

SWIMMING POOLS IN NSW: DO WE KNOW HOW DANGEROUS THEY ARE?

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This article reports on a postal survey of the 179 local government authorities (LGAs) in NSW to investigate the number of swimming pools under their ordinances and whether there is an association between the number of pools and serious immersions (drownings and hospitalised near-drownings) in those areas.

BACKGROUND

Private swimming pools represent the single most dangerous water environment for children up to the age of four in NSW. For example, there were 400 serious immersions in swimming pools in NSW for this age group in the years 1986 and 1989-92 inclusive.¹

On 1 August 1992, the Swimming Pools Act 1992 replaced legislation which had been passed in NSW in 1990. The major revision of the new Act was the removal of the requirement of all private pools to have isolation fencing. The new legislation requires only pools built after 1 August 1990 to be surrounded by isolation fencing. Pools built prior to that date need only to be surrounded by a child-resistant barrier that separates the pool from any adjoining premises. Before 1990, under Ordinance 288C of the Local Government Act 1919, a council could serve notice on pool owners to enclose or fence a pool if it was considered by the council to be dangerous to human life. Under this ordinance, individual local councils set their own enclosure requirements, with varied opinions of what pool environments would be considered dangerous.

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TABLE 1

DESCRIPTIVE STATISTICS OF THE SURVEY

Survey Question	% with DK *	n	Mean	SD	Median	Range
How many pools are there in the LGA?	22.5	110	1535.5	3619.2	209	2-25000
What proportion of these pools would comply with the 1992 Swimming Pools Act?	44.4	79	75.5	23.9	80	1-100
How many new applications for pools have there been in the past 12 months?	2.1	138	49.7	119.2	9	0-1043
How many inspections of swimming pools took place in the past 12 months?	18.3	116	116.1	385.1	10	0-3000
Per cent of pools inspected	—	94	14.8	24.2	5.2	0-100
How many residential properties are there in the LGA?	7.8	130	12356.8	17093.2	4157.5	100-75000

* DK = 'don't know'

The provisions of the Swimming Pools Act 1992 places two mandatory requirements on a local council:

- to ensure that it is notified of the existence of all swimming pools that are within its Area;
- to promote awareness of the requirements of the Act to swimming pool owners in its Area.

Unfortunately, these provisions can be interpreted in different ways, resulting in great variation in their implementation. For example, many local councils believe that it is the pool owner's responsibility to ensure that a pool complies with the legislation. Many local councils believe that the requirement of council inspection is only in the instance of pool installation under building application requirements. There is confusion about whether further inspections should be made after installation. Although there is no clear requirement to inspect any swimming pools on a regular basis, there are provisions within the legislation to prosecute noncompliance. In practice, it is up to local councils to decide whether regular inspection of swimming pools is required to ensure that pool owners are both aware of the legislation and comply with it.

Under the Swimming Pools Act 1992, local councils are responsible for regulating and enforcing the Act. However, there has been no state-wide evaluation of the implementation and effectiveness of the new legislation as there is no coordinated approach to ensure that local councils are fulfilling their mandatory responsibilities.

In identifying black spots in NSW for serious immersions in the toddler age group, it was hypothesised that the

number of serious immersions in an area is related to the number of children,¹ the number of pools and, importantly, the number of pools that are considered 'safe' comply with the Swimming Pools Act 1992. Affluence (socioeconomic status) is also thought to have a positive association with the rate of serious immersions in local government authorities (LGAs),² as more affluent areas could be expected to have a greater number of pools. If these relationships exist, level of affluence would be a confounder in the relationship between number of pools and serious immersions. In the current study, we investigated these factors for possible association with higher than expected rates of serious immersions.

Until the present study, there has been no attempt to determine the number of pools for each LGA in NSW. The aim of the present study was to identify how many pools there are in each LGA and how many of these comply with the existing legislation. A secondary aim was to determine whether there is an association between the number of pools and serious immersion incidents, after adjusting for level of affluence.

METHODS

Following the publication of 'Motivating local action on pool drownings: A black spot approach for NSW',¹ a survey was carried out of all 179 local government councils in NSW during February 1996.

The postal survey was addressed to the general manager of each local council, but stated in the covering letter that the appropriate officer should complete the form. The survey asked:

TABLE 2

REGRESSION OF STANDARDISED SERIOUS IMMERSION RATIOS (SSIR) ON THE NUMBER OF POOLS IN LGAs IN NSW

	n	Univariate: No. of pools		No. of pools adjusted for by Jarman 8 index	
		p	R ²	P	R ²
NSW	105	0.104	0.026	0.038	0.047
Sydney	19	0.076	0.174	0.305	0.199
LGAs with SSIR>0					
NSW	61	0.674	0.003	0.498	0.009
Sydney	15	0.269	0.093	0.708	0.150

How many pools are there in the LGA?

What proportion of these pools would comply with the 1992 Swimming Pools Act?

How many new applications for pools have there been in the past 12 months?

How many inspections of swimming pools took place in the past 12 months?

How many residential properties are there in the LGA?

For each question, there was the option of an open field or a 'don't know' (DK) response. The LGAs were able to respond by mail or by fax. Three follow-up telephone calls were conducted between February and April 1996 for non-responders.

Descriptive analysis of the survey was carried out initially. Linear regression in SAS version 6.12 was used to test the association between the level of affluence as measured by the Jarman 8 Score Index and the number of pools in each LGA.³ Multiple linear regression was used to regress the number of pools in each LGA on the standardised serious immersion ratio (SSIR), adjusting for level of affluence. The SSIR uses all serious immersions in NSW for 1986 and 1989–92 for children under the age of four as the standard and calculates the ratio of observed immersions over expected immersions for each LGA.¹ The Jarman 8 index is derived from the 1991 census variables related to the population structure, family structure, worker skills, unemployment rates and ethnicity.³

Of the 179 LGAs, 142 (79.3 per cent) returned surveys by April 1996. The percentage of respondents who were

unable to answer the survey questions—designating the DK option—is given in Table 1.

The survey question most frequently receiving a DK response was the proportion of pools that complied with the legislative requirements (44.9 per cent). This was followed by the number of pools in the LGA (22.5 per cent).

The descriptive statistics (Table 1) show an enormous variation in responses. On average, there were 1535 pools in each LGA and it was stated that 75.5 per cent complied with the legislation.

Table 2 shows regression of standardised serious immersion ratios on the number of pools in LGAs in NSW. Univariate analysis revealed a significant positive association between the number of pools and higher level of affluence in an LGA as measured by the Jarman 8 ($p < 0.001$, $R^2 = 0.08$). Multivariate regression models showed that, after adjustment by the Jarman 8 index, the number of pools became a significant predictor of SSIR for NSW, but not for Sydney. However, the model accounted for only five per cent of the variation for NSW. No other variable was significant either univariately or adjusted for the Jarman 8 index. The number of new pools was the next best predictor of SSIR in Sydney ($p = 0.080$, $R^2 = 0.138$).

Given the results of the univariate analysis as a basis, a subsequent power analysis revealed a power of 0.34 for NSW and 0.17 for LGAs in the Sydney metropolitan area for the association between the number of pools and the SSIR.

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DISCUSSION

This survey suggests that many councils were unaware of their responsibilities under the Swimming Pools Act 1992. It is unlikely that 75 per cent of pools in NSW comply with the Act, given the low level of pool inspection shown in the current study (14.8 per cent of pools in a 12-month period). A study of compliance in the Newcastle area revealed that only 17 per cent of pools complied with the Swimming Pools Act 1992, even after a public awareness campaign.⁴ This result was much lower than that expected by the Newcastle City Council. The Newcastle study also showed that significant improvement (a 79 per cent increase) in pool compliance was achieved through an inspection and reinspection program. This indicates that an active regulation program can maintain a high level of compliance.

The large number of non-respondents and 'don't know' answers has reduced the power and accuracy of this analysis. The small amount of explained variation in the data (R^2) indicate that the number of pools and the level of affluence in an LGA are not the only important factors associated with serious immersions. The other factors need to be identified by further research.

Adjustment for the level of affluence strengthened the positive association between the number of pools and the SSIR. However, this was not the case for the 19 LGAs in Sydney. The lack of effect in Sydney may be due to the heterogeneity of LGAs in Sydney, with areas of great affluence and poverty coexisting in the same LGA, as well as the small number of LGAs included in this analysis. There may also be differences in the nature of pool use in rural and urban areas.

There are other possible explanations for these conflicting results. Children in less affluent families may have an unusually low exposure to pools (rather than children in affluent families having greater exposure), resulting in a lower rate of immersions. It is possible that the relationship is not linear and that a certain threshold of exposure has to be achieved before the relationship exists. The impact of isolation fencing versus perimeter fencing on the serious immersion rate is also difficult to assess. Affluent areas

often tend to be older suburbs, which would result in more pools being built before 1 August 1990. If perimeter fencing were less effective, there would be an increase in the immersion rate in those areas with higher rates of perimeter fencing.

The current analysis could be repeated with more reliable data on the number of pools in NSW; more accurate data on compliance levels; more reliable data on the number of pools with perimeter fencing or isolation fencing; and a longer period of surveillance that would capture more serious immersion incidents. If local government authorities kept accessible and timely records of the number of pools in their areas, and any inspection programs, this would permit identification of possible problem areas and assist the development of appropriate interventions.

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INFECTIOUS DISEASES, NSW: DECEMBER 1998

In recent weeks there has been an increase in reports of **Ross River virus infections**, particularly from rural Macquarie and Greater Murray Areas (Figure 1). The increase is earlier than expected for the season, and has prompted local public warnings about the importance of personal protection to avoid infection through being bitten by mosquitoes. These measures include screening external windows and doors in houses, removing stagnant water from around the house, covering up with loose-fitting long sleeves and trousers and using plenty of insect repellent, especially when going outdoors around and soon after dusk.

Reports of **pertussis** have been on the rise since June.

Many of these cases have occurred in the Greater Murray, Southern NSW and Hunter areas (Table 3). These reports highlight the need for health care providers to be vigilant in checking the immunisation status of all children attending for any reason, and to have a high index of suspicion for this infection in patients of any age attending with a coughing illness. Suspected cases should be notified (confidentially) to the local public health unit (PHU). While treatment has little impact on symptoms (except if given very early in the course of the infection), it is effective in stopping transmission to contacts. PHU staff can help arrange preventive therapy for close contacts of cases.

YEAR IN REVIEW INFECTIOUS DISEASES SURVEILLANCE: 1997

In this issue, we provide a summary of infectious disease surveillance for 1997. Tables 4 through 7 provide breakdowns of the notifiable diseases for NSW by year, month, area of residence, age group and sex.

DISEASES WITH INCREASED NOTIFICATIONS

There were 1610 cases of **Ross River virus infection** reported by laboratories. This was a significant increase over previous years and probably relates to both an increased prevalence of infected mosquitoes, and better recognition of the disease by laboratories, doctors, and the public. The epidemic affected most rural areas of the state, and large numbers of cases were reported from the Greater Murray, Hunter, Central Coast, Illawarra and Far West areas. Some cases were also reported that had resulted from exposure to mosquitoes in bushland areas on the periphery of Sydney.

Reports of **gonorrhoea** continued to increase in 1997, particularly in young inner city men, highlighting the need for a continuing emphasis on the practice of safe sex.

Hepatitis A reports also jumped dramatically in 1997. Several hundred of these cases were attributable to an outbreak traced to eating contaminated oysters in the early

part of the year.¹ A smaller outbreak of 23 cases was traced to consumption of contaminated prawns at a Sydney restaurant in May.² Other cases were attributable to person-to-person spread, notably among young men in the inner city. These latter cases are a reminder of the value of hepatitis A vaccination for gay men and other high risk groups.

Laboratory reports of positive antibodies to **hepatitis C** virus remained the most commonly reported condition, with almost 9000 case reports in 1997. However, many of these reports are likely to represent persons infected in previous years. On the other hand, many persons with new hepatitis C infections have no symptoms, do not seek testing and, so, do not appear in these surveillance data.

There were 222 cases of **meningococcal disease** in 1997. An unusually high proportion of cases were adolescents or young adults, which may be explained in part by the emergence of a relatively new strain of serogroup C in the mid 1990s. (There is some evidence that the appearance of a new strain leads to an upward shift in the age groups of cases in affected communities.) Three small clusters of illness due to serogroup C were identified in 1997. These included three students at a university in August,³ and three students at a high school in October.⁴ Both of these

clusters led to vaccination programs at the respective institutions. The third cluster was two students (including one from out-of-state) who attended a university rowing carnival.

There were 4336 cases of **pertussis** (including the deaths of four infants) reported with onset in 1997, more than twice the number reported for any year since 1991. Cases occurred across all areas of the state, and many were school-aged children or young adults.

DISEASES WITH DECREASED NOTIFICATION

Some of the best news for years has been generated by the use of highly active antiretroviral therapy against HIV infection. While the number of new reports of **HIV infection** have remained relatively stable—at around 400 per year—since 1994, the number of new **AIDS** diagnoses has more than halved in the past few years, most likely due to the availability of these new treatments.

Reports of invasive ***Haemophilus influenzae type b* infections** (formerly a major cause of meningitis in infants) remained well down on historical levels since the introduction of vaccine for small children in 1993. Interestingly, only eight of the 18 cases reported in 1997 were younger than five years of age.

Thank you

Behind each case that contributes to these surveillance statistics lies a person with an illness requiring medical attention. The surveillance system is the backbone of disease control in NSW; for it to work well requires the good will and enthusiasm of patients (who are usually keen to talk to PHU staff to find out what might have contributed to their illness), their doctors and laboratories. Notification of an illness is confidential and required by law.

To all those health care workers and laboratory staff who contribute to disease surveillance and control by notifying cases, helping in case follow-up or arranging preventive therapy, we salute you!

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4. NSW Health Department. Infectious Diseases Report. *NSW Public Health Bulletin* 1997; 8: 86

FIGURE 1

REPORTS OF SELECTED INFECTIOUS DISEASES, NSW, JANUARY 1994 TO NOVEMBER 1998, BY MONTH OF ONSET

These are preliminary data: case counts in recent months may increase because of reporting delays

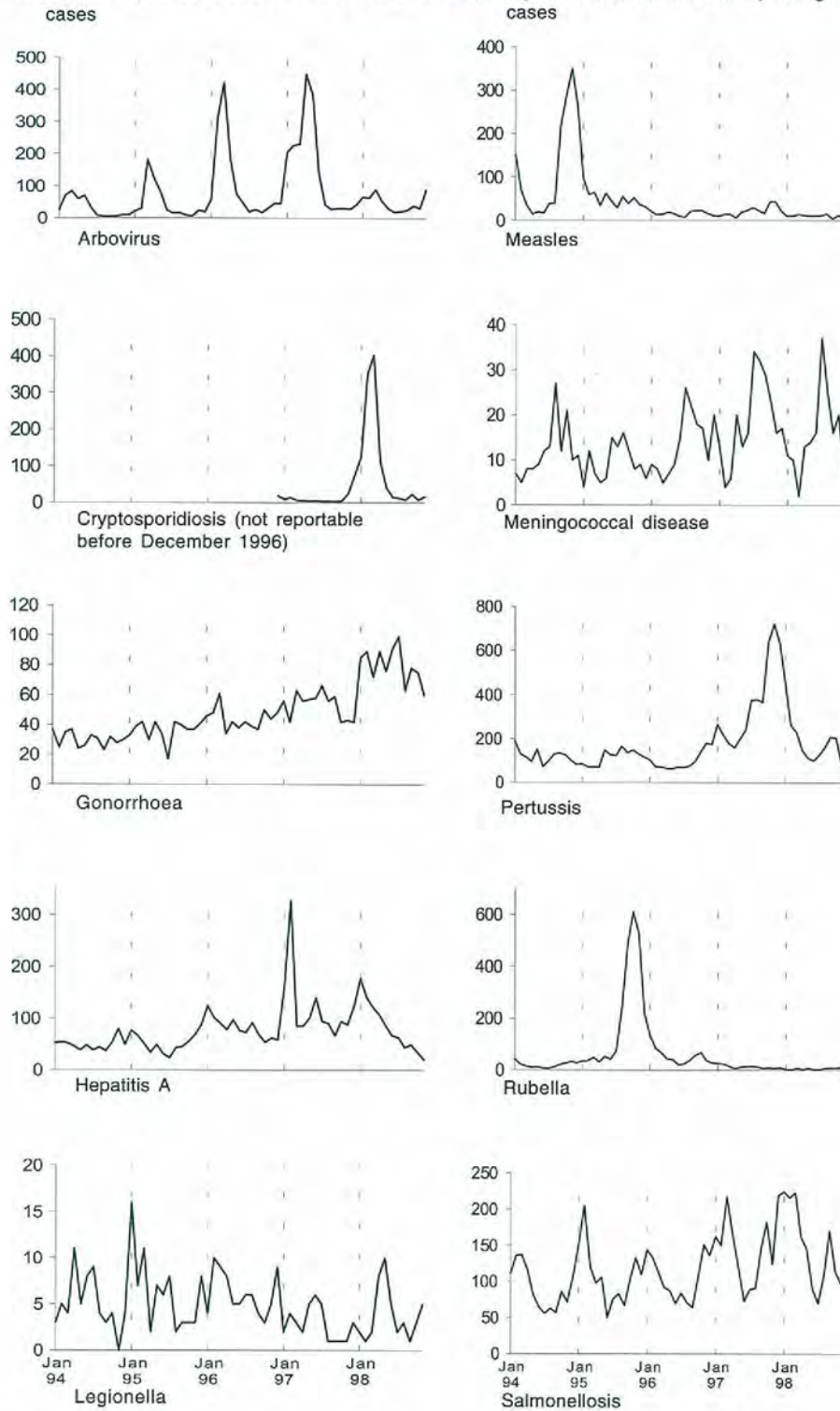


TABLE 3 INFECTIOUS DISEASE NOTIFICATIONS RECEIVED IN NOVEMBER 1998 BY AREA HEALTH SERVICES

Condition	Area Health Service (1998)																		Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	for Nov**	To date†	
Blood-borne and sexually transmitted																				
AIDS	6	5	1	1	-	-	-	3	10	-	2	-	-	-	-	-	-	28	158	
HIV infection*	1	1	2	2	-	-	-	-	7	-	-	-	-	-	-	-	-	33†	366	
Hepatitis B: acute viral*	-	-	-	-	-	-	-	-	2	-	-	-	-	1	-	-	-	3	55	
Hepatitis B: other*	54	28	-	2	4	9	7	7	44	2	2	1	-	-	9	4	2	176†	3438	
Hepatitis C: acute viral*	2	1	-	-	-	-	-	-	4	-	-	-	-	-	1	1	3	12	115	
Hepatitis C: other*	64	55	3	42	-	57	69	24	89	44	42	10	6	28	2	12	23	572†	8608	
Hepatitis D: unspecified*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	
Hepatitis, acute viral (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
Chlamydia (genital)	10	6	-	5	-	-	6	17	49	13	3	6	5	10	3	6	2	143†	292	
Gonorrhoea*	10	3	-	-	-	2	2	2	56	1	3	2	1	1	-	-	-	83	896	
Syphilis	8	2	-	1	-	-	-	-	7	1	-	2	1	1	1	-	1	25	510	
Vector-borne																				
Arboviral infection*	-	-	-	1	-	-	1	10	2	3	8	7	34	2	6	12	-	86	548	
Malaria*	1	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-	6†	145	
Zoonoses																				
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	
Leptospirosis*	-	-	-	-	-	-	1	-	-	5	2	-	-	2	-	-	-	10	38	
Q fever*	-	-	-	-	-	-	-	-	-	6	7	6	4	-	3	2	3	31	231	
Respiratory and other																				
Blood lead level	16	4	1	5	-	11	1	-	2	1	2	-	-	1	-	2	-	46	1297	
Legionnaires' disease	-	2	2	1	1	-	-	-	1	-	-	-	-	-	-	-	-	7	44	
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Meningococcal infection (invasive)	1	1	-	-	-	1	2	-	1	-	-	1	-	1	-	-	-	8	171	
Mycobacterial tuberculosis	2	4	3	-	1	1	1	-	3	-	-	1	-	-	-	-	-	16	353	
Mycobacteria other than TB	4	5	-	2	-	2	3	-	5	1	2	-	-	1	-	-	-	26†	295	
Vaccine-preventable																				
Adverse event after immunisation	3	-	-	2	3	-	-	-	-	-	-	-	1	-	-	-	5	14	192	
Haemophilus influenzae b infection (invasive)	-	-	-	1	-	-	-	-	-	-	1	1	-	-	-	-	-	3	10	
Measles	2	1	2	-	-	-	1	-	1	-	1	-	-	-	-	-	1	9	119	
Mumps*	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	37	
Pertussis	3	7	15	26	9	2	22	13	11	2	4	3	2	12	12	51	29	224†	2511	
Rubella*	-	-	-	-	-	1	4	-	2	5	3	-	-	-	-	-	-	15	70	
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
Faecal-oral																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Cryptosporidiosis	-	-	-	-	-	-	-	-	-	3	1	6	-	-	1	1	-	12	1,142	
Giardiasis	8	4	7	7	-	4	3	4	7	9	-	2	1	2	1	1	4	64	300	
Food borne illness (not otherwise specified)	-	-	-	-	-	1	-	-	-	-	1	4	-	-	-	-	-	6	151	
Gastroenteritis (in an institution)	10	-	12	-	-	-	41	-	60	-	-	-	-	-	-	-	-	124†	519	
Haemolytic uraemic syndrome	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	6	
Hepatitis A	3	1	2	-	4	-	-	3	11	-	2	1	-	-	-	2	2	31	950	
Hepatitis E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	
Listeriosis*	-	-	-	-	-	1	-	1	1	-	-	-	-	-	-	-	-	3	29	
Salmonellosis (not otherwise specified)*	11	18	17	2	3	4	9	7	16	18	6	3	1	4	-	2	2	125†	1718	
Typhoid and paratyphoid*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	29	
Verotoxin-producing E. coli	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	

* laboratory-confirmed cases only † includes cases with unknown postcode

CSA = Central Sydney Area
NSA = Northern Sydney Area
WSA = Western Sydney AreaWEN = Wentworth Area
SWS = South Western Sydney Area
CCA = Central Coast AreaHUN = Hunter Area
ILL = Illawarra Area
SES = South Eastern Sydney AreaNRA = Northern Rivers Area
MNC = North Coast Area
NEA = New England AreaMAC = Macquarie Area
MWA = Mid Western Area
FWA = Far West AreaGMA = Greater Murray Area
SA = Southern Area

TABLE 4

DISEASE NOTIFICATIONS IN NSW, 1991 TO 1997

Condition	Year of Onset						
	1991	1992	1993	1994	1995	1996	1997
Adverse event after immunisation	NN	31	24	27	28	23	50
AIDS	440	439	483	538	450	341	163
Arboviral: Bamah virus infections*	6	6	25	41	280	178	190
Arboviral: Ross River virus infections*	305	329	596	333	241	1048	1610
Arboviral: Other Infections*	118	12	33	11	28	29	35
Blood lead level >= 15ug/dl	not notifiable until December 1996					227	653
Brucellosis*	2	2	4	4	2	1	3
Cholera*	1	0	1	0	1	4	1
Cryptosporidiosis*	not notifiable until December 1996					23	159
Diphtheria	0	0	0	0	0	0	0
Food-borne illness (NOS)	2342	228	115	221	288	218	272
Gastroenteritis (in an institution)	166	411	437	305	1371	564	946
Gonorrhoea*	403	494	387	361	431	526	639
Invasive <i>H. influenzae</i> type b infections (total)	240	223	126	61	30	14	18
<i>H. influenzae</i> type b epiglottitis	17	58	32	21	6	2	5
<i>H. influenzae</i> type b meningitis	51	106	55	17	11	4	3
<i>H. influenzae</i> type b septicaemia	11	27	24	12	9	3	1
<i>H. influenzae</i> type b infection (NOS)	161	32	15	11	4	5	9
Haemolytic uraemic syndrome	not notifiable until December 1996					0	3
Hepatitis A*	1182	921	593	591	629	971	1455
Hepatitis B: acute viral*	431	121	102	79	66	44	50
Hepatitis B: chronic or carrier*	44	603	807	927	834	1212	1245
Hepatitis B: unspecified*	1173	2762	3126	3625	3956	3114	2818
Hepatitis C: acute viral*	25	30	31	24	38	22	20
Hepatitis C: unspecified*	990	4251	6618	9256	8264	8634	8942
Hepatitis D: acute viral*	0	0	0	1	2	1	3
Hepatitis D: unspecified*	0	8	13	19	18	8	9
Hepatitis E*	0	0	1	2	0	3	6
Hepatitis: acute viral (NOS)	61	16	6	2	2	3	1
HIV infection*	788	638	517	430	435	412	398
Legionnaires' disease*	39	105	67	60	75	74	33
Leprosy	1	8	5	3	3	2	0
Leptospirosis*	31	21	16	14	6	33	34
Listeriosis*	11	14	13	10	14	22	23
Malaria*	202	164	164	187	206	233	192
Measles	540	816	2372	1501	604	193	264
Meningococcal infections (total)	138	123	153	143	113	165	222
Meningococcal meningitis	58	95	98	81	72	102	110
Meningococcal septicaemia	18	18	43	41	26	40	65
Meningococcal infection (NOS)	62	10	12	21	15	23	47
Mumps*	8	23	13	11	14	27	29
Mycobacterial infection: other than TB*	330	410	481	553	507	453	371
Mycobacterial tuberculosis	461	394	396	400	454	412	461
Pertussis	55	221	1546	1420	1390	1175	4336
Poliomyelitis	0	0	0	0	0	0	0
Q Fever*	173	213	406	268	206	296	265
Rubella*	64	328	1187	230	2391	636	155
Rubella (Congenital)*	1	0	2	4	1	5	0
Salmonella infections (total)*	1302	827	1002	1126	1405	1259	1732
Salmonella bovis morbificans infections*	20	21	31	23	17	11	27
Salmonella typhimurium infections*	216	238	297	465	558	597	950
Salmonella infections (NOS)*	1066	568	674	638	830	651	755
Syphilis	642	933	781	1063	903	730	571
Tetanus	6	2	5	4	0	1	3
Typhoid and paratyphoid*	59	28	37	36	40	48	33
Viral haemorrhagic fever	0	0	0	0	0	0	0

* Laboratory-confirmed cases only

NOS = Not otherwise Specified

NN = Not notifiable

TABLE 5

DISEASE NOTIFICATIONS, BY PUBLIC HEALTH UNIT AREA, NSW, 1997

Conditions	CCA	CSA	FWA	GMA	HUN	ILL	MAC	MNC	MWA
Adverse event after immunisation	0	0	0	10	0	0	0	1	3
AIDS	1	29	1	1	7	3	0	3	0
Arboviral: Barmah virus infections*	0	1	5	9	4	7	2	99	2
Arboviral: Ross river virus infections*	191	16	103	299	249	109	82	88	48
Arboviral: Other Infections*	0	2	0	3	4	3	0	7	0
Blood lead level >= 15ug/dl	6	12	1	11	354	28	4	2	3
Brucellosis*	0	1	0	0	0	0	0	1	0
Cholera*	0	0	0	0	0	0	0	0	0
Cryptosporidiosis*	0	8	1	11	4	2	9	29	1
Food-borne illness (NOS)	73	87	18	17	0	0	5	0	5
Gastroenteritis (institution)	93	56	3	0	367	0	4	0	0
Gonorrhoea*	7	101	4	3	19	8	17	11	3
Invasive <i>H.influenzae</i> type b infections (total)	1	0	0	0	1	2	0	0	0
<i>H.influenzae</i> type b epiglottitis	0	0	0	0	0	0	0	0	0
<i>H.influenzae</i> type b meningitis	0	0	0	0	0	0	0	0	0
<i>H.influenzae</i> type b septicaemia	0	0	0	0	0	0	0	0	0
<i>H.influenzae</i> type b infection (NOS)	1	0	0	0	1	2	0	0	0
Haemolytic uraemic syndrome	0	0	0	0	0	0	0	1	1
Hepatitis A*	43	127	53	12	121	34	52	91	54
Hepatitis B: acute viral*	2	4	1	1	3	0	0	3	1
Hepatitis B: chronic or carrier*	9	10	5	13	26	0	1	8	29
Hepatitis B: unspecified*	60	665	7	16	44	95	16	15	24
Hepatitis C: acute viral*	0	2	1	0	1	0	1	1	0
Hepatitis C: unspecified*	370	864	28	179	515	351	75	212	319
Hepatitis D: acute viral*	0	0	0	0	1	0	0	0	2
Hepatitis D: unspecified*	0	0	0	0	1	0	0	0	0
Hepatitis E*	1	1	0	0	0	0	0	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	0	0	0	0
HIV infection*	2	61	0	0	16	8	0	5	3
Legionnaires' disease*	0	8	0	0	5	4	0	1	1
Leptospirosis*	1	0	0	3	11	0	0	1	1
Listeriosis*	2	2	0	1	2	1	0	1	1
Malaria*	4	21	0	3	7	3	4	3	1
Measles	8	15	2	4	46	11	10	9	9
Meningococcal infections (total)	15	18	3	3	14	13	6	7	13
Meningococcal meningitis	10	11	1	0	8	10	3	3	8
Meningococcal septicaemia	0	6	0	1	3	2	0	2	3
Meningococcal infection NOS)	5	1	2	2	3	1	3	2	2
Mumps*	1	4	8	0	1	0	0	0	0
Mycobacterial infection: other than TB*	13	63	0	8	30	2	5	13	0
Mycobacterial tuberculosis	2	80	2	3	16	14	1	8	7
Pertussis	80	298	30	67	688	190	41	123	84
Q Fever*	4	1	13	30	9	2	51	41	23
Rubella*	6	9	1	3	14	4	2	5	3
Salmonella infections (total)*	62	112	26	48	145	57	29	67	43
<i>Salmonella bovis</i> morbiticans infections*	0	2	1	0	0	1	1	3	0
<i>Salmonella typhimurium</i> infections*	25	74	6	28	88	35	5	27	18
<i>Salmonella</i> infections (NOS)*	37	36	19	20	57	21	23	37	25
Syphilis	7	104	24	3	12	5	25	11	12
Tetanus	0	0	0	0	2	0	0	0	0
Typhoid and paratyphoid*	0	6	0	2	1	0	0	0	1

* lab-confirmed cases only NOS = Not Otherwise Specified

Area health service population estimates 1997:

CCA = Central Coast Area (279 475)	CSA = Central Sydney Area (457 702)	FWA = Far West Area (52 596)
GMA = Greater Murray Area (264 083)	HUN = Hunter Area (540 242)	ILL = Illawarra Area (342 190)
MAC = Macquarie Area (107 033)	MNC = Mid North Coast Area (256 634)	MWA = Mid Western Area (172 366)

TABLE 5

DISEASE NOTIFICATIONS BY PUBLIC HEALTH UNIT AREA, NSW, 1997 *continued*

Conditions	NEA	NRA	NSA	SA	SES	SWS	WEN	WSA	NOS
Adverse event after immunisation	0	0	0	1	18	1	7	9	0
AIDS	1	3	20	2	66	10	2	14	0
Arboviral: Barmah virus infections*	6	41	3	2	6	0	1	1	1
Arboviral: Ross river virus infections*	40	67	69	28	29	24	82	39	47
Arboviral: Other infections*	0	0	6	0	5	3	0	2	0
Blood lead level >= 15ug/dl	10	11	9	6	28	97	28	43	0
Brucellosis*	0	0	0	0	1	0	0	0	0
Cholera*	0	0	0	0	1	0	0	0	0
Cryptosporidiosis*	39	18	0	5	9	3	10	10	0
Food-borne illness (NOS)	0	3	8	9	14	30	0	2	1
Gastroenteritis (institution)	0	0	10	0	319	51	8	6	29
Gonorrhoea*	16	14	40	1	295	30	8	43	19
Invasive <i>H.influenzae</i> type b infections (total)	0	0	0	3	2	4	4	1	0
<i>H.influenzae</i> type b epiglottitis	0	0	0	1	0	1	2	1	0
<i>H.influenzae</i> type b meningitis	0	0	0	0	0	2	1	0	0
<i>H.influenzae</i> type b septicaemia	0	0	0	0	0	0	1	0	0
<i>H.influenzae</i> type b infection (NOS)	0	0	0	2	2	1	0	0	0
Haemolytic uraemic syndrome	0	0	0	0	0	0	0	1	0
Hepatitis A*	81	130	131	14	217	105	40	132	18
Hepatitis B: acute viral*	2	1	0	0	15	0	2	9	6
Hepatitis B: chronic or carrier*	21	6	13	0	396	100	21	567	20
Hepatitis B: unspecified*	23	22	450	25	127	1024	40	152	13
Hepatitis C: acute viral*	1	0	1	0	3	2	1	6	0
Hepatitis C: unspecified*	166	476	544	283	1410	1242	435	1394	79
Hepatitis D: acute viral*	0	0	0	0	0	0	0	0	0
Hepatitis D: unspecified*	0	1	0	0	2	1	0	4	0
Hepatitis E*	0	0	0	0	2	0	1	1	0
Hepatitis: acute viral (NOS)	0	0	0	0	1	0	0	0	0
HIV infection*	2	7	35	1	132	24	1	15	86
Legionnaires' disease*	0	1	4	0	5	2	2	0	0
Leptospirosis*	8	3	0	2	1	1	0	0	2
Listeriosis*	1	0	1	1	3	2	1	4	0
Malaria*	6	7	48	6	26	18	5	30	0
Measles	13	2	23	13	19	22	13	41	4
Meningococcal infections (total)	6	6	15	2	24	21	23	31	2
Meningococcal meningitis	2	3	11	1	9	13	4	13	0
Meningococcal septicaemia	3	3	2	0	5	7	13	13	2
Meningococcal infection NOS)	1	0	2	1	10	1	6	5	0
Mumps*	0	2	4	0	6	0	0	3	0
Mycobacterial infection: other than TB*	6	13	61	9	60	41	3	33	11
Mycobacterial tuberculosis	1	1	42	2	76	125	4	76	1
Pertussis	98	178	460	96	520	524	298	530	31
Q Fever*	48	30	0	5	2	3	1	1	1
Rubella*	8	14	20	3	28	9	12	14	0
Salmonella infections (total)*	71	137	208	31	214	191	124	158	9
Salmonella bovis morbificans infections*	1	2	4	1	1	3	1	6	0
Salmonella typhimurium infections*	31	37	107	14	139	119	99	91	7
Salmonella infections (NOS)*	39	98	97	16	74	69	24	61	2
Syphilis	31	15	28	1	156	70	3	57	7
Tetanus	0	1	0	0	0	0	0	0	0
Typhoid and paratyphoid*	1	1	6	0	4	5	0	6	0

* lab-confirmed cases only NOS = Not Otherwise Specified

Area health service population estimates 1997:

NEA = New England Area (189 168) NRA = Northern Rivers Area (263 238) NSA = Northern Sydney Area (746 973)
 SA = Southern Area (187 252) SES = South Eastern Sydney (722 579) SWS = South Western Sydney (729 364)
 WEN = Wentworth Area (307 369) WSA = Western Sydney Area (647 706) NOS = Area Not Stated

TABLE 6

DISEASE NOTIFICATIONS BY AGE AND SEX, NSW, 1997

Conditions	0-4 yrs			5-24 yrs			25-44 yrs			
	M	F	U	M	F	U	M	F	T	U
Adverse event after immunisation	26	23	0	1	0	0	0	0	0	0
AIDS	0	1	0	5	4	0	109	2	0	0
Arboviral: Barmah virus infections*	2	1	0	10	7	0	41	37	0	0
Arboviral: Ross river virus infections*	6	4	0	91	123	1	358	353	0	3
Arboviral: Other Infections*	0	0	0	1	4	0	5	7	0	0
Blood lead level \geq 15ug/dl (a)	9	6	0	75	4	1	352	7	0	0
Brucellosis*	0	0	0	0	0	0	0	0	0	0
Cholera*	0	0	0	0	0	0	0	0	0	0
Cryptosporidiosis*	46	48	0	14	31	0	10	4	0	0
Food-borne illness (NOS)	11	9	0	28	29	0	59	62	0	0
Gastroenteritis (institution)	63	65	5	11	46	0	27	98	0	0
Gonorrhoea*	0	0	0	131	48	0	384	23	0	1
Invasive <i>H. influenzae</i> type b infections (total)	4	4	0	1	3	0	1	1	0	0
<i>H. influenzae</i> type b epiglottitis	2	0	0	1	1	0	0	1	0	0
<i>H. influenzae</i> type b meningitis	0	2	0	0	1	0	0	0	0	0
<i>H. influenzae</i> type b septicaemia	0	0	0	0	0	0	1	0	0	0
<i>H. influenzae</i> type b infection (NOS)	2	2	0	0	1	0	0	0	0	0
Haemolytic uraemic syndrome	0	1	0	0	0	0	0	0	0	0
Hepatitis A*	36	28	0	283	223	1	439	227	0	1
Hepatitis B: acute viral*	0	0	0	12	8	0	14	11	0	0
Hepatitis B: chronic or carrier* (b)	11	3	0	124	128	4	377	315	0	15
Hepatitis B: unspecified*	6	10	1	269	278	6	875	736	0	13
Hepatitis C: acute viral*	0	0	0	3	3	0	10	3	0	0
Hepatitis C: unspecified* (c)	62	48	6	845	598	14	3992	2045	1	60
Hepatitis D: acute viral*	0	0	0	1	0	0	2	0	0	0
Hepatitis D: unspecified*	0	0	0	0	0	0	6	1	0	0
Hepatitis E*	0	0	0	3	0	0	1	1	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	0	1	0	0	0
HIV infection* (d)	9	3	1	29	8	2	236	17	2	13
Legionnaires' disease*	0	0	0	2	0	0	4	1	0	0
Leptospirosis*	0	0	0	8	1	0	10	4	0	0
Listeriosis*	0	1	0	0	1	0	1	2	0	0
Malaria* (e)	2	0	0	28	13	2	70	30	0	2
Measles	75	50	1	50	67	0	6	12	0	0
Meningococcal infections (total)	46	35	0	51	55	0	9	7	0	0
Meningococcal meningitis	26	10	0	25	29	0	6	5	0	0
Meningococcal septicaemia	11	11	0	18	14	0	3	0	0	0
Meningococcal infection (NOS)	9	14	0	8	12	0	0	2	0	0
Mumps*	0	0	0	6	13	0	1	6	0	1
Mycobacterial infection: other than TB*	16	20	1	5	2	0	49	21	0	0
Mycobacterial tuberculosis	6	3	0	27	30	0	100	90	0	0
Pertussis	251	284	2	1072	1165	4	358	567	0	5
Q Fever*	0	0	0	48	5	0	106	19	0	0
Rubella*	8	4	0	56	29	0	23	21	0	0
Salmonella infections (total)*	351	261	2	261	242	1	178	169	0	0
<i>Salmonella</i> bovis morbificans infections*	7	7	0	5	1	0	2	2	0	0
<i>Salmonella</i> typhimurium infections*	195	148	1	174	158	1	80	83	0	0
<i>Salmonella</i> infections (NOS)*	149	106	1	82	83	0	96	84	0	0
Syphilis	3	2	1	22	61	1	135	130	0	2
Tetanus	0	0	0	0	0	0	0	0	0	0
Typhoid and paratyphoid*	0	1	0	9	8	0	6	4	0	0

* Laboratory-confirmed cases only

NOS = Not Otherwise Specified

(a) = 2 cases unknown age/sex

(b) = 7 cases unknown age/sex

(c) = 8 cases unknown age/sex

(d) = 6 cases unknown age/sex

(e) = 1 case unknown age/sex

TABLE 6

DISEASE NOTIFICATIONS BY AGE AND SEX, NSW, 1997 *continued*

Conditions	45-64 yrs			> = 65 yrs		
	M	F	U	M	F	U
Adverse event after immunisation	0	0	0	0	0	0
AIDS	41	0	0	1	0	0
Arboviral: Barmah virus infections*	38	31	0	16	7	0
Arboviral: Ross river virus infections*	262	277	2	59	69	1
Arboviral: Other Infections*	5	9	0	2	2	0
Blood lead level >= 15ug/dl (a)	180	3	0	9	1	0
Brucellosis*	1	1	0	0	1	0
Cholera*	1	0	0	0	0	0
Cryptosporidiosis*	2	1	0	2	1	0
Food-borne illness (NOS)	28	29	0	5	11	0
Gastroenteritis (institution)	27	68	1	121	412	2
Gonorrhoea*	46	0	0	4	1	0
Invasive <i>H. influenzae</i> type b infections (total)	2	0	0	1	1	0
<i>H. influenzae</i> type b epiglottitis	0	0	0	0	0	0
<i>H. influenzae</i> type b meningitis	0	0	0	0	0	0
<i>H. influenzae</i> type b septicaemia	0	0	0	0	0	0
<i>H. influenzae</i> type b infection (NOS)	2	0	0	1	1	0
Haemolytic uraemic syndrome	1	1	0	0	0	0
Hepatitis A*	108	62	0	17	27	0
Hepatitis B: acute viral*	2	1	0	1	1	0
Hepatitis B: chronic or carrier* (b)	126	78	2	27	23	1
Hepatitis B: unspecified*	313	177	2	73	56	1
Hepatitis C: acute viral*	0	1	0	0	0	0
Hepatitis C: unspecified* (c)	611	305	1	159	160	1
Hepatitis D: acute viral*	0	0	0	0	0	0
Hepatitis D: unspecified*	1	1	0	0	0	0
Hepatitis E*	1	0	0	0	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	0
HIV infection* (d)	64	2	2	4	0	0
Legionnaires' disease*	4	3	0	12	7	0
Leptospirosis*	4	3	0	4	0	0
Listeriosis*	3	1	0	12	2	0
Malaria* (e)	22	9	2	9	2	0
Measles	1	2	0	0	0	0
Meningococcal infections (total)	6	9	0	1	3	0
Meningococcal meningitis	2	5	0	1	1	0
Meningococcal septicaemia	3	3	0	0	2	0
Meningococcal infection (NOS)	1	1	0	0	0	0
Mumps*	1	0	0	1	0	0
Mycobacterial infection: other than TB*	41	36	0	95	80	3
Mycobacterial tuberculosis	52	45	0	63	45	0
Pertussis	207	261	1	66	87	0
Q Fever*	50	16	0	17	4	0
Rubella*	1	7	0	2	3	0
Salmonella infections (total)*	80	91	0	38	55	0
Salmonella bovis morbificans infections*	1	2	0	0	0	0
Salmonella typhimurium infections*	39	35	0	13	22	0
Salmonella infections (NOS)*	40	54	0	25	33	0
Syphilis	114	26	2	46	25	0
Tetanus	0	1	0	0	2	0
Typhoid and paratyphoid*	3	1	0	1	0	0

* Laboratory-confirmed cases only NOS = Not Otherwise Specified

(a) = 2 cases unknown age/sex (b) = 7 cases unknown age/sex (c) = 8 cases unknown age/sex

(d) = 6 cases unknown age/sex (e) = 1 case unknown age/sex

TABLE 7

DISEASE NOTIFICATIONS BY MONTH OF ONSET, NSW, 1997

Conditions	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Adverse event after immunisation	4	4	0	2	2	0	6	7	8	1	5	11
AIDS	22	16	12	16	14	16	5	19	14	6	9	14
Arboviral: Barmah virus infections*	22	17	25	31	32	12	9	4	11	7	6	14
Arboviral: Ross river virus infections*	173	203	201	413	348	128	33	24	18	24	19	26
Arboviral: Other Infections*	9	7	5	4	2	1	1	0	2	0	1	3
Blood lead level >= 15ug/dl	132	52	50	25	27	23	41	77	43	67	70	46
Brucellosis*	0	0	1	0	1	0	0	0	0	0	1	0
Cholera*	0	0	0	0	0	1	0	0	0	0	0	0
Cryptosporidiosis*	11	15	7	8	4	5	3	3	2	4	24	73
Food-borne illness (NOS)	23	1	12	11	3	7	10	4	75	5	20	101
Gastroenteritis (in an institution)	86	75	47	33	32	42	225	65	66	146	129	0
Gonorrhoea*	55	42	62	56	56	58	68	56	59	42	43	42
Invasive <i>H. influenzae</i> type b infections (total)	4	1	0	0	3	1	1	2	3	1	1	1
<i>H. influenzae</i> type b epiglottitis	1	1	0	0	2	0	1	0	0	0	0	0
<i>H. influenzae</i> type b meningitis	0	0	0	0	0	0	0	2	0	1	0	0
<i>H. influenzae</i> type b septicaemia	0	0	0	0	1	0	0	0	0	0	0	0
<i>H. influenzae</i> type b infection (NOS)	3	0	0	0	0	1	0	0	3	0	1	1
Haemolytic uraemic syndrome	0	0	0	0	0	0	0	1	0	0	1	1
Hepatitis A*	160	327	85	85	101	140	94	90	67	94	88	124
Hepatitis B: acute viral*	6	4	6	7	5	7	3	2	4	2	0	4
Hepatitis B: chronic or carrier*	101	96	98	127	96	84	121	122	109	87	100	104
Hepatitis B: unspecified*	230	234	240	251	258	207	277	218	213	221	246	223
Hepatitis C: acute viral*	0	0	2	2	1	3	0	1	0	0	5	6
Hepatitis C: unspecified*	735	804	707	726	733	688	770	765	849	751	726	688
Hepatitis D: acute viral*	0	1	2	0	0	0	0	0	0	0	0	0
Hepatitis D: unspecified*	1	2	0	1	0	1	0	1	0	2	0	1
Hepatitis E*	2	0	2	0	0	0	0	2	0	0	0	0
Hepatitis: acute viral (NOS)	0	0	0	0	0	1	0	0	0	0	0	0
HIV infection*	39	29	33	38	32	28	30	32	37	31	35	34
Legionnaires' disease*	1	4	3	2	5	6	5	1	1	1	1	3
Leptospirosis*	1	3	1	5	5	3	3	1	3	2	4	3
Listeriosis*	3	1	4	0	2	0	3	2	3	1	1	3
Malaria*	22	11	14	21	21	17	14	14	20	12	8	18
Measles	10	14	14	6	20	23	30	23	16	43	43	22
Meningococcal infections (total)	13	4	6	20	13	16	34	32	28	23	16	17
Meningococcal meningitis	7	2	3	11	9	5	18	19	15	11	5	5
Meningococcal septicaemia	5	2	3	4	2	9	7	6	10	6	5	6
Meningococcal infection (NOS)	1	0	0	5	2	2	9	7	3	6	6	6
Mumps*	6	1	11	1	1	0	2	1	1	1	3	1
Mycobacterial infection: other than TB*	32	27	26	43	33	26	45	27	32	26	31	23
Mycobacterial tuberculosis	53	33	44	31	41	31	31	36	51	26	57	27
Pertussis	263	218	179	159	198	237	361	375	366	636	717	627
Q Fever*	28	16	14	23	35	27	26	19	17	21	21	18
Rubella*	25	24	15	6	11	14	15	13	7	9	7	9
Salmonella infections (total)*	163	150	215	162	120	74	88	91	146	180	124	219
Salmonella bovis morbificans infections*	1	2	2	3	2	1	0	2	5	1	4	4
Salmonella typhimurium infections*	77	81	110	85	51	30	57	55	86	119	67	132
Salmonella infections (NOS)*	85	67	103	74	67	43	31	34	55	60	53	83
Syphilis	51	63	58	42	60	42	49	53	32	40	37	44
Tetanus	0	0	0	0	1	0	1	0	0	0	0	1
Typhoid and paratyphoid*	9	3	4	4	1	0	3	1	1	1	0	6

* Laboratory-confirmed cases only

NOS = Not otherwise specified

1998 INDEX BY SUBJECT

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adolescents, *see also* children

Adolescent health monitoring at the regional level (Bauman A et al.) 1998 9(6-7) 78-79

Efficacy of interventions: an evidence-based approach (Alperstein G, Nossar V) 1998 9(10) 109-110

Health gain for the children and youth of Central Sydney: a strategic plan (Alperstein G, Nossar V) 1998 9(10) 108, 110

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advertising

Advertising campaign on the dangers of lead 1998 9(3) 38

AIDS, *see* HIV-AIDS

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Pollutant exposures: back to basics [letter] (Beggs P) 1998 9(3) 38

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B

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New South Wales Mothers and Babies 1996: 1998 9(3) 36-37

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Cancer in NSW: incidence and mortality 1995 (Coates M, Armstrong B) 1998 9(8-9) 95-97

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Changes to the NSW notifiable diseases schedule 1998 9(10) 118

childbirth

New South Wales Mothers and Babies 1996: 1998 9(3) 36-37

children

Child health: key programs and strategies to achieve health gains [editorial] (Nossar V, Alperstein G) 1998 9(11) 123

Child health now! the state of children's health: historical contexts and current developments (Murphy E, Wraith C) 1998 9(5) 60-63

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