

NSW PUBLIC HEALTH BULLETIN

Year in review

Year in review: health protection in NSW, 2012

Health Protection NSW

Health protection involves the prevention and control of threats to health from communicable diseases and the environment. In New South Wales (NSW) in 2012 these functions were carried out by a range of groups, among them Health Protection NSW's Communicable Diseases and Environmental Health Branches, the NSW Ministry of Health's Population and Public Health Division, Public Health Units, clinicians, Local Health District services, local government, other government agencies, and communities.

In this report we highlight the major health outcomes and achievements related to Health Protection NSW's activities in 2012, including some examples of health protection projects done in the field (Boxes 1–6). The health outcomes described in this report are measured mainly through routine surveillance data that are derived from notifications of selected diseases provided by doctors, hospitals and laboratories to Public Health Units under the NSW *Public Health Act 2010*.

Tables 1–6 show disease-specific data on notifiable conditions reported by: year of onset of illness; month of onset of illness; Local Health District; and age group and sex. Note that the degree to which notification data reflect the true incidence of disease varies and is subject to a range of caveats.¹

Surveillance

Vaccine-preventable diseases

In 2012 there were:

- no **haemophilus influenzae type b** notifications in children aged less than 5 years for the first time since 1993
- 5824 **pertussis** notifications (including one death in a 7-week old infant), a marked decrease from the record numbers in 2011 (>13 000)

- 172 **measles** notifications, of which two were imported from overseas, 169 were found to be linked to an imported case (measles virus D8), while another was locally acquired but presumably acquired from an imported case not identified through surveillance (measles virus B3). Most cases were notified by South Western Sydney and Western Sydney Local Health Districts. People of Pacific Islander ethnicity and Aboriginal people were disproportionately affected. There were 58 notifications in children aged less than 5 years, with 37 notifications in infants aged less than 1 year (too young to be vaccinated)
- 66 **meningococcal disease** notifications, the lowest number since the introduction of the meningococcal C vaccine in 2003. Of these, 43 were due to serogroup B (65%), five were due to serogroup Y (8%), four were due to serogroup W135 (6%), two were due to serogroup C (3%), and 12 were of an unknown serogroup (18%). The two cases of meningococcal C disease were reported in young adults who were not vaccinated. Meningococcal notifications have been declining for more than a decade
- 105 **mumps** notifications, an increase from the 67 reported in 2011. The highest notifications were in metropolitan areas and in under-vaccinated persons aged 30–34 years ($n = 27$), followed by those aged 35–39 years ($n = 15$)
- 566 **invasive pneumococcal disease** notifications, a slight increase compared with 529 in 2011. Serotype 19A was identified as the cause of infection in 33% of cases in children aged less than 5 years and 17% of the remainder of the cases where typing was available.

Bloodborne viruses

In 2012 there were:

- 2328 **total hepatitis B** case notifications, an 8% decrease compared with 2011 ($n = 2525$) and the lowest recorded number in 20 years (total notifications are mainly of people whose time of infection is unknown). Fifty-four percent of cases were male and 30% were aged between 25 and 34 years

Box 1. NSW Denominator Data Project

Positive laboratory results for notifiable conditions are reported by each pathology service to the local Public Health Unit. This provides information about the number of new cases of disease. Data on the level of testing is useful to indicate whether an apparent increase in notification is due to increased testing. The NSW Denominator Data Project began in January 2012 to collect the total number of tests performed per month (the denominator data) for selected notifiable conditions with significant public health implications from 14 public and private laboratories in NSW. The data for sexually transmitted infections (HIV, chlamydia and gonorrhoea), vectorborne infections (Ross River and Barmah Forest viruses), pertussis and enteric diseases are reported in a web-based secure site per laboratory. The reported data are interpreted per laboratory (to account for various testing methods) and collated to give monthly aggregated data per condition. Comparison with notifications provides an indication of a trend in incidence to enable timely public health action. As no demographic information is provided, the data cannot be used to indicate specific rates for age, sex or geographic location. The positivity rate for all conditions in 2012 ranged from 0.1% (shigellosis) to 5.7% (chlamydia infection). Notifications for chlamydia and gonorrhoea were correlated with testing, while the incidence of enteric conditions suggests that seasonal factors rather than testing patterns influence notification rates.

Box 2. Backyard tattooists: risky business for all involved

The growth in the popularity of body art, coupled with the ease of buying body art equipment over the internet, has contributed to an apparent increase in skin penetration procedures done at home by 'backyard tattooists'. Unsterile skin penetration runs the risk of spreading viral, bacterial, and other infections. During 2012, the North Coast Public Health Unit (PHU) responded to six complaints about backyard tattooists. The complaints included two from parents whose children had been tattooed by other children without the parents' knowledge, one from a mother concerned that her child's tattoos were performed by an adult tattoo operator without the mother's knowledge, and three from concerned registered tattoo parlours. In response, staff from the PHU visited, inspected or wrote to the alleged backyard tattooists, informing them of the health risks and legal implications, and involving council or police assistance where necessary. The PHU also issued a media release warning of the potential risks of backyard tattoos, and contributed an article to the Department of Education and Communities' regional weekly electronic newsletter for primary and secondary school staff across the North Coast.

Box 3. Sydney cruise ship health surveillance and inspection

Sydney Harbour is the busiest cruise ship destination in Australia with over 200 voyages arriving in 2012, bringing half a million people to the city. With this come public health risks: cases of infectious diseases on cruise ships are commonplace and outbreaks of respiratory disease and gastroenteritis occur. In response, the South Eastern Sydney Public Health Unit (PHU) has developed two public health programs: the Cruise Ship Health Surveillance Program and the Vessel Inspection Program. These programs aim to monitor disease occurrence, increase preventive action and offer operational public health advice to international vessels entering the Port of Sydney. During the period 2006–2011, the Cruise Ship Health Surveillance Program was involved in the investigation of 45 outbreaks of disease onboard cruise ships entering Sydney; 30 of these outbreaks were caused by gastroenteritis and almost half of these were confirmed to be due to norovirus. Of 15 outbreaks of respiratory disease, influenza was confirmed in seven. Environmental inspection of vessels occurs routinely or as part of an outbreak investigation. A Vessel Inspection Manual has been written by staff of the PHU to provide guidance on inspection items including the potable water supply system; the medical facilities including vaccine storage; recreational water facilities; childcare facilities; collection, storage and disposal of waste; skin penetration procedures; pest control strategies; general infection control standards; and ventilation systems. A website has been developed to provide advice to passengers, crew and their agents and to present monthly reports of the proportion of acute respiratory disease and acute gastroenteritis reported by cruise ships. The Environmental Health Vessel Inspection Manual and a 5-year report of the Cruise Ship Health Surveillance Program are available at: http://www.seslhd.health.nsw.gov.au/Public_Health/CruiseShipProgram/default.asp

- 28 **newly-acquired hepatitis B** case notifications, a 7% decrease compared with 2011 ($n = 30$). Eighty-six per cent of cases were male
- 3292 **total hepatitis C** case notifications, similar to the number reported in 2011 ($n = 3326$). Sixty-four per cent of cases were male and 34% were aged between 30 and 39 years
- 47 **newly-acquired hepatitis C** case notifications, an 8% decrease compared with 2011 ($n = 51$). Sixty-six per cent of cases were male

Box 4. Avian influenza in Hunter New England

An outbreak of low pathogenicity H9N2 at a Hunter New England turkey farm in April 2012 was the first such outbreak detected in Australian poultry. Eight human contacts were provided with seasonal influenza vaccination and placed under surveillance until 7 days after last poultry exposure. All remained well and baseline serology demonstrated no evidence of influenza A infection. Antivirals were not used. All birds were destroyed.

Enhanced surveillance by the Department of Primary Industries subsequently identified low pathogenicity H9N2 in a second turkey flock in Hunter New England. There was no significant poultry illness and repeat testing confirmed clearance of the virus from the flock. Six human contacts were encouraged to have seasonal influenza vaccination through their general practitioner and were monitored; none developed significant illness. Nose and throat swabs collected from two contacts with mild upper respiratory symptoms were positive for rhinovirus and enterovirus. Serology was not collected and antivirals were not used. No clear pathway of transmission between farms was identified and the same virus was later identified in water birds in the region.

In November, highly pathogenic H7N7 was detected in poultry on an egg farm in the region. Seven close human contacts were monitored and the offer of antiviral prophylaxis was accepted by one. Nose and throat swabs from a contact with upper respiratory symptoms tested negative for influenza and other respiratory pathogens by polymerase chain reaction. No other illness developed. All birds were destroyed.

The need for modified public health responses to low pathogenicity avian influenza outbreaks (rather than adopting high pathogenicity avian influenza protocols), with a limited role for serology and questionable value of antivirals during these outbreaks, were important lessons arising from the management of these avian influenza outbreaks.

Box 5. Public health emergency preparedness exercises

Sourcing ciprofloxacin for 200 people? Identifying the cause of a mysterious illness affecting children in the state's southwest? These fictional scenarios, considered as part of discussion exercises focused on an intentional release of anthrax spores (August 2012) and a contaminated consumer product (December 2012), are one of the best ways to test response arrangements, build relationships and identify planning gaps. In 2012 Health Protection NSW and the Office of the Chief Health Officer launched a series of exercises focused on public health responses to major incidents or emergencies. Health Protection NSW, the NSW Ministry of Health, Public Health Unit staff, and colleagues from other health specialities (e.g. pharmaceutical services, microbiology and toxicology) were brought together to tackle some of the trickier aspects of the myriad of incidents managed by public health services. The discussions, while always entertaining, also contribute to a common understanding of the tools and strategies we have at our disposal.

In the spirit of strengthening NSW Health's ability to deal with major emergencies and natural disasters, the Office of the Chief Health Officer led the development of a pilot specialised public health commander course. Following a competitive tender process, the course was developed in consultation with key public health practitioners and delivered to 21 participants over 3 days in June 2012. The aim of the course was to enhance the ability of senior NSW public health professionals to effectively lead teams during responses to emergencies or major incidents. The course enabled participants to interact with a range of existing emergency management tools and processes that are available for use in both emergency situations and day-to-day operations. The course also reinforced existing emergency management concepts and arrangements, including how to apply an incident control system.

- 409 cases of **newly-diagnosed HIV infection**, a 24% increase compared with 2011 ($n = 330$). The increase was across most at-risk groups. Most new HIV infections were reported to be male homosexually-acquired (81%), with other risk exposure categories reported as heterosexual contact (14%) and injecting drug use (2%).

The proportion of people with newly-diagnosed homosexually-acquired HIV infection who reported having an HIV test in the year prior to diagnosis decreased slightly from 42% in 2011 to 40% in 2012, while the proportion of those who reported no previous HIV test prior to diagnosis rose from 14% in 2011 to 17% in 2012.

Box 6. Investigating Legionnaires' disease clusters in western Sydney

From February to April 2012, 14 cases of Legionnaires' disease due to *Legionella pneumophila* serogroup 1 were reported in Western Sydney and Nepean Blue Mountains residents. This was around twice the number of cases usually seen in this period. The cases had onset in three clustered periods: early February, mid-March and late April. There were several locations in western Sydney that more than one case had visited during the incubation period of the illness common to each of the clusters. In collaboration with environmental health officers from local councils, all known cooling towers within 500 m of places that cases had visited were inspected, and water samples were taken. Public Health Unit (PHU) and council environmental health officers also searched for and tested other potential sources of *L. pneumophila*, such as unregistered cooling towers, untreated water irrigation systems, car washes, fountains and misting systems. The environmental investigation did not identify the source of infection, however notification rates returned to the normal level after April. A review of weather patterns showed that during the incubation period prior to each cluster of cases the conditions were particularly humid and cloudy. From late April to the end of May there were no further days of complete cloud cover and high humidity. The PHU hypothesises that the periods of complete cloud cover and high humidity may have allowed *L. pneumophila* to survive longer in an aerosol and travel further than usual.

Sexually transmissible infections

In 2012 there were:

- 21 291 **chlamydia** case notifications, a 4% increase compared with 2011 ($n = 20\,570$). Fifty-six percent of cases were female and 58% were aged between 15 and 24 years
- 4127 **gonorrhoea** case notifications, a 43% increase compared with 2011 ($n = 2882$). Eighty-one percent of cases were male and 39% were aged between 20 and 29 years
- 498 **infectious syphilis** case notifications, a 19% increase compared with 2011 ($n = 418$). Almost all cases (96%) were male and 30% were aged between 40 and 49 years
- 29 **lymphogranuloma venereum** (LGV) case notifications, a 19% decrease from the 36 in 2011. All cases were male, and 35% were aged between 30 and 39 years. The number of LGV notifications has decreased since 2010 following an outbreak early in that year. The outbreak in NSW occurred in the global context of increased European rates of LGV infection in men who have sex with men.²

Enteric diseases

In 2012 there were:

- 7669 **enteric disease** case notifications, a 6% increase compared with the average annual count for the previous 5 years
- 2955 **salmonellosis** case notifications, a 15% decrease compared with 2011 and similar to the average annual count for the previous 5 years
- 61 **outbreaks of probable foodborne disease** affecting 662 people, an increase compared with 47 outbreaks affecting 797 people in 2011
- 803 **outbreaks of probable viral gastroenteritis in institutions** affecting 13 842 people, an increase compared with 525 notifications affecting 9071 people in 2011. The increase was likely related to the emergence of a new variant of norovirus GII.4 (known as Sydney 2012)³

- 13 point-source outbreaks of **Salmonella Typhimurium infection** affecting 162 people, most likely associated with the consumption of sauces and desserts prepared with raw eggs.

Respiratory diseases

In 2012 there were:

- 61 **Legionnaires' disease** case notifications due to *Legionella pneumophila* infection, compared with 60 cases in 2011. Public health investigations did not identify any common sources for these cases. *L. pneumophila* cases peaked in February 2012 with 12 cases reported. Notifications due to *L. longbeachae* infection decreased (29 compared with 38 cases in 2011)
- 7999 notifications of **influenza**, an increase compared with 5773 notifications in 2011. Approximately 78% of laboratory-confirmed influenza was influenza A, with the influenza A(H3N2) strain predominating (97%). The incidence of influenza B increased later in the season and accounted for 21% of laboratory-confirmed influenza cases overall. While laboratory-confirmed influenza notifications are likely to represent only a small proportion of cases in the community, other indicators of increased influenza activity in 2012 were: an increase from June to September of people presenting to emergency departments with influenza-like illness (well above the normal expected range); and a marked increase in the number of reported outbreaks of respiratory illness in aged-care and other residential care facilities. The increase in morbidity due to influenza is most likely because the predominant strain (influenza A (H3N2)/Victoria/361/2011) was different to the strain in the 2012 influenza vaccine
- 471 notifications of **tuberculosis**, a decrease from the 523 cases reported in 2011
- three cases of **multi-drug resistant tuberculosis** (MDR-TB). Five cases per year were reported in 2010 and 2011.

Table 1. Disease notifications by year of onset of illness, NSW, 2003–2012

Condition	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Adverse event after immunisation	219	187	107	72	243	259	128	232	359	251	2057
Anthrax	0	0	0	1	0	0	0	1	0	0	2
Arboviral infection	1020	1139	1077	1917	1498	1846	1411	1598	1190	1238	13 934
Barmah Forest virus infection	451	400	449	642	574	530	358	264	458	347	4473
Ross River virus infection	492	696	574	1221	841	1153	909	1087	579	603	8155
Other	77	43	54	54	83	163	144	247	153	288	1306
Blood lead level $\geq 10 \mu\text{g}/\text{dL}^a$	319	277	206	269	242	239	176	232	269	575	2804
Botulism	0	1	0	0	0	0	0	0	2	0	3
Brucellosis	3	7	3	9	4	1	4	2	6	4	43
<i>Chlamydia trachomatis</i> infection	7773	10 001	11 267	12 056	12 463	14 029	15 000	18 269	20 604	21 332	142 794
Chlamydia (congenital)	23	28	46	39	31	44	50	37	34	41	373
Chlamydia (STI)	7750	9973	11 221	12 017	12 432	13 985	14 950	18 232	20 570	21 291	142 421
Cholera	0	1	0	3	2	2	3	2	0	2	15
Creutzfeldt-Jakob disease	0	6	8	10	9	8	11	8	10	7	77
Cryptosporidiosis	203	353	849	778	544	486	1463	349	359	685	6069
Foodborne illness (NOS) ^b	1071	550	309	507	763	667	902	927	797	662	7155
Gastroenteritis (institutional)	3583	12784	1395	10641	10488	10135	11876	7651	9071	13842	91466
Giardiasis	1028	1232	1449	1722	1945	1783	2099	2300	2376	2008	17 942
Gonorrhoea	1324	1428	1571	1730	1382	1330	1653	2301	2882	4127	19 728
Haemolytic uraemic syndrome	5	9	11	11	13	17	4	3	4	10	87
<i>H. influenzae</i> type b	6	5	7	11	7	9	6	6	4	2	63
Hepatitis A	123	137	83	95	65	69	98	83	57	42	852
Hepatitis B	2688	2625	2654	2451	2556	2489	2620	2561	2525	2328	25 497
Hepatitis B – newly acquired	74	53	56	52	56	45	37	35	30	28	466
Hepatitis B – other	2614	2572	2598	2399	2500	2444	2583	2526	2495	2300	25 031
Hepatitis C	4829	4496	4188	4187	4044	3653	3787	3763	3326	3292	39 565
Hepatitis C – newly acquired	123	57	43	56	64	26	41	38	51	47	546
Hepatitis C – other	4706	4439	4145	4131	3980	3627	3746	3725	3275	3245	39 019
Hepatitis D	12	14	13	14	11	13	9	9	12	5	112
Hepatitis E	6	8	7	10	8	14	17	14	21	10	115
HIV infection – newly diagnosed	413	406	394	367	386	324	331	307	330	409	3667
Influenza	862	938	1415	678	2059	1855	12 846	1606	5773	7999	36 031
Influenza – Type A	769	793	1132	487	1703	833	12 570	1416	4034	6250	29 987
Influenza – Type B	55	118	262	181	184	1002	162	145	1629	1712	5450
Influenza – Type A&B	NN	NN	10	2	2	3	12	36	29	34	128
Influenza – Type NOS	38	27	11	8	170	17	102	9	81	3	466
Legionellosis (Legionnaires' disease)	60	80	88	78	104	90	93	97	104	99	893
<i>Legionella longbeachae</i>	37	26	23	22	29	52	64	49	38	29	369
<i>Legionella pneumophila</i>	23	52	64	56	73	38	28	39	60	61	494
Legionnaires' disease – other	0	2	1	0	2	0	1	9	6	9	30
Leprosy	2	5	1	1	5	4	1	1	3	0	23
Leptospirosis	39	40	35	17	9	17	18	23	39	21	258
Listeriosis	28	30	25	26	22	34	27	26	21	39	278
Lymphogranuloma venereum (LGV)	0	1	2	1	0	3	4	57	36	29	133
Malaria	120	100	203	138	96	115	91	122	77	70	1132
Measles	18	12	5	60	4	39	19	26	90	172	445
Meningococcal disease	202	149	140	106	112	81	96	75	72	66	1099
Meningococcal – serogroup B	100	81	73	54	76	49	57	49	43	43	625
Meningococcal – serogroup C	45	24	16	12	9	9	7	5	2	2	131
Meningococcal – serogroup W135	2	5	8	5	2	5	5	4	4	4	44
Meningococcal – serogroup Y	5	3	3	1	5	4	3	3	4	5	36
Meningococcal – other	46	33	37	29	17	13	20	12	18	12	237
Meningococcal – conjunctivitis	4	3	3	5	3	1	4	2	1	0	26
Mumps	36	65	111	155	323	77	40	40	67	105	1019
Pertussis	2769	3565	5797	4909	2097	8755	12 550	9350	13 178	5824	68 794
Pneumococcal disease (invasive)	801	903	642	562	519	547	476	500	529	566	6045
Psittacosis	87	81	121	94	35	40	22	17	21	15	533
Q fever	287	220	143	176	204	167	140	146	137	116	1736
Rotavirus	NN	NN	NN	NN	NN	NN	NN	1380	1061	1754	4195
Rubella	24	18	10	37	9	17	7	13	17	10	162
Congenital rubella	1	1	0	0	1	0	0	0	0	0	3
Rubella – other	23	17	10	37	8	17	7	13	17	10	159
<i>Salmonella</i> infection	1848	2124	2148	2027	2493	2250	2727	3761	3480	2955	25 813
Shigellosis	59	96	134	72	71	109	151	116	131	123	1062
Syphilis	784	754	550	619	822	843	938	822	815	841	7788
Congenital syphilis	3	1	9	4	5	3	0	0	3	0	28
Infectious syphilis ^c	242	294	241	230	458	428	530	421	418	498	3760
Syphilis – other	539	459	300	385	359	412	408	401	394	343	4000
Tetanus	1	1	1	2	2	1	2	1	1	1	13
Tuberculosis ^d	373	432	435	463	454	496	507	528	523	471	4682
Typhoid	15	38	27	35	34	43	47	31	45	43	358
Verotoxin-producing <i>Escherichia coli</i> infections	3	5	16	10	23	19	21	10	10	13	130

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^aFrom May 2012, blood lead was notifiable by a blood lead level of or above $10 \mu\text{g}/\text{dL}$ (previously defined by a blood lead level of or above $15 \mu\text{g}/\text{dL}$).

^bFoodborne illness cases are only those notified as part of an outbreak.

^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.

^dTuberculosis data based on year of diagnosis.

NOS: not otherwise specified.

NN: not notifiable for that year.

No cases of the following conditions have been notified since 1991: plague, diphtheria, granuloma inguinale, lyssavirus, poliomyelitis, rabies, smallpox, typhus, viral haemorrhagic fever, yellow fever.

Source: Notifiable Conditions Information Management System, NSW Health.

Table 2. Incidence rate of disease notifications by year of onset of illness (per 100 000 population), NSW, 2003–2012

Condition	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Adverse event after immunisation	3.3	2.8	1.6	1.1	3.5	3.7	1.8	3.2	5	3.4
Anthrax	0	0	0	0	0	0	0	0	0	0
Arboviral infection	15.4	17	15.9	28.1	21.7	26.4	20	22.4	16.5	17.1
Barmah Forest virus infection	6.8	6	6.6	9.4	8.3	7.6	5.1	3.7	6.4	4.8
Ross River virus infection	7.4	10.4	8.5	17.9	12.2	16.5	12.9	15.2	8	8.3
Other	1.2	0.6	0.8	0.8	1.2	2.3	2	3.5	2.1	4
Blood lead level $\geq 10 \mu\text{g/dL}^a$	4.8	4.1	3	3.9	3.5	3.4	2.5	3.2	3.7	7.9
Botulism	0	0	0	0	0	0	0	0	0	0
Brucellosis	0	0.1	0	0.1	0.1	0	0.1	0	0.1	0.1
<i>Chlamydia trachomatis</i> infections	116.4	149.1	166.8	176.9	181.1	201.1	212.2	255.7	285.7	292.7
Chlamydia (congenital)	0.3	0.4	0.7	0.6	0.5	0.6	0.7	0.5	0.5	0.6
Chlamydia (STI)	116.1	148.7	166.1	176.3	180.6	200.5	211.5	255.2	285.2	292.1
Cholera	0	0	0	0	0	0	0	0	0	0
Creutzfeldt-Jakob disease	0	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1
Cryptosporidiosis	3	5.3	12.6	11.4	7.9	7	20.7	4.9	5	9.4
Foodborne illness (NOS) ^b	16.1	8.2	4.6	7.4	11.1	9.5	12.7	13	11.1	9.1
Giardiasis	15.4	18.4	21.4	25.3	28.2	25.6	29.7	32.2	32.9	27.6
Gonorrhoea	19.8	21.3	23.3	25.4	20.1	19.1	23.4	32.2	40	56.6
Haemolytic uraemic syndrome	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0	0.1	0.1
<i>H. influenzae</i> type b	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0
Hepatitis A	1.8	2	1.2	1.4	0.9	1	1.4	1.2	0.8	0.6
Hepatitis B	40.3	39.1	39.3	36	37.1	35.6	37	35.9	35	32
Hepatitis B – newly acquired	1.1	0.8	0.8	0.8	0.8	0.6	0.5	0.5	0.4	0.4
Hepatitis B – other	39.2	38.3	38.5	35.2	36.3	35	36.5	35.4	34.6	31.6
Hepatitis C	72.3	67	61.9	61.4	58.7	52.4	53.6	52.6	46.1	45.1
Hepatitis C – newly acquired	1.8	0.8	0.6	0.8	0.9	0.4	0.6	0.5	0.7	0.6
Hepatitis C – other	70.5	66.2	61.3	60.6	57.8	52	53	52.1	45.4	44.5
Hepatitis D	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.1
Hepatitis E	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.1
HIV infection – newly diagnosed	6.2	6	5.8	5.4	5.6	4.6	4.6	4.3	4.6	5.6
Influenza	12.9	14	21	9.9	29.9	26.5	181.7	22.4	80	109.8
Influenza – Type A	11.5	11.8	16.8	7.1	24.7	11.9	177.8	19.8	55.9	85.8
Influenza – Type B	0.8	1.8	3.9	2.7	2.7	14.4	2.3	2	22.6	23.5
Influenza – Type A&B	0	0	0.1	0	0	0	0.2	0.5	0.4	0.5
Influenza – Type NOS	0.6	0.4	0.2	0.1	2.5	0.2	1.4	0.1	1.1	0
Legionellosis (Legionnaires' disease)	0.9	1.2	1.2	1.1	1.5	1.2	1.3	1.3	1.4	1.3
<i>Legionella longbeachae</i>	0.6	0.4	0.3	0.3	0.4	0.7	0.9	0.7	0.5	0.4
<i>Legionella pneumophila</i>	0.3	0.8	0.9	0.8	1.1	0.5	0.4	0.5	0.8	0.8
Legionnaires' disease – other	0	0	0	0	0	0	0	0.1	0.1	0.1
Leprosy	0	0.1	0	0	0.1	0.1	0	0	0	0
Leptospirosis	0.6	0.6	0.5	0.2	0.1	0.2	0.3	0.3	0.5	0.3
Listeriosis	0.4	0.4	0.4	0.4	0.3	0.5	0.4	0.4	0.3	0.5
Lymphogranuloma venereum	0	0	0	0	0	0	0.1	0.8	0.5	0.4
Malaria	1.8	1.5	3	2	1.4	1.6	1.3	1.7	1.1	1
Measles	0.3	0.2	0.1	0.9	0.1	0.6	0.3	0.4	1.2	2.4
Meningococcal disease	3.1	2.2	1.9	1.6	1.5	1.2	1.4	1.1	1	1
Meningococcal – serogroup B	1.5	1.2	1.1	0.8	1.1	0.7	0.8	0.7	0.6	0.6
Meningococcal – serogroup C	0.7	0.4	0.2	0.2	0.1	0.1	0.1	0.1	0	0
Meningococcal – serogroup W135	0	0.1	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1
Meningococcal – serogroup Y	0.1	0	0	0	0.1	0.1	0	0	0.1	0.1
Meningococcal – other	0.7	0.5	0.5	0.4	0.2	0.2	0.3	0.2	0.2	0.2
Meningococcal – conjunctivitis	0.1	0	0	0.1	0	0	0.1	0	0	0
Mumps	0.5	1	1.6	2.3	4.7	1.1	0.6	0.6	0.9	1.4
Pertussis	41.5	53.2	85.8	72	30.5	125.5	177.5	130.9	182.7	79.9
Pneumococcal disease (invasive)	12	13.5	9.5	8.2	7.5	7.8	6.7	7	7.3	7.8
Psittacosis	1.3	1.2	1.8	1.4	0.5	0.6	0.3	0.2	0.3	0.2
Q fever	4.3	3.3	2.1	2.6	3	2.4	2	2	1.9	1.6
Rotavirus	NN	NN	NN	NN	NN	NN	NN	19.3	14.7	24.1
Rubella	0.3	0.3	0.1	0.5	0.1	0.2	0.1	0.2	0.2	0.1
Congenital rubella	0	0	0	0	0	0	0	0	0	0
Rubella – other	0.3	0.3	0.1	0.5	0.1	0.2	0.1	0.2	0.2	0.1
<i>Salmonella</i> infection	27.7	31.7	31.8	29.7	36.2	32.3	38.6	52.6	48.3	40.5
Shigellosis	0.9	1.4	2	1.1	1	1.6	2.1	1.6	1.8	1.7
Syphilis	11.7	11.2	8.1	9.1	12	12	13.3	11.5	11.3	11.5
Congenital syphilis	0	0	0.1	0.1	0.1	0	0	0	0	0
Infectious syphilis ^c	3.6	4.4	3.6	3.4	6.7	6.1	7.5	5.9	5.8	6.8
Syphilis – other	8.1	6.8	4.4	5.6	5.2	5.9	5.8	5.6	5.5	4.7
Tetanus	0	0	0	0	0	0	0	0	0	0
Tuberculosis ^d	5.6	6.4	6.4	6.8	6.6	7.1	7.2	7.4	7.3	6.5
Typhoid	0.2	0.6	0.4	0.5	0.5	0.6	0.7	0.4	0.6	0.6
Verotoxin-producing <i>Escherichia coli</i> infections	0	0.1	0.2	0.1	0.3	0.3	0.3	0.1	0.1	0.2

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^aFrom May 2012, blood lead was notifiable by a blood lead level of or above $10 \mu\text{g/dL}$ (previously defined by a blood lead level of or above $15 \mu\text{g/dL}$).

^bFoodborne illness cases are only those notified as part of an outbreak.

^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.

^dTuberculosis data based on year of diagnosis.

NOS: not otherwise specified.

NN: not notifiable for that year.

No cases of the following conditions have been notified since 1991: plague, diphtheria, granuloma inguinale, lyssavirus, poliomyelitis, rabies, smallpox, typhus, viral haemorrhagic fever, yellow fever.

Source: Notifiable Conditions Information Management System, NSW Health.

Table 3. Disease notifications by month of onset of illness, NSW, 2012

Condition	Jan.	Feb.	Mar.	Apr.	May.	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Adverse event after immunisation	7	26	50	33	28	22	16	12	21	15	13	8	251
Arboviral infection	104	157	152	177	131	61	62	51	67	104	92	80	1238
Barmah Forest virus infection	22	44	40	30	28	21	20	16	23	37	36	30	347
Ross River virus infection	45	80	83	115	80	23	23	16	26	37	40	35	603
Other	37	33	29	32	23	17	19	19	18	30	16	15	288
Blood lead level $\geq 10 \mu\text{g}/\text{dL}^a$	31	58	45	38	61	51	36	44	36	103	46	26	575
Brucellosis	1	0	0	0	1	0	1	0	0	0	1	0	4
<i>Chlamydia trachomatis</i> infections	1875	2052	1995	1576	1992	1599	1690	1833	1544	1859	1867	1450	21 332
Chlamydia (congenital)	3	4	5	2	4	5	5	5	1	3	3	1	41
Chlamydia (STI)	1872	2048	1990	1574	1988	1594	1685	1828	1543	1856	1864	1449	21 291
Cholera	0	0	0	1	0	0	0	1	0	0	0	0	2
Creutzfeldt-Jakob disease	1	0	1	1	0	1	0	1	1	1	0	0	7
Cryptosporidiosis	43	76	95	109	78	47	48	27	15	28	47	72	685
Foodborne illness (NOS) ^b	36	39	133	121	47	70	9	40	38	33	36	60	662
Gastroenteritis (institutional)	332	566	948	853	1620	1097	1209	2477	1976	1029	1102	633	13842
Giardiasis	173	234	252	195	202	150	120	116	143	140	156	127	2008
Gonorrhoea	322	370	298	312	369	356	351	364	321	415	377	272	4127
Haemolytic uraemic syndrome	0	3	0	0	1	3	1	0	1	0	0	1	10
<i>H. influenzae</i> type b	0	0	0	0	0	0	2	0	0	0	0	0	2
Hepatitis A	0	5	6	4	4	1	2	2	3	6	6	3	42
Hepatitis B	185	227	198	159	207	201	188	227	191	202	176	167	2328
Hepatitis B – newly acquired	3	2	3	2	1	3	2	1	2	1	2	6	28
Hepatitis B – other	182	225	195	157	206	198	186	226	189	201	174	161	2300
Hepatitis C	247	314	345	238	276	266	237	318	274	264	285	228	3292
Hepatitis C – newly acquired	5	6	2	3	6	2	3	9	0	8	1	2	47
Hepatitis C – other	242	308	343	235	270	264	234	309	274	256	284	226	3245
Hepatitis D	1	1	0	1	0	0	0	0	0	2	0	0	5
Hepatitis E	1	0	0	2	1	0	1	0	1	2	2	0	10
HIV infection – newly diagnosed	26	38	48	23	32	29	37	38	37	46	29	26	409
Influenza	48	66	121	97	332	1965	2420	1675	786	265	133	91	7999
Influenza – Type A	32	43	96	82	291	1844	2176	1215	269	87	56	59	6250
Influenza – Type B	15	23	24	12	37	114	242	456	514	172	76	27	1712
Influenza – Type A&B	1	0	1	3	4	7	2	3	3	6	1	3	34
Influenza – Type NOS	0	0	0	0	0	0	0	1	0	0	0	2	3
Legionellosis (Legionnaires' disease)	11	15	8	14	10	6	10	3	4	3	9	6	99
<i>Legionella longbeachae</i>	4	2	1	1	6	2	3	2	2	1	3	2	29
<i>Legionella pneumophila</i>	7	12	6	10	4	4	3	1	2	2	6	4	61
Legionnaires' disease – other	0	1	1	3	0	0	4	0	0	0	0	0	9
Leptospirosis	2	3	3	5	1	4	0	0	1	0	1	1	21
Listeriosis	6	2	2	4	3	3	1	2	3	4	0	9	39
Lymphogranuloma venereum	0	3	0	1	0	1	2	4	3	5	4	6	29
Malaria	7	5	1	7	5	5	10	8	6	7	6	3	70
Measles	0	0	0	5	6	11	27	44	59	18	2	0	172
Meningococcal disease	2	2	3	10	6	7	13	7	7	4	3	2	66
Meningococcal – serogroup B	1	1	2	7	4	6	9	3	4	3	2	1	43
Meningococcal – serogroup C	0	0	0	0	0	0	1	0	0	0	1	0	2
Meningococcal – serogroup W135	1	0	0	0	0	0	0	0	2	1	0	0	4
Meningococcal – serogroup Y	0	0	0	1	0	0	1	2	0	0	0	1	5
Meningococcal – other	0	1	1	2	2	1	2	2	1	0	0	0	12
Mumps	6	7	3	8	23	20	9	14	3	4	2	6	105
Pertussis	867	682	514	446	564	374	402	439	363	427	431	315	5824
Pneumococcal disease (invasive)	22	10	24	35	70	76	63	85	59	44	44	34	566
Psittacosis	1	3	2	3	0	0	0	2	2	2	0	0	15
Q fever	17	10	11	12	7	5	4	9	8	15	10	8	116
Rotavirus	55	70	65	33	50	63	96	299	530	320	127	46	1754
Rubella	4	0	0	1	0	1	1	3	0	0	0	0	10
<i>Salmonella</i> infection	329	327	360	245	197	123	153	198	190	271	260	302	2955
Shigellosis	22	7	13	7	5	11	12	8	5	13	15	5	123
Syphilis	78	77	60	73	71	67	82	78	78	61	70	46	841
Infectious syphilis ^c	45	44	20	43	42	44	44	48	52	38	50	28	498
Syphilis – other	33	33	40	30	29	23	38	30	26	23	20	18	343
Tetanus	0	0	0	0	0	0	0	0	0	0	1	0	1
Typhoid	5	7	4	3	7	1	2	1	1	5	1	6	43
Verotoxin-producing <i>Escherichia coli</i> infections	2	1	0	3	1	1	1	0	1	1	1	1	13

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^aFrom May 2012, blood lead was notifiable by a blood lead level of or above $10 \mu\text{g}/\text{dL}$ (previously defined by a blood lead level of or above $15 \mu\text{g}/\text{dL}$).^bFoodborne illness cases are only those notified as part of an outbreak.^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.

NOS: not otherwise specified.

No cases of the following conditions have been notified since 1991: plague, diphtheria, granuloma inguinale, lyssavirus, poliomyelitis, rabies, smallpox, typhus, viral haemorrhagic fever, yellow fever.

Source: Notifiable Conditions Information Management System, NSW Health.

Table 4. Disease notifications by Local Health District of residence, NSW, 2012 (based on onset of illness)

Condition	Sydney	Central Coast	Far West	Hunter New England	Illawarra Shoalhaven	Mid North Coast	Murrumbidgee	Nepean Blue Mountains	North Sydney	Northern NSW	South Eastern Sydney	South Western Sydney	Southern NSW	Western Sydney	Western NSW	Justice Health	Other ^f	Overseas	Total
Adverse event after immunisation	5	15	1	52	12	2	27	10	25	8	12	17	16	34	14	0	1	0	251
Arboviral	39	49	22	248	45	94	133	37	76	271	36	43	23	25	94	1	0	2	1238
Barmah Forest virus infections	1	9	3	69	19	53	13	4	3	148	1	3	5	2	14	0	0	0	347
Ross River virus infections	7	26	19	155	10	34	118	20	11	100	1	7	12	6	76	1	0	0	603
Other	31	14	0	24	16	7	2	13	62	23	34	33	6	17	4	0	0	2	288
Blood lead level $\geq 10 \mu\text{g/dl}^g$	12	7	167	47	9	0	70	28	9	10	24	46	5	32	108	0	1	0	575
Brucellosis	0	0	0	2	0	0	0	0	0	1	0	1	0	0	0	0	0	0	4
<i>Chlamydia trachomatis</i> infections	2154	1039	91	3071	1096	516	736	890	1745	944	3615	1998	394	1953	832	177	29	52	21332
Chlamydia (congenital)	2	0	0	7	0	3	1	2	2	0	0	7	3	9	5	0	0	0	41
Chlamydia (STI)	2152	1039	91	3064	1096	513	735	888	1743	944	3615	1991	391	1944	827	177	29	52	21291
Cholera	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
Creutzfeldt-Jakob disease	0	0	0	3	1	0	0	0	0	0	0	1	0	0	2	0	0	0	7
Cryptosporidiosis	65	32	0	83	23	11	14	24	129	28	139	31	9	69	28	0	0	0	685
Giardiasis	177	70	6	243	107	30	52	105	366	17	370	125	44	183	111	1	0	1	2008
Gonorrhoea	890	62	33	260	101	23	39	121	300	74	1318	377	20	412	47	16	4	30	4127
Haemolytic uraemic syndrome	1	0	0	0	0	1	0	1	3	0	0	2	0	1	1	0	0	0	10
<i>H. influenzae</i> type b	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
Hepatitis A	6	0	0	0	0	1	0	0	5	1	7	8	1	10	2	0	0	1	42
Hepatitis B	387	29	5	67	45	27	38	32	295	13	319	458	13	530	40	23	2	5	2328
Hepatitis B – newly acquired	0	1	0	10	0	0	0	2	0	4	5	4	0	0	2	0	0	0	28
Hepatitis B – other	387	28	5	57	45	27	38	30	295	9	314	454	13	530	38	23	2	5	2300
Hepatitis C	299	167	39	347	175	101	137	129	156	178	259	423	97	307	181	289	3	5	3292
Hepatitis C – newly acquired	4	1	0	17	0	2	0	2	0	3	10	0	0	0	4	4	0	0	47
Hepatitis C – other	295	166	39	330	175	99	137	127	156	175	249	423	97	307	177	285	3	5	3245
Hepatitis D	1	0	0	0	0	0	0	0	0	0	0	1	0	3	0	0	0	0	5
Hepatitis E	3	1	0	0	0	0	0	0	0	0	2	1	0	3	0	0	0	0	10
HIV infection – newly diagnosed	112	10	2	14	9	3	5	5	23	5	148	30	8	26	7	1	0	0	409
Influenza	491	133	29	1134	260	119	278	373	1029	460	1147	861	260	1221	181	7	9	7	7999
Influenza – Type A	379	106	24	903	225	91	229	291	756	357	827	693	231	984	134	7	8	5	6250
Influenza – Type B	112	27	4	229	34	28	48	81	273	100	296	167	28	235	47	0	1	2	1712
Influenza – Type A&B	0	0	0	1	1	0	1	1	0	2	24	1	1	2	0	0	0	0	34
Influenza – Type NOS	0	0	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	3
Legionellosis (Legionnaires' disease)	4	2	1	8	5	1	9	5	14	3	12	5	1	23	5	0	1	0	99
<i>Legionella longbeachae</i>	0	1	1	1	4	1	4	0	5	0	0	2	1	6	3	0	0	0	29
<i>Legionella pneumophila</i>	4	1	0	2	1	0	4	4	9	1	12	3	0	17	2	0	1	0	61
Legionnaires' disease – other	0	0	0	5	0	0	1	1	0	2	0	0	0	0	0	0	0	0	9
Leptospirosis	0	0	0	5	1	1	4	0	0	5	2	0	1	0	2	0	0	0	21
Listeriosis	2	1	0	1	5	0	1	2	7	0	11	7	0	2	0	0	0	0	39
Lymphogranuloma venereum	13	0	0	0	0	0	0	0	0	0	12	3	0	1	0	0	0	0	29
Malaria	8	2	0	8	4	2	5	3	2	2	5	4	2	20	2	0	0	1	70
Measles	2	0	0	0	5	3	0	2	2	0	1	126	0	30	0	1	0	0	172
Meningococcal disease	2	4	0	9	7	4	3	4	3	2	6	7	3	8	3	0	1	0	66
Meningococcal – serogroup B	1	2	0	7	5	3	2	3	3	1	3	5	2	3	2	0	1	0	43
Meningococcal – serogroup C	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	2
Meningococcal – serogroup W135	0	1	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	4
Meningococcal – serogroup Y	1	0	0	0	0	0	0	1	0	0	1	0	1	0	1	0	0	0	5
Meningococcal – other	0	1	0	1	2	1	0	0	0	1	1	1	0	4	0	0	0	0	12
Mumps	16	3	1	2	4	0	1	5	21	3	23	13	0	10	3	0	0	0	105
Pertussis	253	235	10	596	440	158	375	396	601	329	507	455	249	770	450	0	0	0	5824
Pneumococcal disease (invasive)	34	28	4	63	45	10	26	41	59	22	64	62	19	57	30	0	0	2	566
Psittacosis	0	2	0	1	0	0	0	2	1	0	1	3	0	1	4	0	0	0	15
Q fever	0	0	0	36	11	8	6	0	2	26	0	4	9	0	14	0	0	0	116
Rotavirus	125	51	1	300	91	11	55	113	213	72	169	180	11	240	119	0	1	2	1754
Rubella	2	0	0	0	0	0	1	0	1	0	1	2	0	3	0	0	0	0	10
<i>Salmonella</i> infection	250	134	13	331	141	140	136	115	387	176	359	312	59	290	94	6	7	5	2955
Shigellosis	19	5	1	4	3	4	1	5	22	4	30	15	1	6	2	0	0	1	123
Syphilis	179	30	3	36	31	1	9	27	55	16	246	79	7	95	25	0	0	2	841
Infectious syphilis ^c	127	9	2	18	11	1	3	13	34	8	213	23	1	26	7	0	0	2	498
Syphilis – other	52	21	1	18	20	0	6	14	21	8	33	56	6	69	18	0	0	0	343
Tetanus	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Tuberculosis ^d	68	2	0	16	15	5	5	14	53	5	64	75	2	139	3	2	1	2	471
Typhoid	3	0	0	1	0	1	2	1	7	1	8	9	1	9	0	0	0	0	43
Verotoxin-producing <i>Escherichia coli</i> infections	0	1	0	8	0	0	0	0	0	1	0	1	1	0	1	0	0	0	13

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^fFrom May 2012, blood lead was notifiable by a blood lead level of or above $10 \mu\text{g/dL}$ (previously defined by a blood lead level of or above $15 \mu\text{g/dL}$).^gFoodborne illness cases are only those notified as part of an outbreak.^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.^dTuberculosis data based on year of diagnosis.^eIncludes disease notifications with unknown Local Health District.

NOS: not otherwise specified.

No cases of the following conditions have been notified since 1991: plague, diphtheria, granuloma inguinale, lyssavirus, poliomyelitis, rabies, smallpox, typhus, viral haemorrhagic fever, yellow fever.

Source: Notifiable Conditions Information Management System, NSW Health.

Table 5. Incidence rate of disease notifications by Local Health District of residence (per 100 000 population), NSW, 2012 (based on onset of illness)

Condition	Sydney	Central Coast	Far West	Hunter New England	Illawarra Shoalhaven	Mid North Coast	Murrumbidgee	Nepean Blue Mountains	North Sydney	Northern NSW	South Eastern Sydney	South Western Sydney	Southern NSW	Western Sydney	Western NSW
Adverse event after immunisation	0.8	4.7	3.2	5.9	3.1	0.9	9.3	2.9	2.9	2.7	1.4	1.9	8	3.9	5.2
Arboviral	6.7	15.2	71.3	28.1	11.6	44.3	46	10.5	9	91.9	4.2	4.8	11.5	2.9	34.8
Barmah Forest virus infections	0.2	2.8	9.7	7.8	4.9	25	4.5	1.1	0.4	50.2	0.1	0.3	2.5	0.2	5.2
Ross River virus infections	1.2	8.1	61.6	17.6	2.6	16	40.8	5.7	1.3	33.9	0.1	0.8	6	0.7	28.1
Other	5.3	4.3	0	2.7	4.1	3.3	0.7	3.7	7.3	7.8	4	3.7	3	2	1.5
Blood lead level $\geq 10 \mu\text{g/dL}^a$	2	2.2	541	5.3	2.3	0	24.2	8	1.1	3.4	2.8	5.2	2.5	3.7	39.9
Brucellosis	0	0	0	0.2	0	0	0	0	0	0.3	0	0.1	0	0	0
<i>Chlamydia trachomatis</i> infections	366.1	322.5	294.8	347.8	281.5	242.9	254.3	253.7	204.4	320	425.7	224.3	195.8	226.7	307.2
<i>Chlamydia</i> (congenital)	0.3	0	0	0.8	0	1.4	0.3	0.6	0.2	0	0	0.8	1.5	1	1.8
<i>Chlamydia</i> (STI)	365.8	322.5	294.8	347	281.5	241.5	254	253.1	204.2	320	425.7	223.5	194.3	225.7	305.4
Cholera	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0	0	0
Creutzfeldt-Jakob disease	0	0	0	0.3	0.3	0	0	0	0	0	0	0.1	0	0	0.7
Cryptosporidiosis	11	9.9	0	9.4	5.9	5.2	4.8	6.8	15.1	9.5	16.4	3.5	4.5	8	10.3
Giardiasis	30.1	21.7	19.4	27.5	27.5	14.1	18	29.9	42.9	5.8	43.6	14	21.9	21.2	41
Gonorrhoea	151.3	19.2	106.9	29.4	25.9	10.8	13.5	34.5	35.1	25.1	155.2	42.3	9.9	47.8	17.4
Haemolytic uraemic syndrome	0.2	0	0	0	0	0.5	0	0.3	0.4	0	0	0.2	0	0.1	0.4
<i>H. influenzae</i> type b	0	0	0	0	0	0	0	0	0	0	0.1	0	0.5	0	0
Hepatitis A	1	0	0	0	0	0.5	0	0	0.6	0.3	0.8	0.9	0.5	1.2	0.7
Hepatitis B	65.8	9	16.2	7.6	11.6	12.7	13.1	9.2	34.6	4.5	37.6	51.4	6.5	61.5	14.7
Hepatitis B – newly acquired	0	0.3	0	1.1	0	0	0	0.6	0	1.4	0.6	0.4	0	0	0.7
Hepatitis B – other	65.8	8.7	16.2	6.5	11.6	12.7	13.1	8.6	34.6	3.1	37	51	6.5	61.5	14
Hepatitis C	50.8	51.8	126.3	39.3	45	47.5	47.3	36.8	18.3	60.3	30.5	47.5	48.2	35.6	66.9
Hepatitis C – newly acquired	0.7	0.3	0	1.9	0	0.9	0	0.6	0	1	1.2	0	0	0	1.5
Hepatitis C – other	50.1	51.5	126.3	37.4	45	46.6	47.3	36.2	18.3	59.3	29.3	47.5	48.2	35.6	65.4
Hepatitis D	0.2	0	0	0	0	0	0	0	0	0	0	0.1	0	0.3	0
Hepatitis E	0.5	0.3	0	0	0	0	0	0	0	0	0.2	0.1	0	0.3	0
HIV infection – newly diagnosed	19	3.1	6.5	1.6	2.3	1.4	1.7	1.4	2.7	1.7	17.4	3.4	4	3	0.4
Influenza	83.4	41.3	94	128.4	66.8	56	96	106.3	120.5	155.9	135.1	96.6	129.2	141.7	66.9
Influenza – Type A	64.4	32.9	77.8	102.3	57.8	42.8	79.1	82.9	88.5	121	97.4	77.8	114.8	114.2	49.5
Influenza – Type B	19	8.4	13	25.9	8.7	13.2	16.6	23.1	32	33.9	34.9	18.7	13.9	27.3	17.4
Influenza – Type A&B	0	0	0	0.1	0.3	0	0.3	0.3	0	0.7	2.8	0.1	0.5	0.2	0
Influenza – Type NOS	0	0	3.2	0.1	0	0	0	0	0	0.3	0	0	0	0	0
Legionellosis (Legionnaires' disease)	0.7	0.6	3.2	0.9	1.3	0.5	3.1	1.4	1.7	1	1.4	0.5	0.5	2.7	1.8
<i>Legionella longbeachae</i>	0	0.3	3.2	0.1	1	0.5	1.4	0	0.6	0	0	0.2	0.5	0.7	1.1
<i>Legionella pneumophila</i>	0.7	0.3	0	0.2	0.3	0	1.4	1.1	1.1	0.3	1.4	0.3	0	2	0.7
Legionnaires' disease – other	0	0	0	0.6	0	0	0.3	0.3	0	0.7	0	0	0	0	0
Leptospirosis	0	0	0	0.6	0.3	0.5	1.4	0	0	1.7	0.2	0	0.5	0	0.7
Listeriosis	0.3	0.3	0	0.1	1.3	0	0.3	0.6	0.8	0	1.3	0.8	0	0.2	0
Lymphogranuloma venereum	2.2	0	0	0	0	0	0	0	0	0	1.4	0.3	0	0.1	0
Malaria	1.4	0.6	0	0.9	1	0.9	1.7	0.9	0.2	0.7	0.6	0.4	1	2.3	0.7
Measles	0.3	0	0	0	1.3	1.4	0	0.6	0.2	0	0.1	14.1	0	3.5	0
Meningococcal disease	0.4	1.2	0	1	1.8	1.9	1	1.2	0.4	0.6	0.7	0.8	1.5	0.9	1.1
Meningococcal – serogroup B	0.2	0.6	0	0.8	1.3	1.4	0.7	0.9	0.4	0.3	0.4	0.6	1	0.3	0.7
Meningococcal – serogroup C	0	0	0	0	0	0	0.3	0	0	0	0.1	0	0	0	0
Meningococcal – serogroup W135	0	0.3	0	0.1	0	0	0	0	0	0	0	0.1	0	0.1	0
Meningococcal – serogroup Y	0.2	0	0	0	0	0	0	0.3	0	0	0.1	0	0.5	0	0.4
Meningococcal – other	0	0.3	0	0.1	0.5	0.5	0	0	0	0.3	0.1	0.1	0	0.5	0
Mumps	2.7	0.9	3.2	0.2	1	0	0.3	1.4	2.5	1	2.7	1.5	0	1.2	1.1
Pertussis	43	73	32.4	67.5	113	74.4	129.6	112.9	70.4	111.5	59.7	51.1	123.8	89.4	166.2
Pneumococcal disease (invasive)	5.8	8.7	13	7.1	11.6	4.7	9	11.7	6.9	7.5	7.5	7	9.4	6.6	11.1
Psittacosis	0	0.6	0	0.1	0	0	0	0.6	0.1	0	0.1	0.3	0	0.1	1.5
Q fever	0	0	0	4.1	2.8	3.8	2.1	0	0.2	8.8	0	0.4	4.5	0	5.2
Rotavirus	21.2	15.8	3.2	34	23.4	5.2	19	32.2	24.9	24.4	19.9	20.2	5.5	27.9	43.9
Rubella	0.3	0	0	0	0	0	0.3	0	0.1	0	0.1	0.2	0	0.3	0
<i>Salmonella</i> infection	42.5	41.6	42.1	37.5	36.2	65.9	47	32.8	45.3	59.7	42.3	35	29.3	33.7	34.7
Shigellosis	3.2	1.6	3.2	0.5	0.8	1.9	0.3	1.4	2.6	1.4	3.5	1.7	0.5	0.7	0.7
Syphilis	30.4	9.3	9.7	4	7.9	0.5	3.1	7.7	6.5	5.4	29	8.9	3.5	11	9.2
Infectious syphilis ^c	21.6	2.8	6.5	2	2.8	0.5	1	3.7	4	2.7	25.1	2.6	0.5	3	2.6
Syphilis – other	8.8	6.5	3.2	2	5.1	0	2.1	4	2.5	2.7	3.9	6.3	3	8	6.6
Tetanus	0	0	3.2	0	0	0	0	0	0	0	0	0	0	0	0
Tuberculosis ^d	11.6	0.6	0.0	1.8	3.9	2.4	1.7	4.0	6.2	1.7	7.5	8.4	1.0	16.1	1.1
Typhoid	0.5	0	0	0.1	0	0.5	0.7	0.3	0.8	0.3	0.9	1	0.5	1	0
Verotoxin-producing <i>Escherichia coli</i> infections	0	0.3	0	0.9	0	0	0	0	0	0.3	0	0.1	0.5	0	0.4

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^aFrom May 2012, blood lead was notifiable by a blood lead level of or above $10 \mu\text{g/dL}$ (previously defined by a blood lead level of or above $15 \mu\text{g/dL}$).^bFoodborne illness cases are only those notified as part of an outbreak.^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.^dTuberculosis data based on year of diagnosis.

NOS: not otherwise specified.

No cases of the following conditions have been notified since 1991: plague, diphtheria, granuloma inguinale, lyssavirus, poliomyelitis, rabies, smallpox, typhus, viral haemorrhagic fever, yellow fever.

Source: Notifiable Conditions Information Management System, NSW Health.

Table 6. Disease notifications by age group and sex of the case, NSW, 2012 (based on onset of illness)

Condition	0–4 yrs		5–24 yrs		25–44 yrs		45–64 yrs		65+ yrs		Total		Total
	F	M	F	M	F	M	F	M	F	M	F	M	
Adverse event after immunisation	46	55	55	33	11	4	22	8	14	3	148	103	251
Arboviral infection	2	6	94	79	227	237	213	219	73	84	611	626	1238
Barmah Forest virus infection	0	3	19	18	64	47	68	78	17	33	168	179	347
Ross River virus infection	2	2	32	37	111	121	106	95	52	42	305	298	603
Other	0	1	43	24	52	69	39	46	4	9	138	149	288
Blood lead level $\geq 10\mu\text{g/dl}^a$	50	50	4	85	8	227	13	114	3	20	78	496	575
Brucellosis	0	0	0	1	0	1	0	1	1	0	1	3	4
<i>Chlamydia trachomatis</i> infections	35	21	8171	4301	3341	4357	219	774	4	66	12 000	9525	21 557
Chlamydia (congenital)	26	14	1	0	0	0	0	0	0	0	27	14	41
Chlamydia (STI)	9	7	8170	4301	3341	4357	219	774	4	66	12 000	9511	21 543
Cholera	0	2	0	0	0	0	0	0	0	0	0	2	2
Creutzfeldt-Jakob disease	0	0	0	0	0	0	2	0	3	2	5	2	7
Cryptosporidiosis	131	162	114	73	99	64	20	7	6	9	370	315	685
Giardiasis	217	301	167	188	387	327	133	127	93	63	998	1006	2008
Gonorrhoea	1	0	340	764	355	2023	76	529	7	29	780	3345	4127
Haemolytic uraemic syndrome	0	3	0	2	3	1	1	0	0	0	4	6	10
<i>H. influenzae</i> type b	0	0	0	1	0	0	0	0	0	1	0	2	2
Hepatitis A	1	2	11	7	6	6	3	3	1	2	22	20	42
Hepatitis B	2	0	140	155	575	660	258	348	57	103	1033	1266	2328
Hepatitis B – newly acquired	0	0	1	3	2	12	1	6	0	3	4	24	28
Hepatitis B – other	2	0	139	152	573	648	257	342	57	100	1029	1242	2300
Hepatitis C	5	3	117	221	587	1070	385	739	89	66	1184	2100	3292
Hepatitis C – newly acquired	0	0	4	5	11	16	1	10	0	0	16	31	47
Hepatitis C – other	5	3	113	216	576	1054	384	729	89	66	1168	2069	3245
Hepatitis D	0	0	0	1	0	1	1	2	0	0	1	4	5
Hepatitis E	0	0	0	0	3	4	1	2	0	0	4	6	10
HIV infection – newly diagnosed	0	0	9	43	18	237	9	85	0	7	36	372	409
Influenza	748	830	954	917	1095	649	659	602	844	675	4304	3678	7999
Influenza – Type A	611	683	602	545	875	525	554	501	744	591	3389	2849	6250
Influenza – Type B	137	146	351	371	217	119	102	97	93	72	901	806	1712
Influenza – Type A&B	0	1	1	1	1	4	3	4	7	12	12	22	34
Influenza – Type NOS	0	0	0	0	2	1	0	0	0	0	2	1	3
Legionellosis (Legionnaires' disease)	0	0	1	0	3	4	15	24	22	30	41	58	99
<i>Legionella longbeachae</i>	0	0	1	0	1	2	8	4	5	8	15	14	29
<i>Legionella pneumophila</i>	0	0	0	0	2	2	5	19	14	19	21	40	61
Legionnaires' disease – other	0	0	0	0	0	0	2	1	3	3	5	4	9
Leptospirosis	0	0	1	1	2	7	2	6	1	1	6	15	21
Listeriosis	3	1	0	0	3	0	2	3	17	10	25	14	39
Lymphogranuloma venereum	0	0	0	3	0	16	0	9	0	1	0	29	29
Malaria	1	0	6	13	6	20	6	14	1	3	20	50	70
Measles	27	31	31	39	21	20	3	0	0	0	82	90	172
Meningococcal disease	11	12	8	13	0	4	6	6	3	3	28	38	66
Meningococcal – serogroup B	8	11	4	7	0	2	3	5	1	2	16	27	43
Meningococcal – serogroup C	0	0	0	1	0	1	0	0	0	0	0	2	2
Meningococcal – serogroup W135	0	1	0	0	0	0	1	1	0	1	1	3	4
Meningococcal – serogroup Y	0	0	1	0	0	1	1	0	2	0	4	1	5
Meningococcal – other	3	0	3	5	0	0	1	0	0	0	7	5	12
Mumps	3	2	10	10	22	41	8	5	3	1	46	59	105
Pertussis	581	600	1430	1298	575	296	404	284	208	145	3199	2623	5824
Pneumococcal disease (invasive)	36	30	20	20	52	44	51	80	110	122	269	297	566
Psittacosis	0	0	0	0	2	0	4	6	0	3	6	9	15
Q fever	0	1	1	12	4	23	15	44	1	15	21	95	116
Rotavirus	358	402	225	267	86	72	63	56	144	78	876	876	1754
Rubella	1	2	1	0	3	2	0	1	0	0	5	5	10
<i>Salmonella</i> infection	331	357	375	429	362	332	221	207	184	150	1473	1476	2955
Shigellosis	3	5	16	14	19	24	15	16	4	6	58	65	123
Syphilis	0	0	6	58	52	351	31	229	32	80	121	719	841
Infectious syphilis ^c	0	0	2	42	13	246	3	173	1	17	19	478	498
Syphilis – other	0	0	4	16	39	105	28	56	31	63	102	241	343
Tetanus	0	0	0	0	0	0	0	0	1	0	1	0	1
Tuberculosis ^d	6	5	33	29	122	104	41	52	16	62	218	252	471
Typhoid	1	1	7	10	8	13	1	2	0	0	17	26	43
Verotoxin-producing <i>Escherichia coli</i> infections	0	0	2	2	2	0	2	3	0	2	6	7	13

Onset of illness: the earlier of patient-reported onset date, specimen date or date of notification.

^aFrom May 2012, blood lead was notifiable by a blood lead level of or above 10 $\mu\text{g/dL}$ (previously defined by a blood lead level of or above 15 $\mu\text{g/dL}$).^bFoodborne illness cases are only those notified as part of an outbreak.^cIncludes primary, secondary, less than 1-year duration and newly-acquired syphilis.^dTuberculosis data based on year of diagnosis.

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Source: Notifiable Conditions Information Management System, NSW Health.

Vectorborne diseases

In 2012 there were:

- 603 **Ross River virus infection** notifications, an increase from 579 in 2011
- 347 **Barmah Forest virus infection** notifications, a 24% decrease compared with the 458 notifications in 2011
- 208 **dengue fever** case notifications, a 50% increase compared with the 139 notifications in 2011. The majority of the cases in 2012 were linked to international travel; Indonesia was the most commonly reported exposure site (40%), followed by Thailand (21%), India (7%) and the Philippines (5%). While there currently is no local transmission of dengue fever in NSW, it is the most common mosquitoborne viral disease of humans worldwide and represents a major international public health concern
- 70 **malaria** case notifications, compared with 77 in 2011. All were acquired overseas. Travel to India was the most commonly reported exposure site (19%), followed by Sudan and Pakistan (both 10%)
- no confirmed cases of **flavivirus infections, Kunjin virus infections** or **Murray Valley encephalitis virus infections** notified
- two confirmed cases of **Chikungunya**, both acquired outside Australia (India and Kenya); this is a decrease from the 10 cases notified in 2011.

Table 7. Proportion of Aboriginal and non-Aboriginal children fully immunised in NSW, for three age groups, December 2011 and December 2012

Age group (years)	Non-Aboriginal children		Aboriginal children	
	2011 (%)	2012 (%)	2011 (%)	2012 (%)
1	91.8	91.4	87.2	85.6
2	92.6	92.3	92.9	92.7
5	89.8	91.6	84.9	92.7

Source: Australian Childhood Immunisation Register.

Zoonotic diseases

In 2012 there was:

- a slight decrease in **Q fever** case notifications (116 compared with 137 in 2011). Q fever was the most commonly notified zoonotic disease in 2012
- a slight decrease in **brucellosis** infections (four compared with six in 2011). Two cases were overseas-acquired and two infections were in hunters of feral pigs in Northern NSW.

Prevention activities

Immunisation

In 2012 NSW Health:

- **maintained high immunisation coverage rates for children at 1, 2 and 5 years of age** (Table 7). While coverage rates for Aboriginal and non-Aboriginal children are comparable at 2 and 5 years of age, coverage for Aboriginal children is less at 1 year of age and Aboriginal children are more likely to be vaccinated late at any age
- funded a pilot program to employ Aboriginal Health Workers to work collaboratively with existing services to promote **timely vaccination of Aboriginal children** through targeted interventions
- developed an **immunisation awareness campaign** to inform the community and providers about the importance of ensuring that children are fully vaccinated on time
- successfully implemented the **transition from Prevenar 7 to Prevenar 13** vaccine for children at 2, 4 and 6 months of age, and a supplementary program for children who had commenced Prevenar 7 vaccination to provide greater protection against pneumococcal disease
- introduced a more focused **pertussis control strategy** by offering new mothers free pertussis vaccine in the maternity unit after the birth of their child or via their general practitioner (GP) within 2 weeks post-birth
- increased immunisation coverage rates for adolescents in the **NSW School-Based Vaccination Program** for vaccines offered to students in Years 7 and 10 (Table 8)

Table 8. Proportion of eligible students in Years 7 and 10 who received human papillomavirus (HPV), hepatitis B (HepB), diphtheria-tetanus-pertussis (dTpa) and varicella (Vz) vaccine at school, NSW, 2011 and 2012

Vaccine	Dose 1		Year 7 Dose 2		Dose 3		Year 10 Dose 1	
	2011 (%)	2012 (%)	2011 (%)	2012 (%)	2011 (%)	2012 (%)	2011 (%)	2012 (%)
HPV	81	86	76	83	71	73	–	–
HepB	68	69	63	63	–	–	–	–
dTpa	77	81	–	–	–	–	66	67
Vz	45	50	–	–	–	–	–	–

Source: NSW School Immunisation Program.

- facilitated the provision of free **seasonal influenza vaccine** to people at high risk of severe influenza complications. The NSW Health Population Health Survey estimated that 31% of all respondents (95% CI: 28–33%) interviewed during August and September 2012 had received a seasonal influenza vaccine in the previous 12 months; vaccine uptake was similar to the estimate for the same period in the previous year (33% [95% CI: 31–35%]). For respondents aged 65 years and over (one of the identified high-risk groups), the estimated vaccination rate was 72% (95% CI: 69–76%), which is similar to previous years.

Disease control

In 2012 Health Protection NSW:

- initiated a range of control measures to contain the **measles** outbreak, including sending letters to health care providers, issuing media alerts, developing measles alert posters and other materials for health care facilities and local GPs, and holding free local vaccination clinics in areas with high rates of measles infections
- continued an **influenza** prevention campaign that focused on three key respiratory disease prevention messages: *Cover your face when you cough or sneeze*; *Wash your hands*; and *Stay at home if you're sick so you don't infect others*. The campaign included distribution of *The Spread of Flu is Up to You* campaign posters; vaccination and pregnancy brochures; and infection control signage to health care facilities, aged-care facilities and a range of other sectors
- with local Public Health Units and an expert sub-committee of the NSW Tuberculosis Advisory Committee, continued to develop and implement strategies to eliminate transmission of **tuberculosis in Aboriginal communities** in NSW. This work involves better understanding barriers to early presentation to health services and non-compliance with treatment for latent tuberculosis infection, and investigation of strategies to raise awareness and increase early diagnosis of tuberculosis. The Northern NSW and Mid North Coast Local Health Districts have employed two Aboriginal Community Engagement Consultants to work directly with local Aboriginal communities on awareness-raising and prevention activities
- continued the **NSW Arbovirus Surveillance Program**, which included testing for both alphaviruses (Barmah Forest, Ross River and Sindbis virus) and flaviviruses (Alfuy, Edge Hill, Kokobera and Stratford) in mosquitoes trapped at 20 coastal, inland and metropolitan locations, and testing of chickens for antibody seroconversion to Murray Valley encephalitis virus and Kunjin virus at 10 sites in inland NSW from November 2011 to April 2012. During the 2011–2012 season inland areas had seen considerable arboviral activity with 67 isolates from mosquitoes and 15 seroconversions for Murray Valley encephalitis virus in chickens. Inland areas have

also seen extremely high numbers of mosquitoes due to excessive precipitation and flooding. Coastal and Sydney metropolitan areas had low vector abundance and minimal arboviral activity

- issued statewide media releases in January, March and December, warning about the increased risk of **mosquito-borne infections** and how to prevent them. In addition, advice on mosquito control in flood-affected areas was provided to councils and the general public in March. These were supplemented by the information on the Ministry of Health website, development of guiding principles for environmental health officers, distribution of *Fight the Bite* posters and brochures, radio advertising and a range of local media messaging by public health officials.

Drinking water

In 2012 Health Protection NSW:

- together with local Public Health Units, helped more than 30 local water utilities develop **risk-based drinking water management systems**, consisting of documents, procedures and other supporting information for the safe supply of drinking water. These systems allow water utilities to document current practices that fulfil *Australian Drinking Water Guidelines*⁴ requirements, identify any gaps, conduct risk assessment workshops, identify critical control points (e.g. filtration and disinfection), and develop operational procedures for critical control points
- developed **guidelines** jointly with the NSW Office of Water (*NSW Guidelines for Drinking Water Management Systems*)⁵ and the NSW Food Authority (*NSW Guidelines for Water Carters*)⁶ **to assist water suppliers** to comply with the requirements of the *NSW Public Health Act 2010* for all suppliers of drinking water to develop, by 1 September 2014, a management system based on the Framework for Management of Drinking Water Quality (*Australian Drinking Water Guidelines 2011*)⁷
- rebuilt the **NSW Drinking Water Database**, which holds the results of drinking water monitoring across regional NSW, to improve data management and reporting
- reviewed multiple applications for water recycling
- continued to **regulate major water utilities** (Hunter Water Corporation, Sydney Water Corporation and Sydney Catchment Authority), **monitor compliance of utilities** with the *NSW Fluoridation of Public Water Supplies Act 1957*, and oversee more than 100 regional water utilities.

Aboriginal health

NSW Housing for Health

In 2012:

- Housing for Health^{8,9} projects were underway in Broken Hill, Tibooburra, Purfleet/Taree, Box Ridge/Coraki, Walhallow, Cabbage Tree Island and

Toomelah/Boggabilla. NSW Health, in partnership with other state and Commonwealth agencies, has been delivering Housing for Health projects in the **Aboriginal community housing** sector across NSW since 1998. Housing for Health aims to test and repair or replace health hardware (mainly plumbing or electrical items) so that houses are safe and occupants have the ability to carry out evidence-based healthy living practices (such as washing people and clothes). The Program has surveyed and serviced over 2826 houses in 86 Aboriginal communities over the period 1998–2012. Over 81 000 items relating specifically to improved health and safety have been fixed, benefiting approximately 12 100 people

- integrated projects (i.e. Housing for Health projects run together with the Aboriginal Housing Office housing upgrade projects) were underway in Toomelah/Boggabilla, and preparations began for a project in Murrin Bridge.

Aboriginal Communities Water and Sewerage Program

In 2012:

- seven new Aboriginal communities began receiving **improved water and sewerage services** (bringing the total to 41 communities, and over 4000 people receiving improved water and sewerage services under the Program). Regional Public Health Units worked with communities, the NSW Office of Water, local water utilities and service providers to implement Risk-Based Water and Sewerage Management Plans. The Aboriginal Communities Water and Sewerage Program¹⁰ is a joint partnership between the NSW Government and the NSW Aboriginal Land Council. It aims to ensure adequate operation, maintenance and monitoring of water supplies and sewerage systems in over 60 Aboriginal communities in NSW. NSW Health is involved in the development and roll-out of the Program across the state.

The Aboriginal Environmental Health Officer Training Program

In 2012 there were:

- 11 **Aboriginal environmental health officer trainees** participating in the Program
- 12 graduate Aboriginal environmental health officers from the Program
- nine Training Program partnerships under 50/50 funding agreements:
 - four partnerships with Public Health Units
 - four three-way partnerships with Public Health Units and Local Government
 - one partnership with Local Government.

Heat

In November 2012, when a period of unseasonably hot weather coincided with a number of major events in Sydney, the NSW Heatwave Sub Plan was activated for

the first time. NSW Health worked closely with the NSW Police Force and other agencies to ensure the public were provided with clear and consistent advice on how to minimise the risk of heat-related illness.

Implementation of Public Health Regulation 2012

In 2012 Health Protection NSW:

- developed supporting resources including forms, information sheets, fact sheets and audit tools to assist in the implementation of the **Public Health Act 2010** and the **Public Health Regulation 2012**, both of which commenced on 1 September 2012
- held **forums at 11 localities** across the state to brief Local Government environmental health officers on the regulatory changes, and their implementation and enforcement methodology. Specific case studies were developed through a steering committee for presentation and study at the forums. Local Government feedback was positive, providing advice for improvements.

Asbestos

In 2012 Health Protection NSW:

- participated in the **Heads of Asbestos Coordination Authority**, a state-based interagency group that has been developing programs including a statewide plan for asbestos, a model asbestos policy for local councils, and a comprehensive public awareness campaign. Through this membership it also provides input into the newly formed Commonwealth Asbestos Safety and Eradication Agency.

Air quality

In 2012 Health Protection NSW:

- supported **two environmental studies in the Hunter Valley** to help define the types of exposure of the community to particulate air pollution and determine the distribution and relative contribution of various sources to this pollution. This information will inform programs to reduce community exposure
- supported the Chief Health Officer's **Air Pollution Expert Advisory Committee**, which provides independent advice on the scientific basis for management of the health effects of air pollution.

Conclusion

Communicable diseases and the environment pose many potential threats to human health. These potential threats are dealt with through a combination of four goals:

- **preventing production of the threat** (through, for example, immunisation, regulation of drinking water and working with planning agencies to ensure planning approvals address potential health threats)
- **early identification of the threat** (through surveillance systems such as the disease and exposure notification, and arbovirus surveillance systems)

- **reducing the level of the threat** (through strategies such as outbreak control, immunisation, and identification and treatment of the causes of diseases)
- **effective communication** (with the community, with appropriate health professionals, with other government agencies such as the NSW Environment Protection Authority and NSW Department of Planning, and with other jurisdictions, to respond to threats and reduce exposures).

Effective health protection for the NSW population is dependent on our success in achieving these four goals. That success is dependent on the skills, experience and advocacy of health protection workers across the state in identifying, responding to and communicating health threats to the NSW population.

Increasing international travel also increases the risk of importing enteric diseases such as hepatitis A, typhoid and paratyphoid, and other vaccine-preventable diseases such as measles and diphtheria. This underlines the need to maintain high vaccination coverage rates for all NSW children, and for all people planning travel, to ensure they have received all their routine vaccines, as well as specific travel vaccines such as hepatitis A and typhoid for some destinations.

Steady migration to Australia of people from countries with a high burden of tuberculosis necessitates maintenance of specialised tuberculosis services accessible across NSW for early detection, expert treatment and screening activities.

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Protecting the health of the community is a collaborative effort, involving Public Health Units, clinicians, laboratory scientists, affected communities, and other government and community-based organisations. We thank all those involved for the role they played in NSW in 2012.

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