	-0.1	+0.5	-0.0

* These data relating to 6-year-old children should be considered as preliminary. The proportions shown as 'fully immunised' appear low when compared with the proportions for individual vaccines. This is at least partly due to poor identification of children on immunisation encounter forms.

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 *2004;28:99.*

HIV and AIDS diagnoses and deaths following AIDS reported for 1 July to 30 September 2004, as reported to 31 December 2004, are included in this issue of Communicable Diseases Intelligence *(Tables 9 and 10).*

Table 9. New diagnoses of HIV infection, new diagnoses of AIDS and deaths following AIDS occurring in the period 1 July to 30 September 2004, 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 2004	This period 2003	Year to date 2004	Year to date 2003
HIV diagnoses	Female	1	9	0	2	0	0	5	0	17	21	86	64
	Male	0	55	0	38	18	1	48	6	166	179	558	589
	Sex not reported	0	1	0	0	0	0	0	0	1	3	3	5
	Total*	1	65	0	40	18	1	53	6	184	204	648	659
AIDS diagnoses	Female	0	0	1	0	0	0	1	0	2	2	10	10
	Male	0	5	0	6	1	0	7	0	19	51	87	138
	Total*	0	5	1	6	1	0	8	0	21	53	98	149
AIDS deaths	Female	0	0	1	1	0	0	0	0	2	3	4	8
	Male	0	5	0	1	3	0	5	0	14	23	46	56
	Total*	0	5	1	2	3	0	5	0	16	26	50	64

* Totals include people whose sex was reported as transgender.

Table 10. Cumulative diagnoses of HIV infection, AIDS and deaths following AIDS since the introduction of HIV antibody testing to 30 September 2004, and reported by 31 December 2004, by sex and state or territory

	Sex	State or territory								
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
HIV diagnoses	Female	31	769	17	224	82	8	307	161	1,599
	Male	246	12,574	122	2,407	826	89	4,717	1,086	22,067
	Not reported	0	239	0	0	0	0	22	0	261
	Total*	277	13,610	139	2,640	909	97	5,065	1,254	23,991
AIDS diagnoses	Female	9	221	2	61	30	4	94	34	455
	Male	92	5,110	41	970	386	48	1,853	407	8,907
	Total*	101	5,346	43	1,033	417	52	1,957	443	9,392
AIDS deaths	Female	6	128	1	41	20	2	58	22	278
	Male	71	3,486	26	632	268	32	1,364	282	6,161
	Total*	77	3,623	27	675	288	34	1,430	305	6,459

* Totals include people whose sex was reported as transgender.

Australian Paediatric Surveillance Unit

The Australian Paediatric Surveillance Unit (APSU) conducts nationally based active surveillance of rare diseases of childhood, including specified communicable diseases and complications of rare communicable diseases in children. The primary objectives of the APSU are to document the number of Australian children under 15 years newly diagnosed with specified conditions, their geographic distribution, clinical features, current management and outcome. Contributors to the APSU are clinicians known to be working in paediatrics and child health in Australia. In 2003, over 1,050 clinicians participated in the surveillance of 14 conditions through the APSU, with an overall response rate of 96 per cent. The APSU can be contacted by telephone: +61 2 9845 2200, email: apsu@chw.edu.au. For more information about APSU see Surveillance systems reported in CDI*, published in* Commun Dis Intell *2004;28:101.*

The results for the period 1 July to 31 December are shown in Table 11.

Table 11. Confirmed cases of communicable diseases reported to the Australian Paediatric Surveillance Unit, 1 July to 31 December 2004*

Condition	Previous reporting period January–June 2004	Current reporting period July-December 2004*
Acute flaccid paralysis	12	21
Congenital cytomegalovirus	8	17
Congenital rubella	1	1
Perinatal exposure to HIV infection	9	13
Neonatal herpes simplex virus infection	2	17
Hepatitis C virus infection	5	20

* Surveillance data are provisional and subject to revision.

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. These pathogens include Salmonella, Escherichia coli, Vibrio, Yersinia, Plesiomonas, Aeromonas *and* Campylobacter. Communicable Diseases Intelligence *quarterly reports include only* Salmonella*.*

Data are based on reports to NEPSS from Australian laboratories of laboratory-confirmed human infection with Salmonella*. Salmonella are identified to the level of serovar and, if applicable, phage-type. Infections apparently acquired overseas are included. Multiple isolations of a single* Salmonella *serovar/phage-type from one or more body sites during the same episode of illness are counted once only. The date of the case is the date the primary diagnostic laboratory isolated a* Salmonella *from the clinical sample.*

Note that the historical quarterly mean counts should be interpreted with caution, and are affected by surveillance artefacts such as newly recognised (such as S. *Typhimurium 197 and* S. *Typhimurium U290) and incompletely typed* Salmonella*.*

Reported by Joan Powling (NEPSS Co-ordinator) and Mark Veitch (Public Health Physician), Microbiological Diagnostic Unit — Public Health Laboratory, Department of Microbiology and Immunology, University of Melbourne. NEPSS can be contacted at the above address or by telephone: +61 3 8344 5701, or facsimile: +61 3 9625 2689.

Reports to the National Enteric Pathogens Surveillance System of Salmonella *infection for the period 1 October to 31 December 2004 are included in Tables 12 and 13. Data include cases reported and entered by 28 January 2005. Counts are preliminary, and subject to adjustment after completion of typing and reporting of further cases to NEPSS. For more information about NEPSS see* Surveillance systems reported in CDI, *published in* Commun Dis Intell *2004;28:101.*

Fourth quarter 2004

The total number of reports to NEPSS of human *Salmonella* infection increased to 1,765 in the fourth quarter of 2004, 53 per cent more than in third quarter of 2004, and approximately 15 per cent more than the final count for the fourth quarter of 2003. Case counts to 28 January 2005 are expected to comprise more than 95 per cent of the final counts for the quarter.

During the fourth quarter of 2004, the 25 most common *Salmonella* types in Australia accounted for 1,069 cases, 61 per cent of all reported human *Salmonella* infections.

Eighteen of the 25 most common *Salmonella* infections in the fourth quarter of 2004 were among the 25 most commonly reported in the previous quarter.

S. Typhimurium phage type 170/108 reports increased in number, particularly in New South Wales, making it the most common cause of human salmonellosis during this quarter. Reports of other common salmonellae with counts well above historical averages include *S.* Saintpaul (in northern Australia), *S.* Typhimurium phage type 197 (in the eastern mainland states, particularly Queensland), *S.* Virchow phage type 8 and S. Aberdeen (both particularly in Queensland), and *S.* Birkenhead (in New South Wales and Queensland). Counts of *S.* Hvittingfoss and *S.* Typhimurium phage type 12 and S. Waycross also remain elevated.

Acknowledgement: Thanks to contributing laboratories and scientists.

Table 12. Reports to the National Enteric Pathogens Surveillance System of *Salmonella* isolated from humans during the period 1 October to 31 December 2004, as reported to 28 January 2005

	ACT	NSW	NT	Qld	SA	Tas	Vic	WA	Australia
Total all *Salmonella* for quarter	16	486	79	631	127	38	255	133	1,765
Total contributing *Salmonella* types	13	116	40	119	47	19	95	68	241

Table 13. Top 25 *Salmonella* types identified in Australia, by state or territories, 1 October to 31 December 2004

National rank	*Salmonella* type	State or territory								Total 4th quarter 2004	Last 10 years mean 4th quarter	Year to date 2004	Year to date 2003
		ACT	NSW	NT	Qld	SA	Tas	Vic	WA				
1	*S.* Typhimurium 170	3	119	0	12	0	2	25	0	161	41	575	441
2	*S.* Typhimurium 135	1	34	0	56	2	0	12	8	113	135	563	695
3	*S.* Saintpaul	0	6	15	58	3	0	5	12	99	68	389	298
4	*S.* Typhimurium 9	1	27	0	7	14	2	15	5	71	124	357	420
5	*S.* Typhimurium 197	1	10	0	40	0	0	12	1	64	12	267	172
6	*S.* Virchow 8	0	6	0	48	4	0	5	0	63	37	333	207
7	*S.* Birkenhead	0	28	0	26	1	0	6	0	61	57	263	172
8	*S.* Aberdeen	0	2	0	40	0	0	1	0	43	17	134	86
9	*S.* Infantis	1	17	1	3	4	0	13	3	42	29	154	200
10	*S.* Chester	0	5	0	17	6	1	3	4	36	36	193	218
11	*S.* Hvittingfoss	0	4	0	26	1	0	0	1	32	15	148	89
12	*S.* Typhimurium 12	0	16	0	5	1	0	8	0	30	11	234	114
13	*S.* Muenchen	0	5	1	15	0	0	1	4	26	27	115	134
14	Sal subsp I ser 16:l,v:-	2	10	2	6	0	0	1	2	23	11	59	81
15	*S.* Typhimurium RDNC	0	6	1	5	4	1	4	1	22	17	103	66
16	*S.* Waycross	0	1	0	20	0	0	0	0	21	16	120	72
17	*S.* Typhimurium 4	0	17	0	1	0	0	1	1	20	15	77	81
18	*S.* Anatum	0	4	3	7	1	0	1	3	19	19	90	123
19	*S.* Mississippi	0	0	0	1	0	16	2	0	19	14	75	81
20	*S.* Enteritidis 6a	1	4	0	3	3	1	4	3	19	4.4	70	24
21	*S.* Typhimurium 135a	0	0	0	0	19	0	0	0	19	3.5	31	21
22	*S.* Agona	1	5	0	4	1	1	5	0	17	15	80	66
23	*S.* Stanley	0	4	0	7	4	0	0	2	17	12	77	54
24	*S.* Zanzibar	0	2	1	10	1	1	1	0	16	7	53	42
25	*S.* Enteritidis 1b	0	2	0	1	0	1	6	6	16	2.2	42	16

Overseas briefs

ProMED-mail

This material has been summarised from information provided by ProMED-mail (http://www.promedmail.org). A link to this site can be found under 'Other Australian and international communicable diseases sites' on the Communicable Diseases Australia homepage.

Tsunami-related disease potential — Asia

Source: Reuters 27 December 2004 [edited]

The United Nations (UN) warned of epidemics within days, unless health systems in southern Asia can cope, after more than 140,000 people were killed, and hundreds of thousands left homeless, by a giant tsunami.

Aid agencies around the world rushed staff, equipment and money to southern Asia, after huge waves, triggered by a massive underwater earthquake, swamped coastal communities in at least six countries on 26 December 2004.

'This may be the worst natural disaster in recent history, because it is affecting so many heavily populated coastal areas ... so many vulnerable communities,' said the UN's Emergency Relief Coordinator. 'The longer term effects may be as devastating as .... the tsunami itself.' 'Many more people are now affected by polluted drinking water. We could have epidemics within a few days, unless we get health systems up and running.

Experts said the top five issues to be addressed were water, sanitation, food, shelter and health. 'The biggest health challenge we face is the spread of waterborne diseases, particularly malaria and diarrhoea, as well as respiratory tract infections,' said the Red Cross Federation's senior health officer.

Poliomyelitis — Sudan

Source: Integrated Regional Information Networks 24 December 2004 (edited)

The United Nations (UN) has warned that an outbreak of polio in Sudan could lead to a spread of the disease to other countries in the region unless it is quickly contained. UN and government officials held an emergency meeting on Thursday in the Sudanese capital, Khartoum, to discuss how to contain the disease amidst reports that 79 new cases had been recorded across the country. 'This is quite dramatic, considering there were no reported cases of polio in 2003,' said a UNICEF official. 'Sudan was well underway to being declared polio-free, but the country has now become the number two or three in the world in terms of the number of polio cases reported in 2004.' Thirty-two of the reported cases were found in the state of Khartoum, while Unity state and Western Upper Nile in the south each reported five cases.

The disease spread across at least 10 nations in Africa this year after vaccination in some states of northern Nigeria was suspended in mid-2003 amid concerns from local religious leaders about the safety of the oral vaccine. Those concerns were later proved baseless and vaccination has resumed.

Initial testing indicated that both the genetic P–1 strain, related to reported cases in Nigeria, and the unrelated P–3 strain were present in Sudan, suggesting that the outbreak might have resulted from both imported and locally transmitted cases.

The World Health Organization and UNICEF will conduct a polio vaccination campaign across the whole of the country starting in January 2005.

Information on the total reported cases by country of report can be found at the polio eradication website: http://www.polioeradication.org/content/fixed/case-count.shtml.

Avian influenza, humans — Japan: confirmed

Source: Reuters report, 22 December 2004 [edited]

The Japanese Health Ministry said today that at least one person had been infected with avian influenza virus after an outbreak among chickens in February 2004. The Ministry said four others had probably also been infected with avian influenza virus but added that none of the five had developed any symptoms of avian influenza. The case marks the first human infection of avian influenza virus in Japan, which reported several outbreaks of avian influenza in poultry earlier in 2004.

The Ministry said on 18 December 2004 that blood tests showed that five people who were involved in work such as the culling of chickens after an outbreak of avian influenza in Kyoto in western Japan in February 2004, had developed an immune response to the virus. 'The five people who tested positive for antibodies have not developed symptoms of avian influenza and there is no risk of them developing symptoms in the future. And there is no possibility they will infect others,' the Ministry said today. 'We don't think it is a problem for public health,' the Ministry added.

All avian influenza outbreaks in Japan have been identified as caused by the H5N1-type virus, the virus that has hit other countries in Asia and been blamed for human deaths in Viet Nam and Thailand.

Variant Creutzfeld-Jakob disease monthly statistics — December 2004

Source: UK Department of Health, 6 December 2004 [edited]

Definite and probable CJD cases in the United Kingdom

Summary of vCJD cases — deaths

Deaths from definite vCJD (confirmed): 106

Deaths from probable vCJD (without neuropathological confirmation): 39

Deaths from probable vCJD (neuropathological confirmation pending): 2

Total number of deaths from definite or probable vCJD (as above): 147

Summary of vCJD cases — alive

Number of probable vCJD cases still alive: 5

Total number of definite or probable vCJD (dead and alive): 152

Since November 2004, the number of deaths from definite vCJD has increased by one, raising the total number of deaths from definite or probable vCJD to 147. The number of probable vCJD cases still alive remains at 5. Therefore, the overall total number of definite or probable vCJD cases now becomes 152.

Meningococcal disease — Scotland

Source: BBC News 23 November 2004 [edited]

The public and doctors are being urged to remain vigilant for signs of meningitis, following a surge in the number of deaths from the disease. Public health officials are concerned that people may have a false sense of security after the vaccination campaign against meningococcal meningitis type C. This has been hugely successful, but the B strain remains a serious threat. Health Protection Scotland (HPS) says the B strain has claimed most of the 16 deaths so far this year [2004]. This compares to four deaths last year. The latest figures published by Health Protection Scotland show there have been 131 cases of meningitis in 2004 so far, compared with 159 last year. Investigations have identified no link between any of the cases, which have included a wide range of unrelated strains.

There has been an increase in the number of cases of meningitis due to meningococcus type B over the past months, for which there is, so far, no vaccine available in the United Kingdom. In 2000, 2001, and 2002, the total number of deaths from the disease were 26, 13, and 13, respectively. A vaccine is undergoing clinical trials in New Zealand, and HPS is monitoring the results with a view to its introduction as soon as possible. HPS has already written to doctors pointing out the importance of identifying the strains they find, so the most effective antimicrobial therapy can be swiftly administered.

Rabies, human, bat — USA (Wisconsin): recovery

Source: Associated Press, 30 December 2004 [edited]

A teenager who became the first person known to have survived rabies without vaccination expects to come home from hospital on New Year's Day. The 15-year-old girl has spent nearly 11 weeks at the Children's Hospital of Wisconsin. In recent weeks, the girl has worked to regain her weight, strength, and coordination.

Only five people in the world besides the girl are known to have survived rabies virus infection after the onset of symptoms, but they had received standard treatment, a series of rabies vaccine shots, or vaccine ahead of time.

One of the girl's doctors, said the teen is medically sound and should eventually resume high school, although she still shows some effects from the illness. The teenager was bitten by a rabid bat on 12 September 2004 and went to a doctor on 13 October 2004 with only vague symptoms of fatigue and tingling and numbness of the hand where the bite occurred. She was hospitalised a few days later. As her condition worsened, doctors at the Children's Hospital induced a coma and administered a combination of drugs. She was in intensive care for nearly two months and eventually came out of the coma. At home, she will continue with speech, physical, and occupational therapy, according to the hospital. The USA Centers for Disease Control and Prevention has said it is re-evaluating its approach to human rabies because of the results.

Mumps, students — United Kingdom

Source: Eurosurveillance Wkly, 25 November 2004 [edited]

In weeks 1 to 39 of 2004, 3,696 cases of mumps have been confirmed in England and Wales, compared with a 5-year cumulative (1999 to 2003) total of 3,884 cases. All regions have reported cases in 2004, and all except two have already had more cases this year than in the whole of 2003. Of all cases this year, 78 per cent (2,886 cases) were reported in young people aged 15-24 years.

Immunisation against mumps was introduced in England and Wales in October 1988 as a component of the measles, mumps and rubella (MMR) vaccine and offered routinely to all children aged 12 to 15 months. A second dose of MMR vaccine at preschool age was introduced in October 1996. Since 1989, mumps has been notifiable and since late 1994, the facility to test saliva for mumps IgM has been available to family doctors.

Following the introduction of MMR, the incidence of mumps decreased rapidly until 1997. Since then the number of confirmed cases has increased. In 2003, there was a rise in notifications which has continued throughout 2004, with further increases in the numbers of confirmed cases.

This increase in mumps cases in England and Wales since 1997 was predicted by seroprevalence studies in 1993. The results suggested that certain cohorts had remained susceptible—probably due to reduced exposure to natural infection following high uptake of the MMR vaccine.[1] The cohort identified to be at particularly high risk of mumps were those who are too old to have received two doses of MMR in the routine schedule (born before 1992) but young enough to have grown up during a period of low incidence, and so have escaped mumps infection in childhood. Confirmed mumps cases have been mainly in older teenagers and young adults (born between 1982 and 1990), and outbreaks have moved from being mainly in secondary schools to universities and further education colleges. Many of this group received measles-rubella (MR) vaccine in 1994, as at that time there was a shortage of MMR, and so they are not protected against mumps. The Health Protection Agency and the Department of Health recommend that all school-leavers and university entrants who have not received MMR vaccine or who have only received one dose should have the opportunity to get MMR.

Reference

1. Gay N, Miller E, Hesketh L, Morgan-Capner P, Ramsay M, Cohen B, Brown D. Mumps surveillance in England and Wales supports introduction of two dose vaccination schedule. *Commun Dis Rep CDR Wkly* 1997; 7:21—26.

World Health Organization

This material has been summarised from information on the World Health Organization Internet site (www.who.int). A link to this site can be found under 'Other Australian and international communicable diseases sites' on the Communicable Diseases Australia homepage.

Avian influenza – situation in Viet Nam

30 December 2004

The World Health Organization has received informal reports of a laboratory-confirmed case of H5N1 infection in Viet Nam. The patient, who has been hospitalised since 26 December, is a 16-year-old girl who fell ill in the southern province of Tay Ninh. Vietnamese authorities are investigating the source of her infection, including the possibility of contact with infected poultry.

This is the first human case of H5N1 detected in Viet Nam since early September. It coincides with several fresh poultry outbreaks reported in southern provinces in December. Recent poultry outbreaks in Tay Ninh Province have not been reported. As avian influenza viruses become more active at cooler temperatures, further poultry outbreaks, possibly accompanied by sporadic human cases, can be anticipated.

Poultry marketing, transportation, and consumption increase in Viet Nam with the approach of the Lunar New Year in early February. These activities create conditions favouring the spread of poultry outbreaks and call for heightened control measures.

Since January 2004, 28 human cases have been detected in Viet Nam. Of these, 20 were fatal. Thailand has also reported human cases, bringing the total in Asia since the beginning of 2004 to 45 cases, of which 32 have been fatal.

Typhoid fever in the Democratic Republic of the Congo

15 December 2004

The World Health Organisation WHO has received reports of a significant, ongoing outbreak of typhoid fever in Kinshasa. The cases have occurred in the suburbs which had already been affected by an important outbreak of *Escherichia coli* in May 2004.

As of 13 December 2004, a total of 13,400 cases were reported. Between 1 October and 10 December 2004, 615 severe cases with peritonitis, with or without perforation, including 134 deaths (case fatality rate, 21.8%) have occurred. Five of 32 samples tested positive for *Salmonella Typhi*.

Very poor sanitary conditions and a lack of drinking water have been reported in these areas. A crisis committee has been established to contain the outbreak and is carrying out health education activities and distributing medicine.

Cholera in Nigeria

3 December 2004

The World Health Organisation (WHO) has received reports from the Federal Ministry of Health in Nigeria of a total number of 1,616 cases of cholera and 126 deaths. Kano State reported 1,316 cases and 76 deaths (case fatality rate, 5.8%) from 15 October to 23 November 2004 and Edo State reported 300 cases and 50 deaths (case fatality rate 16.7%) from 16 September to 18 November 2004. In both states, *Vibrio cholerae* has been laboratory confirmed.

In Kano State, 20 local government areas have been affected with the case fatality rate highest among those less than two years of age and over 60 years of age. While there are widespread water shortages in metropolitan local government areas, many of the water sources that do exist are not safe.

WHO has assisted the Federal Ministry of Health with surveillance activities and supplies of anti-sera. Cases appear to be decreasing in both states.