

## MENTAL HEALTH PROMOTION IN NSW: CONCEPTUAL FRAMEWORK FOR DEVELOPING INITIATIVES

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**M**ental health promotion has received increasing attention in NSW, as well as nationally and internationally. Strong evidence highlighting the efficacy and effectiveness of programs aimed at promoting mental health and preventing mental health problems and disorders is now available. Despite this, no overall framework to define and draw together the work of mental health and health promotion has previously existed. *Mental health promotion in NSW: conceptual framework for developing initiatives* aims to provide such a structure. This article describes the background and planning of the framework.

The mental health promotion framework has been agreed to by health promotion and mental health workers and consumers. It provides a basis for initiating mental health promotion initiatives, a shared language to facilitate further cooperation between services, a planning tool to help in selection and identification of initiatives and further references to allow for more detailed reading.

### EPIDEMIOLOGY

Mental health promotion initiatives are similar to those for other physical health problems. Prevalence studies of mental health, mental health problems and illnesses have occurred, and risk and protective factors have been identified.

Nearly one in five children and adolescents (18 per cent) experiences a mental health problem in a six-month period, and these problems tend to be continuous into adult life.<sup>1</sup> Of adults, 18 per cent experience a mental disorder in a 12-month period.<sup>2,3</sup> Prevalence is highest among young people aged 18 to 24 years (27 per cent) and decreases with increasing age. Depression has been identified as one of the major public health problems of the twenty-first century. Mental health problems are more common than current

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asthma (defined as recent wheeze and airway hyperresponsiveness) in children and adolescents (18 per cent compared with 7 to 13 per cent).<sup>5</sup> More people died from suicide than road injury in NSW in 1995–96 (813 compared with 607).<sup>6</sup>

Factors that increase the risk of mental health problems and disorders, or protect people against their development, have been identified.<sup>7</sup> These factors span the full range of biopsychosocial influences. Examples of risk factors are genetic factors, exposure to divorce, bereavement, trauma and child abuse. Examples of protective factors are resilience and optimism, positive parenting, having a key support person, job satisfaction and social advantage.

### DEFINITION OF MENTAL HEALTH PROMOTION

The concept of health, including mental health, as advanced by the World Health Organization, is that health is a positive state and not merely the absence of illness. Given this, the following definition of mental health was developed for the framework document:

Enabling people, communities and populations to increase control over and improve and/or maintain their subjective well-being, optimal development and use of mental abilities (cognitive, affective and relational) and the achievement of goals consistent with social justice.<sup>8</sup>

### INTRODUCING THE FRAMEWORK

*Mental health promotion in NSW: conceptual framework for developing initiatives* is a planning tool. It draws on the report of the Institute of Medicine on evidence-based practice in prevention in mental health, but has a stronger focus on promoting mental health.<sup>7</sup>

The framework incorporates the approach of the Ottawa Charter and two continuums:

- Health care continuum: from enhancing health, through primary prevention, early recognition and intervention and treatment to continuing care.
- Mental health status continuum: from positive mental health, through being at risk of developing mental health problems (with signs and symptoms of mental health problems or disorders), to having diagnosable mental health problems or disorders.

Copies of *Mental health promotion in NSW: conceptual framework for developing initiatives* are available from the Better Health Centre, telephone (02) 9954 1193.

Several principles underpin the framework:

- Promoting mental health is inextricably linked with preventing mental health problems.
- Physical health and mental health are interrelated.
- Social, economic and environmental factors can affect mental health.
- Intervention opportunities occur across a range of settings.
- Achieving equity in health outcomes and service access is critical.

Evidence-based programs that modify risk or protective factors for mental health problems and disorders are available.<sup>7,9–11</sup> To ensure the effectiveness of these programs the involvement of mental health specialist expertise is critical. The programs target whole populations (universal interventions), people at high risk (selective interventions) or those with signs and symptoms of mental health problems and disorders (indicated interventions). The Prenatal/Early Infancy Program of home visitation by nurses to disadvantaged, first-time mothers reduced child abuse, criminal behaviour and use of welfare services.<sup>12,13</sup> The Headstart and High/Scope (Perry Pre-school) programs showed improvements in educational and social outcomes.<sup>14,15</sup> The Triple P (Positive Parenting Program) showed a reduction in the prevalence of conduct disorder in children.<sup>16</sup> The University of Colorado Separation and Divorce program showed lower levels of psychiatric symptoms, which were sustained over four years.<sup>17–19</sup> The JOBS program reduced the incidence of depression over 2.5 years and improved employment outcomes.<sup>20–22</sup>

Intervention in the early stages of a mental illness, such as for young people with early signs and symptoms of first-onset psychosis or depression, can also result in improved outcomes.<sup>23–25</sup>

Using the mental health promotion framework in conjunction with evidence-based programs will help ensure a comprehensive and coordinated approach to mental health promotion. The evidence-based programs listed are only a sample of the many available. An example of application of the mental health promotion framework, to depression, is shown in Table 1.

### FURTHER PROGRESS

Further progress in mental health promotion requires action in three key areas:

- **building the information base**, including identifying and reporting on outcomes and improving epidemiological mental health information
- **building the infrastructure**, including increasing commitment and support for improving knowledge and skills of workers who undertake mental health promotion initiatives



**TABLE 1**

**USING THE MENTAL HEALTH PROMOTION FRAMEWORK FOR DEPRESSION.<sup>a</sup>**

Mental health promotion includes promoting positive mental health and preventing mental health problems and disorders.

Approaches	Health care and mental health status continuums			
	Enhancing health	Primary prevention	Early recognition and intervention	Treatment and rehabilitation
	Positive mental health	At risk of developing mental health problems	Signs and symptoms of mental health problems and mental disorders	Diagnosable mental health problems and mental health disorders
<ul style="list-style-type: none"> <li>• building health public policy</li> <li>• creating supportive environments</li> <li>• strengthening community action</li> <li>• increasing focus on prevention and early intervention</li> <li>• increasing focus on prevention and early intervention</li> </ul>	Interventions could address <ul style="list-style-type: none"> <li>• problem-solving skills</li> <li>• self-esteem</li> <li>• peer relationships</li> <li>• family relationships</li> <li>• raising awareness of depression</li> <li>• reducing social isolation</li> <li>• improving job satisfaction</li> <li>• access to adequate income and housing</li> <li>• unemployment</li> </ul>	Interventions could address: <ul style="list-style-type: none"> <li>• separation and divorce</li> <li>• stressful life situations</li> <li>• children of parents with a mental illness</li> <li>• unemployment</li> <li>• abuse and violence</li> <li>• teenage pregnancy</li> </ul>	Interventions could address: <ul style="list-style-type: none"> <li>• early identification of depression</li> <li>• training general practitioners and school counsellors in early detection</li> </ul>	Interventions could address: <ul style="list-style-type: none"> <li>• effective clinical treatment</li> <li>• support groups</li> <li>• involving consumers and carers in treatment</li> <li>• ensuring privacy and respect in inpatient facilities</li> <li>• creating a pleasant environment in inpatient facilities</li> </ul>

(a) Factors selected are based on information presented in:

- NHMRC. *Depression in young people: clinical practice guidelines*<sup>25</sup>
- Raphael B. *Scope for prevention in mental health*<sup>9</sup>
- Mrazek P, Haggerty R. *Reducing risks for mental disorders*<sup>7</sup>
- Burdekin report<sup>26</sup>

- **enhancing the resource base**, including committing financial and human resources to mental health promotion.

New South Wales is a co-signatory to the Second National Mental Health Strategy, which commences in July 1998. Promotion, prevention and early intervention have been identified as one of its three key platforms, and the National Mental Health Promotion and Prevention Plan will be available to guide developments. As depression will be one of the major public health problems of the twenty-first century (and is preventable), the National Depression Action Plan due for release in mid-1998 will also provide guidance in this field.

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## COMMENT: PROMOTING MENTAL HEALTH IN NSW

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Many readers would, like me, have been disappointed by the scant regard given to mental health promotion in both *Mental health goals and targets* and *Strategies for health gain*.<sup>1,2</sup> Consequently, it is extremely pleasing that the NSW Centre for Mental Health has begun to address the deficit.<sup>3</sup>

The centrepiece of *Mental health promotion in NSW* is the mental health promotion framework which, firstly, recognises the importance of both promoting positive mental health and preventing mental health problems and disorders (the former having been almost totally ignored by Australian health policy and services for far too long) and, secondly, proposes using the five familiar approaches from the Ottawa Charter to develop strategies to address these two overlapping issues.<sup>4</sup> Even the most dedicated proponents can be overwhelmed at times by the enormity of the task of reducing poverty, increasing equity or improving mental health. Consequently, a model that provides a comprehensive, structured approach to the problem can suggest opportunities for action and allow workers to see how their small contribution fits into the larger picture. I find this latter aspect of good models encouraging, even empowering. There are, however, other useful and noteworthy contributions in *Mental health promotion in NSW*: the definition of a dozen slippery terms, such as 'mental health promotion' and 'positive mental health', the elaboration of 11 underlying principles of mental health promotion' and the identification of the need to build the information, infrastructure and resource bases in order to develop mental health promotion in NSW.

Why, then, has the promotion of positive mental health lagged so far behind the promotion of physical health, the management of mental illness and even the prevention and early detection of mental illness?

Firstly, acceptance of the existence of positive health (as opposed to good health being simply the absence of disease) has proven even more problematic for mental than physical health. Without acceptance of the idea of positive mental health, the development of a widely accepted conceptual definition is impossible, and the measurement of positive mental health is unthinkable. Postmodernism may hold sway in some intellectual circles, but rational positivism (or at least its rhetoric) still rules in the politics and management of health care, and in the absence of measurement, progress is difficult.

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# INFECTION CONTROL AND HYGIENE PRACTICES IN SKIN PENETRATION BUSINESSES

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The infection control practices of services that involve skin penetration were surveyed before and after the introduction of skin penetration guidelines. There were inadequacies in infection control in some sectors of the industry, and this did not change significantly after the introduction of the guidelines.

Personal services involving skin penetration for cosmetic and health-related purposes are widely used by the public. These services are carried out by tattooists, acupuncturists, ear piercers, beauty therapists, barbers and hairdressers. Public and private health professionals may carry out these procedures but they are not considered in this paper.

The risk of transmission of infectious diseases through percutaneous exposure is widely recognised.<sup>1</sup> In particular, reports of the transmission of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection through tattooing have identified these viruses as risks to skin penetration workers and their clients.<sup>2-4</sup> Among Australian Navy personnel, the number of tattoos is positively correlated with the prevalence of serological markers of HBV infection.<sup>5</sup> HBV transmission has also occurred through acupuncture.<sup>6</sup> Because routes of transmission of HBV and HIV are similar, HIV infection is also a potential occupational hazard for skin penetration workers and their clients.<sup>7</sup>

*Pseudomonas aeruginosa*, *Staphylococcus aureus* and *Streptococcus* spp. have been cultured from infections contracted after ear piercing and thus also represent hazards from skin penetration procedures.<sup>8,9</sup>

In 1985, the *Public Health Act 1902* (NSW) was amended to include the Skin Penetration Regulation 1985, which was aimed at introducing infection control measures into the skin penetration industry. In April 1991 the *Public Health Act 1902* was repealed. In March 1991 the NSW Department of Health published infection control advice in the skin penetration guidelines, and in November 1991 gazetted regulations under the *Public Health Act 1991*, which rationalised the requirements.<sup>10</sup> Practitioners needed to comply with the provisions of the regulation, and the guidelines provided a method to achieve this compliance.

To assess the status of the industry's infection control practices and monitor the effect of the guidelines, we studied the infection control practices of the skin penetration industry.

## METHODS

A before-and-after survey design was used, with the first survey during the months before the distribution of the skin penetration guidelines and the second three years

after. The first survey, in November and December 1991, focused on instrument sterilisation procedures and the handling and disposal practices for sharps and contaminated materials. The second survey was carried out from February to October 1994 on the previously surveyed premises, where the same aspects were reassessed.

Premises for survey were randomly selected from lists of skin penetration premises registered with the 14 local councils in the Central Sydney Area and the former Southern Sydney Area. About half the premises on the registers were selected for inspection and interview of the manager with a structured questionnaire. The surveyed skin penetration procedures included acupuncture, ear piercing, electrolysis (hair removal using an electrified needle), depilation (hair removal using wax), pedicure (the removal of corns and treatment of other foot conditions with cutting and abrasive tools), lancing (the removal of blackheads, ingrown hairs etc. with a lancet) and pigment implantation (injection of permanent inks to colour the skin, usually on the face).

Traditional tattooists were excluded from the survey as there was only one practitioner in the area and therefore no representative indication of workers' practices.

Procedures were assessed in relation to those approved in the skin penetration guidelines: the disposal of single-use skin penetration instruments and the autoclaving of reusable instruments.

Each premises was also assessed on the adequacy of hygiene facilities such as hand-wash basins and soap, the use of disposable or non-disposable hand towels or automatic hand dryers and the use of hospital-grade disinfectant for the cleaning of the premises. Although hospital-grade disinfectant was not specified in the guidelines, its use was in the past required under the Local Government Act legislation for the cleaning of premises, and therefore its presence was used as a hygiene indicator. Verbal advice was provided to managers on any inadequacies in sterilisation of equipment, the handling and disposal of waste, and the repair, cleanliness and hygiene of premises identified at the time of inspection.

Data for the baseline survey were entered into CRS database software and analysed with SAS software;<sup>11,12</sup> for the second survey data were entered into and analysed with Epi-Info database software.<sup>13</sup>

## RESULTS

Eighty-six (51 per cent) of the 170 skin penetration premises registered with the local councils were approached for the baseline survey. The response rate was 100 per cent. Sixty-three of the initially surveyed premises were resurveyed. The number was reduced because operators had moved and could not be located or had ceased offering skin penetration services. In the final survey, more operators were found to offer lancing and



pedicure procedures than in the baseline survey, which may reflect normal trade variations. The most common combinations of services offered at premises in the final survey are shown in Table 2. Over half of the premises conducted either solely ear piercing or solely acupuncture.

The disposal and reuse of instruments and the use of approved and non-approved sterilisation procedures are shown in Table 3. The predominant infection control practice in all procedures except pedicure was the use of disposable single-use skin-penetration instruments. The only ear-piercing procedure used was insertion of pre-sterilised studs into the ear with a gun, which complied with the guidelines. No evidence was found of the re-use of depilation wax for more than one client.

The repeat survey revealed a slight but not significant increase in the use of disposable instruments for acupuncture and pigment implantation (which was already common) and for electrolysis, lancing and pedicure. Eight different methods were used to clean reusable instruments. Only one method, autoclaving, is approved as sterilisation in the skin penetration guidelines. In the repeat survey, only one of the 37 businesses reusing instruments used an autoclave. Among those reusing skin penetration instruments, there was a significant decrease in the use of approved sterilisation procedures from 17 per cent (5/29) to 3 per cent (1/37) ( $P < 0.05$ ). Overall, 22 per cent of procedures in the final survey continued to be performed with reusable instruments not sterilised in an approved manner.

**TABLE 2**

**MOST COMMON PROCEDURES AND COMBINATIONS OF PROCEDURES IN SURVEYED SKIN PENETRATION BUSINESSES**

Procedures	1991		1994	
	n	%	n	%
Ear piercing only	27	31	18	28
Acupuncture only	22	26	15	24 <sup>a</sup>
Ear piercing, electrolysis and lancing	5	6	0	0
Depilation, ear piercing, electrolysis, lancing and pedicure	0	0	10	16
Depilation, ear piercing, electrolysis, lancing, pedicure and pigment implantation	0	0	5	8
Other combinations <sup>a</sup>	32	37	15	24
Total	86	100	63	100

Note:

(a) No other combination of procedures was undertaken by more than 3 businesses.

The use of safe and appropriate sharps and contaminated waste storage receptacles and licensed removal contractors had increased upon resurvey (Table 4).

Deficiencies in hygiene practices were evident in the absence of hospital-grade disinfectant in almost two-thirds of premises and the absence of hand-wash basins, soap

**TABLE 3**

**SKIN PENETRATION BUSINESSES COMPLYING WITH INFECTION-CONTROL GUIDELINES IN 1991 AND 1994 SURVEYS, BY TYPE OF PROCEDURE**

Business procedure <sup>a</sup>	Compliance: use of disposable instruments only				Compliance: reuse of some or all instruments and approved sterilisation				Noncompliance: reuse of some or all instruments and non-approved sterilisation				Total procedures	
	1991		1994		1991		1994		1991		1994		1991	1994
	n	%	n	%	n	%	n	%	n	%	n	%	n	n
Acupuncture	19	86	13	87	1	4	0	0	2	9	2	13	22	15
Depilation	23	100	29	100	0	0	0	0	0	0	0	0	23	29
Ear piercing	55	100	39	100	0	0	0	0	0	0	0	0	55	39
Electrolysis <sup>b</sup>	18	64	17	71	1	4	0	0	9	31	7	29	28	24
Lancing	12	63	21	84	2	10	0	0	5	26	4	16	19	25
Pedicure <sup>c</sup>	0	0	0	0	1	14	1	4	6	86	23	96	7	24
Pigment implant	7	78	8	100	0	0	0	0	2	22	0	0	9	8
All procedures	134	82	127	77	5	3	1	<1	24	15	36	22	163	164

Notes:

- (a) Some premises undertook more than one procedure. These may appear in multiple rows.
- (b) At some premises, instruments were reused for some clients and disposed of for others.
- (c) Multiple instruments were used in pedicure treatments. Some were disposed of after use.



and towels (Table 5). The recommended use of disposable paper towels or automatic hand dryers for hygiene purposes was largely ignored, as only 10 per cent of premises used disposable paper hand towels and only 5 per cent used automatic hand dryers.

Information was also collated on throughput of clients at the surveyed premises. We estimate that at the time of the final survey, about 47 lancing procedures and 107 pedicure procedures were carried out per week with inadequately sterilised instruments or reusable instruments not sterilised in an approved manner—about 11 per cent of all lancing procedures and 91 per cent of all pedicure procedures carried out weekly at the surveyed premises.

## DISCUSSION

There were inadequacies in infection control among some sectors of the skin penetration industry in NSW, and this did not change significantly after the introduction of the NSW skin penetration guidelines in 1991.

Although disposable instruments are preferred, reusable instruments continued to be used. Many workers used specialised and expensive lancing instruments, and pedicure procedures were all done with precision skin-trimming snips that workers would not consider disposing of after use. Most of these premises were not equipped with adequate sterilisation equipment, and some businesses persisted in reusing skin penetration instruments despite advice from the surveying environmental health officer and the recommendations of the skin penetration guidelines.

The low level of use of approved sterilisation procedures probably reflects a reluctance to invest in expensive technology such as autoclaves. A more cost-effective and appropriate infection control alternative for instruments would be valuable. The predicament of some of the premises surveyed is similar to that of barbers and hairdressers, for whom autoclaving or discarding scissors after each client would be a financial burden.

Although there was a slight improvement in waste disposal practices after the introduction of the guidelines, nearly half of the premises still failed to comply with the Waste Management Authority's recommendations for sharps and contaminated waste storage and disposal.

Although officers provided education for skin penetration operators found to be in breach of the skin penetration guidelines, it was evident that the overall compliance of the skin penetration industry could be improved. Increased emphasis on skin penetration workers' initial training in infection control, the classification, storage and disposal of contaminated waste and the use of disinfectants in accordance with the relevant Australian standard may assist,<sup>14</sup> as would a heightened promotion of skin penetration workers' continuing trade education. Technical colleges and the industry's professional organisations both have roles to accommodate this training. This need could also be met by local councils through their existing supervisory role. The Department

**TABLE 4**

**SKIN PENETRATION BUSINESSES COMPLYING WITH WASTE-HANDLING GUIDELINES IN 1991 AND 1994 SURVEYS, BY TYPE OF PROCEDURE**

Practice <sup>a</sup>	1991 n=78		1994 n=72	
	n	%	n	%
Use of sharps bins				
Acupuncture	7/22	32	8/15	53
Electrolysis	13/28	46	16/24	67
Lancing	11/19	58	16/25	64
Pigment implant	4/9	44	6/8	75
All	35	45	46	64†
Contaminated waste stored in approved bags or bins				
Acupuncture	7/22	46	6/15	27
Electrolysis	6/28	21	15/25	60
Lancing	6/19	32	15/25	60
Pigment implant	2/9	22	6/8	75*
All	21	27	42	58†
Contaminated waste removed by licensed removalist				
Acupuncture	6/22	27	6/15	40
Electrolysis	7/28	25	8/24	33
Lancing	7/19	37	7/25	28
Pigment implant	2/9	22	4/8	50
All	22	28	25	35

(a) Some premises undertook more than one procedure.  
\* $P < 0.05$ , † $P < 0.01$

**TABLE 5**

**PREMISES FOUND SATISFACTORY IN TERMS OF HYGIENE**

Skin penetration hygiene practices	1991		1994	
	n	%	n	%
Presence of hospital-grade disinfectant	32	37	41	65†
Presence of soap	14	16	6	10
Presence of hand-wash basin	13	15	4	6
Total premises inspected	86		63	

†  $P < 0.01$



of Health is currently reviewing the skin penetration guidelines and will incorporate advice to assist the industry to address these and all relevant infection control issues. Finally, enforcement of the guidelines may be required for repeatedly noncompliant operators.

Tattooists were not included in this survey owing to their small number in the areas surveyed. As was evident from Davis's recent letter on tattoos and hepatitis C, there seems to be a dearth of information on infection control practices of NSW tattooists.<sup>15</sup> A statewide survey of tattooists would be useful.

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### COMMENT: PROMOTING MENTAL HEALTH IN NSW

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Secondly, because mental health is so heavily influenced by social structures and processes at the interpersonal, community, national and international levels, the promotion of positive mental health is, more than any other aspect of health promotion, outside the domains of control and influence of traditional health care services. When promoting mental health, it is necessary but not sufficient to ask: How can we enable people to think fewer negative thoughts (compare this with 'smoke less') or be nicer to their neighbours (compare with 'exercise more'). We must also ask: What sort of society (locally, nationally and internationally) do we want to live in? For instance, do we want

- to destroy the history, culture, environment and self-esteem of some groups to promote the interests of others?
- to create social policies which make it all but impossible for many to feel part of, and participate fully in, society?
- to place all the blame on individuals when a child is battered to death, rather than examine the social conditions that create child abuse?
- to exploit workers in developing countries to satisfy our desire for consumer goods?
- to tolerate, and even sometimes promote, the use of violence as a means of solving international disputes?

These are intensely political questions. To promote the mental health of an individual, we must create societies in which social structures and processes promote positive mental health for everyone, not just a few. *Mental health promotion in NSW* is a welcome start for the health sector in NSW. We must be careful, however, not to neglect the role played by our own health care and employment practices in promoting and undermining mental health.

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# INFECTION CONTROL IN GENERAL PRACTICE, 1994 AND 1995

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This article reports the results of a telephone survey of the infection control practices of a random sample of metropolitan and rural general practitioners in NSW. Infection control guidelines appropriate to general practice have now been firmly established in Australia,<sup>1-6</sup> and in New South Wales are enforced by legislation. The survey was first undertaken in 1994, and was repeated in 1995 to assess the extent to which practitioners had changed their reported behaviour in response to the wide dissemination of infection control guidelines and increasing community awareness during the year of the study.

## METHODS

Lists of all general practitioners in practice within the geographic boundaries of the Central Sydney Division of General Practice and the Central West Division of General Practice were obtained from the Divisions. Central Sydney is in the inner city; Central Western is a rural Division which includes large regional centres and small country towns. Both members and non-members of the Division were included in the list.

A random sample of general practitioners was drawn from each list. Only one person was selected from each practice (subsequent selections from the same practice were deleted from the sample). Randomly selected general practitioners were contacted by telephone in May 1994 and interviewed with a standardised interview technique by a trained interviewer using a questionnaire. General practitioners who responded were telephoned again in August 1995 and interviewed using the same technique.

The questionnaire consisted of 16 closed-ended questions and took about five minutes to complete. Demographic data collected included age, sex, number of partners in the practice and years since qualifying. Five questions were used to evaluate four key areas of infection control: use of gloves for venipuncture and suturing, methods of sterilisation or disinfection, methods of disposal of contaminated waste and use of protocols to deal with exposure to infection.

The estimated number per week of requests from patients for HIV serology was used as an estimate of the risk of the practice population (although it was recognised that this might not have reflected the true risk).

Current infection-control guidelines<sup>1-6</sup> and legislative infection-control regulations were used to define five principles of 'acceptable' practice: use of gloves when in contact with blood or mucous membranes; disinfection of instruments in contact with mucous membranes; sterilisation of instruments in contact with sterile tissues; disposal of contaminated waste by incineration; and use of protocols for infection control after exposure.

Data were analysed using SPIDA. Descriptive statistics were calculated and comparisons over time were made using McNemar's test. Groups were compared with chi-squared statistics.

## RESULTS

Table 6 shows reported infection control practices in 1994 and in 1995. Table 7 shows reported infection control practices in 1995 for demographic subgroups.

In 1995, over 70 per cent of general practitioners reported using sterile surgical instruments: 39 per cent reported owning their own autoclave and the remainder of the 70 per cent reported either having access to some means of sterilisation (other practices, hospitals) or using single-use disposable instruments. A significant reported change took place between 1994 and 1995 in the sterilisation of surgical instruments and in ownership of an autoclave. Most respondents reported either disinfecting vaginal specula (using, as a minimum, pasteurisation by

TABLE 7

### CHANGES FROM 1994 TO 1995 IN REPORTED INFECTION-CONTROL MEASURES IN GENERAL PRACTICE

Infection-control measure	% acceptable <sup>a</sup>	
	1994 n=92	1995 n=92
Wear gloves for:		
venipuncture	29	38
minor surgery	87	88
Protocol for needle-stick injury	46	48
Sterilisation and disinfection methods:		
thermometers	78	78
vaginal specula	91	95
surgical instruments	57	71†
Own autoclave	32	39†
Disposal of contaminated waste	71	83†

(a) Response rate 71% (106/149) in 1994, 87% (92/106) in 1995.

† $P < 0.01$



thermal disinfection at 75°C for 10 minutes) or using disposable specula.

Most general practitioners reported wearing gloves for minor surgery but far fewer reported use of gloves for venipuncture; nearly half said they had a protocol to be followed in the event of a needle-stick injury. There was no significant change in these reported practices from 1994 to 1995. Most reported some recognised means for the safe disposal of contaminated waste; the proportion had increased significantly from 1994.

Younger doctors and female doctors were more likely to report wearing gloves for venipuncture (Table 2), and urban practitioners were more likely to own an autoclave. There were no differences in reported behaviour attributable to the level of risk of the patient population (as measured by the number of requests for HIV serology per month).

**TABLE 2**

**REPORTED INFECTION-CONTROL MEASURES IN GENERAL PRACTICE, 1995, BY DEMOGRAPHIC CHARACTERISTICS (n = 92)**

Practitioner characteristic	n	Infection-control measure		
		Wear gloves for venipuncture %	Own autoclave %	Protocol for needle-stick injury %
Age				
<35	6	67*	33	67
35-54	53	26	51	51
≥55	33	50	29	43
Sex				
Male	74	34*	41	49
Female	18	53	53	47
Years since qualifying				
<5	1	100	100	100
6-10	8	67	33	50
≥10	83	35	42	47
No. requests for HIV serology per month				
0-2	45	36	31	44
3-5	25	40	44	44
6-10	7	43	71	57
≥10	15	40	66	60
Location				
Urban	53	47	49†	47
Rural	39	26	36	49

\*P < 0.05, †P < 0.01

**DISCUSSION**

This study describes *reported* behaviour, and results should be interpreted in this light; it is possible that actual behaviour might have been different. However, the fact that general practitioners frequently reported a relatively low level of compliance with many guidelines suggests that the reported behaviours were accurate.

The study shows a generally high level of reported compliance with infection control policy—although there was room for improvement. Although most practitioners reported sterilising surgical instruments, wearing gloves for minor surgery and safely disposing of contaminated waste, the numbers might have been higher. Fewer reported using gloves for venipuncture or reported having a protocol to be used following a needle-stick injury.

Reported infection-control practice was not influenced by the risk level of the patient population (as measured by patient requests for HIV serology), suggesting that, in keeping with current guidelines, measures were applied universally and independently of the perceived risk of the practice population.

General practice differs from hospital practice in many important areas relevant to infection control. Procedural work is much less common and less complex. In this study, many practitioners undertook very little, or no, procedural work. Major practical, logistic and economic barriers acted to inhibit effective infection control, and this led to novel means of complying with infection control policy. While it may be difficult for a practice to justify the purchase of an autoclave, sterilisation of instruments was often arranged through the local hospital, and contaminated waste was often disposed of in the same way. This was particularly true in rural areas.

While 39 per cent of general practitioners owned an autoclave, this did not guarantee acceptable procedures in associated areas of infection control, such as presterilisation cleaning and appropriate reprocessing, monitoring, maintenance and testing of the device.

Things are clearly improving. Reported sterilisation procedures, autoclave ownership and waste disposal all improved to a significant degree during the year of study. This trend is likely to continue in response to increasing professional interest and public awareness. Areas that might form the target of any continuing education endeavours include autoclave ownership (or improved access to some means of sterilisation), use of gloves for minor surgery and venipuncture, and the introduction of postexposure protocols. These things should be encouraged in every general practice.

*continued on p. 55*



# DOCTORS' NOTIFICATIONS OF PERTUSSIS

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This article describes the results of a telephone survey of medical practitioners conducted by the Northern Rivers Public Health Unit (PHU) to determine the reasons why doctors did not notify cases of pertussis directly to the PHU and to identify strategies to improve this situation. The *NSW Public Health Act 1991* requires doctors, hospitals, laboratories, schools and child care facilities to notify cases of pertussis. The North Coast Area had the highest number of pertussis notifications in NSW for 1995 (25 per cent of all cases) but only 18 per cent of these cases were notified by doctors.

Pertussis, or whooping cough, is a serious condition in children under two years of age and often results in admission to hospital. It is a highly contagious bacterial disease. The clinical diagnosis criterion for pertussis is a cough illness with one of the following:

- paroxysms of coughing
- inspiratory 'whoop' without other apparent cause
- post-tussive (post-cough) vomiting
- a link to a laboratory-confirmed case.

The laboratory criterion for diagnosis of pertussis is isolation of *Bordetella pertussis* from a clinical specimen taken from the nose or throat or detection of *Bordetella*-specific IgA from the serum of a patient with a clinically compatible illness.

The notification procedure for pertussis recommended to doctors is to telephone the PHU once a provisional clinical diagnosis has been made. The PHU's response, in consultation with the patient's doctor, may include contact tracing, immunisation advice, advice on treatment, public awareness campaigns and exclusion of unimmunised children from child care facilities.

Information from notifications is included in the NSW Infectious Diseases Surveillance System (IDSS). Feedback to the notifying agencies and doctors includes regular reporting in the *North Coast Health Bulletin* and the *NSW Public Health Bulletin*.

## METHODS

Relevant information on pertussis notifications in the North Coast Area, including sources of notifications and case details, was gathered from the IDSS.

The reliability of notifications of pertussis in 1995 by doctors in the North Coast Area was determined by comparing their notifications with those from laboratories and other sources as identified on the IDSS. Doctors were identified who had not notified cases of pertussis that had subsequently been notified by the laboratories to whom these doctors had sent specimens.

A questionnaire was developed and piloted for use with these doctors. Telephone interviews were conducted with 21 doctors from the North Coast Area, including three doctors from Grafton and 18 from the Tweed and Mid North Coast areas, during May and June 1996. Doctors from the Richmond area were excluded at the request of the Northern Rivers Division of General Practice because they were already participating in an immunisation project.

## RESULTS

### Infectious Diseases Surveillance System

Of the 341 cases of pertussis notified to the PHU in 1995, 62 (18 per cent) were notified by doctors. Other notifications came from laboratories, hospitals, a preschool, a school, a family day care centre and a child care centre (Table 8).

The 262 laboratory notifications of pertussis during 1995 were a result of tests requested by 97 doctors. Only 12 per cent of the 97 doctors who received laboratory confirmation of their pertussis cases directly notified some of these cases to the PHU. One general practitioner was responsible for 23 per cent of pertussis notifications from general practitioners.

Towns and centres with the highest numbers of pertussis cases included Murwillumbah (13 per cent), Casino (10 per cent), Lismore (8 per cent) and Dunoon (5 per cent), with 88 towns and centres having cases.

Most cases (76 per cent) were under 21 years of age and 30 per cent were under three years of age.

### Questionnaire findings

Of the 32 doctors identified for interview, 21 agreed to participate, two declined and the remainder were unavailable.

The 21 participating doctors reported seeing an estimated 227 cases of suspected pertussis within the previous 12 months. Of these cases 9 (4 per cent) were notified to the PHU. A total of 167 (74 per cent) of the estimated 227 suspected cases had specimens collected

TABLE 8

### SOURCE OF FIRST NOTIFICATION OF CASES OF PERTUSSIS TO THE NORTH COAST PUBLIC HEALTH UNIT, 1995

Notifier	n	%
Doctor	62	18.2
Hospital	13	3.8
Laboratory	262	76.8
Other	4	1.2
Total	341	100.0



for laboratory testing, of which 99 (59 per cent) were confirmed as cases.

As many doctors reported that they had never notified an infectious disease to the PHU they could not comment on any problems with the notification process. Problems that were identified included: an inability to contact an appropriate officer immediately (3), difficulty finding forms or telephone numbers (2), being told to follow up contacts (1), and the confidentiality of patient information (1). The doctors who notified the PHU by mail reported no problems with the notification system.

Not all doctors realised that they could notify the PHU by telephone, with four doctors suggesting that this would assist with notification. A toll-free number and a hot-line were suggested. Four doctors suggested improving the knowledge of doctors on the notification procedure. One suggested distributing stickers with a list of notifiable conditions, and another three suggested regular reminders and education. Financial incentives were suggested by two. Suggested alternative methods of notifying the PHU included by fax (2) and e-mail(1). Other suggestions included obtaining consent from the patient or family to notify (1), allowing laboratories to notify for them (1) and making sure that an appropriate person could be contacted during weekends (1). Five doctors had no suggestions.

Eleven doctors had no knowledge of the role of the PHU when notified of a case of pertussis. Other doctors reported surveillance (4) and contact-tracing (6) as the role of the PHU. Only one doctor did not want feedback on notifications to the PHU. Suggestions for feedback mechanisms included through the Division of General Practice newsletters (11), the *North Coast Public Health Bulletin* (9), laboratory reports (1), individual feedback (2) media coverage during outbreaks (1), monthly reports (2), personal letters (1) and the regular Queensland information sheet (1).

Knowledge of the conditions that doctors are required to notify by telephone to the PHU was poor, with six doctors being unable to list any. The most commonly correctly cited were pertussis (9) and measles (9), others were food-related illness (3) and gastroenteritis (3). The only doctor who knew all the notifiable conditions had a list in their office.

## DISCUSSION

Laboratory notifications were the most comprehensive source of notifications for pertussis available to the North Coast PHU. However it is difficult for a PHU to take appropriate and timely action if the first or only notification is through the laboratory as there can be up to a seven day delay from the time of the provisional clinical diagnosis until laboratory confirmation is available. Many doctors commented that they were often unsure that their diagnosis

of pertussis was correct, and that the laboratories would always notify confirmed cases. Uncertainty may be a major deterrent for doctors notifying pertussis. One laboratory carried out 547 tests for pertussis in 1995 and found that only 24 per cent of all tests were positive.

Limited knowledge of notifiable diseases and the notification process also contributed to the poor rate of notification by doctors. Information on the role of the PHU in response to notifications, regular reminders of notifiable conditions and education on the diagnosis of pertussis are necessary to improve notifications of pertussis by doctors.

To improve the rate of notifications by doctors the PHU intends to take the following actions in response to the findings:

- supply doctors with a sticker that lists notifiable conditions and includes the PHU's telephone number and a form with case definitions
- send notification forms and feedback from the survey to all doctors on the North Coast
- develop educational strategies with the Divisions of General Practice and supply articles for the Division's newsletters
- develop a protocol at the PHU, so that all notifications, including after-hours calls, are promptly answered and followed up
- provide training for hospital staff who receive notifications after hours.

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## COMMENT: AIDS/INFECTIOUS DISEASES BRANCH, NSW HEALTH DEPARTMENT

Under the provisions of the *Public Health Act, 1991*, and Regulation, doctors, hospital chief executives (or general managers), pathology laboratories, directors of child care centres and school principals are required to notify certain diseases.

The following diseases are to be **notified by doctors**: acquired immunodeficiency syndrome (AIDS), acute viral hepatitis, adverse event following immunisation, food-borne illness in two or more related cases\*, gastroenteritis among people of any age, in an institution (for example, among persons in educational or residential institutions)\*, leprosy, measles\*, pertussis (whooping cough)\*, syphilis, tuberculosis.

The following are to be **notified by hospital chief executive officers (or general managers)**: acquired immunodeficiency syndrome (AIDS), acute viral hepatitis, adverse event following immunisation, botulism\*, cancer†, cholera\*, diphtheria\*, food-borne illness in two or more related cases\*, gastroenteritis among people of any age, in an institution (for example, among persons in educational or residential institutions)\*, haemolytic uraemic syndrome\*, *Haemophilus influenzae* type b invasive infections\*, legionnaires' disease\*, leprosy, measles\*, meningococcal disease\*, paratyphoid\*, pertussis (whooping cough)\*, plague\*, poliomyelitis\*, rabies\*, syphilis, tetanus, tuberculosis, typhoid\*, typhus (epidemic)\*, viral haemorrhagic fevers\*, yellow fever\*.

The following are to be **notified by laboratories**: arboviral infection (flaviviruses)\*, botulism\*, brucellosis, cancer†, cholera\*, cryptosporidiosis, diphtheria\*, gonorrhoea, *Haemophilus influenzae* type b invasive infection\*, hepatitis A\*, hepatitis B, hepatitis C, hepatitis D (Delta), hepatitis E\*, human immunodeficiency virus (HIV) infection, lead levels in blood >0.72 mmol/L (15mg/dL), legionella infections\*, leptospirosis, listeriosis, malaria, measles\*, meningococcal disease\*, mumps, mycobacterial disease, pertussis (whooping cough)\*, plague\*, poliomyelitis\*, Q fever, rabies\*, rubella (German measles), *Salmonella* infections, syphilis, typhus (epidemic)\*, verotoxin-producing *Escherichia coli* infections\*, viral haemorrhagic fevers\*, yellow fever\*.

The following are to be **notified by school principals and directors of child care facilities**: diphtheria‡, measles‡, mumps‡, pertussis (whooping cough)‡, poliomyelitis‡, rubella (German measles)‡, tetanus‡.

\*Notification requested by telephone as soon as a provisional diagnosis is made

†Notification to the NSW Cancer Registry

‡Notification requested by telephone, if possible

From: *Notification of diseases under the Public Health Act, 1991*. Circular no. 97/92, file no. A5730. Sydney: AIDS/ Infectious Diseases Branch, NSW Health Department.

## INFECTION CONTROL IN GENERAL PRACTICE

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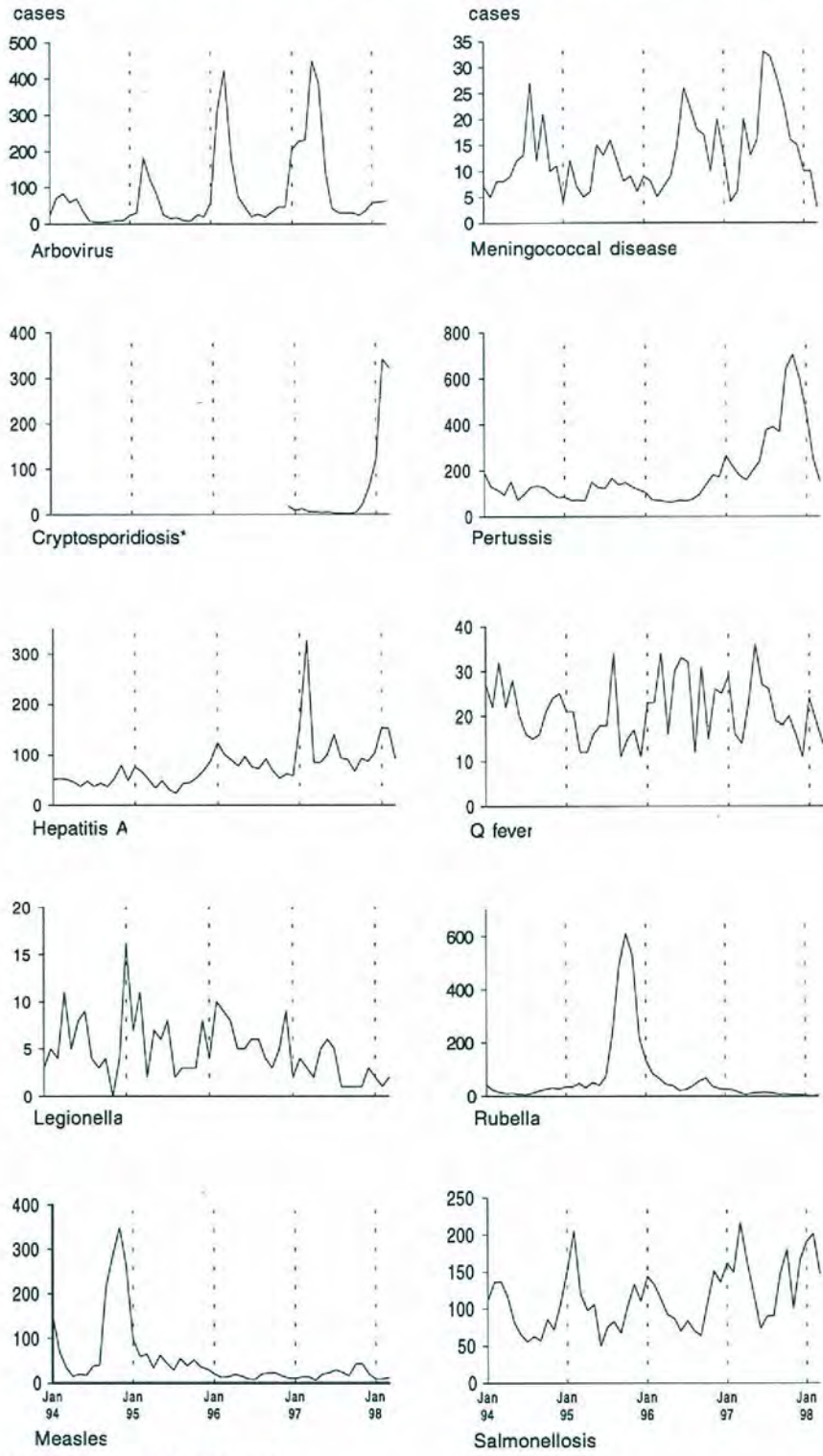
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**FIGURE 1**

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

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



\* not reportable before December 1996



## TRENDS

Reports of **arboviral infection** continue to be well down for this time of year, and recent data indicate that the large outbreak of **cryptosporidiosis** (see the March issue of the *Bulletin*) may be slowing (Figure 1). Typically, outbreaks of cryptosporidiosis can be prolonged, since the low infectious dose is conducive to a high secondary attack rate through person-to-person transmission. Thorough hand washing, especially by persons with diarrhoea, is an essential prevention measure. Reports of **pertussis** continue to decline in most parts of the state.

## MEASLES CONTROL CAMPAIGN

The NSW Health Department will participate in the recently announced National Enhanced Measles Control Program, to be conducted from August to November 1998. The aim of the campaign is to vaccinate all children in primary schools throughout Australia. A campaign (through general practitioners) to vaccinate children under five years of age will run concurrently.

Funds from the Commonwealth Department of Health and Family Services will be provided to cover the purchase of vaccines and consumables, a State measles coordinator, nursing staff, clerical assistants and a multilayered integrated communication campaign.

The National Enhanced Measles Control Program plans to:

- ensure that all primary school children are provided with a second dose of measles-mumps-rubella (MMR) vaccine, through 2,100 NSW primary schools;
- follow up all two- to five-year-olds to ensure they have received their first dose of MMR vaccine (in cooperation with general practitioners and other immunisation providers);
- ensure that all secondary students receive advice to ensure that they have received their MMR booster (second) dose.

## INFLUENZA SURVEILLANCE

The threat (which is now subsiding) of a widespread epidemic of influenza following the emergence of influenza A subtype H5N1 in Hong Kong in late 1997 (see the December *Bulletin*) has concentrated worldwide attention on influenza surveillance. A more real threat to emerge, however, has been the 'Sydney' H3N2 subtype of influenza A, which caused illness in our 1997 winter in Australia, and in the recent northern winter caused some

Readers will notice a change in our regular infectious diseases graphs. Instead of showing disease reports for the previous 12 months with historical comparisons, we'll now show you disease reports over the entire previous four years or so.

illness in Europe and Asia and a widespread epidemic in the United States. In the light of these events and the imminent Australian influenza season, it has been timely to review NSW influenza surveillance systems.

In recent years in NSW, surveillance during the influenza season has consisted of reports of clinical influenza-like illnesses by networks of sentinel general practitioners in selected Areas and reports by four hospital laboratories of influenza diagnoses made on samples submitted from (usually hospitalised) patients.

In 1998 we plan to:

- enrol into the surveillance system two additional laboratories that have agreed to provide weekly reports of influenza diagnoses;
- investigate the expansion of sentinel general practitioner surveillance in other Areas;
- develop a directed virological surveillance scheme involving about 20 general practitioners and three laboratories (Such a scheme is designed to identify strains of influenza soon after their emergence in the community, to obtain specimens from a more representative sample of the population than is available through routine hospital laboratory-based surveillance, and to provide a larger number of isolates for characterisation.);
- provide more timely information about influenza activity in NSW and other parts of the globe, through a new standard weekly bulletin to Public Health Units, general practitioners, laboratories and other interested parties.

With these measures, we hope that influenza surveillance in NSW this winter will provide more useful information for clinical and public health practitioners, administrators, the press and the public.



TABLE 9

## INFECTIOUS DISEASE NOTIFICATIONS RECEIVED IN MARCH 1998, BY AREA HEALTH SERVICES

Condition	Area Health Service (1998)																Total for Mar**	Total to date**	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA			SA
<b>Blood-borne and sexually transmitted</b>																			
AIDS	-	-	1	-	1	2	-	-	-	1	-	1	-	-	-	-	-	6	25
HIV infection*	3	3	1	2	1	-	-	1	9	-	-	-	-	-	-	-	-	50	114
Hepatitis B — acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	13
Hepatitis B — other*	32	16	14	-	25	4	6	6	19	4	5	6	1	-	-	-	3	141	720
Hepatitis C — acute viral*	-	-	-	-	-	-	1	-	-	-	-	-	-	-	2	-	-	3	14
Hepatitis C — other*	41	20	16	-	27	55	44	24	102	35	26	9	4	10	-	10	17	440	1,797
Hepatitis D — unspecified*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Hepatitis, acute viral (not otherwise specified)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
Gonorrhoea*	10	2	-	-	-	4	1	-	25	-	-	4	-	-	-	-	-	46	215
Syphilis	4	2	-	-	-	1	-	1	13	3	-	1	1	1	1	-	1	29	112
<b>Vector-borne</b>																			
Arboviral infection*	-	2	-	-	1	1	8	-	-	13	10	4	1	-	2	5	2	49	152
Malaria*	3	1	-	-	2	-	1	-	3	3	-	-	1	-	-	-	-	14	41
<b>Zoonoses</b>																			
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leptospirosis*	-	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	-	3	7
Q fever*	-	-	-	-	-	1	1	-	-	1	1	2	6	-	-	-	1	13	56
<b>Respiratory and other</b>																			
Blood lead level	6	5	-	-	2	3	9	-	2	1	-	-	-	-	-	2	-	30	104
Legionnaires' disease	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	4
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Meningococcal (invasive) infection	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	21
Mycobacterial tuberculosis	-	1	-	-	2	-	-	-	1	5	-	1	-	-	-	-	-	11	48
Mycobacteria other than TB	-	-	-	-	1	-	-	-	3	-	1	-	-	-	-	-	1	6	40
<b>Vaccine-preventable</b>																			
Adverse event after immunisation	-	-	-	1	1	1	-	-	2	-	1	-	-	-	-	-	1	7	56
<i>Haemophilus influenzae</i> b (invasive) infection	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Measles	1	-	-	1	1	-	1	-	1	-	2	-	-	1	1	-	-	9	30
Mumps*	1	1	1	-	-	-	-	-	2	-	3	-	-	-	-	-	-	8	14
Pertussis	7	8	15	6	5	11	15	12	13	7	15	5	4	1	3	-	-	127	820
Rubella*	-	2	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	4	10
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
<b>Faecal-oral</b>																			
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Cryptosporidiosis	28	16	24	2	22	24	30	13	41	28	31	12	6	-	-	-	7	284	735
Food-borne illness (not otherwise specified)	-	-	-	-	-	-	-	-	2	-	-	1	1	-	-	-	-	4	8
Gastroenteritis (in institution)	-	-	-	-	-	-	7	-	-	4	-	-	-	-	1	-	-	12	50
Haemolytic uraemic syndrome	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	2
Hepatitis A	4	9	1	10	2	10	4	2	16	21	2	5	-	-	-	-	-	86	389
Hepatitis E	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	3
Listeriosis*	-	-	-	-	1	-	2	-	1	-	-	-	-	-	-	-	-	4	15
Salmonellosis (not otherwise specified)*	19	19	-	-	2	13	14	5	16	20	6	5	1	-	1	2	5	128	524
Typhoid and paratyphoid*	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	12
Verotoxin-producing <i>E. coli</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

\* lab-confirmed cases only

\*\* includes cases with unknown postcode

CSA = Central Sydney Area  
NSA = Northern Sydney Area  
WSA = Western Sydney Area

WEN = Wentworth Area  
SWS = South Western Sydney Area  
CCA = Central Coast Area

HUN = Hunter Area  
ILL = Illawarra Area  
SES = South Eastern Sydney Area

NRA = Northern Rivers Area  
MNC = North Coast Area  
NEA = New England Area

MAC = Macquarie Area  
MWA = Mid Western Area  
FWA = Far West Area

GMA = Greater Murray Area  
SA = Southern Area