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HEALTHY PEOPLE 2005: NEW DIRECTIONS FOR PUBLIC HEALTH IN NSW

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This issue of the Bulletin contains a four-page insert summarising *Healthy People 2005: New Directions for Public Health in NSW* which was released in both full and summary form in October 2000. The policy is introduced by an overview of public health in NSW, describes the contributions of key groups, and presents a vision for the future.

The vision is 'better health for all people in NSW through effective public health action to maintain, protect and promote health'. To achieve this, three streams of health improvement initiatives have been identified:

- healthier people
- healthier places
- reducing health inequalities.

A highly consultative process was used to develop the policy, beginning with a workshop convened in June 1999. In July 1999 the Director-General, Mr Michael Reid, issued a discussion paper titled 'Future Directions for Public Health in NSW'. Population data describing the health and risks to health of the people of NSW were included, as well as recent international and national developments in public health. Responses to this discussion paper were considered by a steering committee that was established in August 1999, which I chaired supported by Dr Doris Zonta. This committee provided advice that assisted the development of the policy.

This policy will be implemented over the next five years. Future issues of the Bulletin will highlight aspects to promote discussion and action. I encourage you to examine the four-page summary, and to access a full copy of the document. For further information on *Healthy People 2005* visit the NSW Health Web site at www.health.nsw.gov.au

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DEVELOPING INNOVATIVE STRATEGIES FOR MULTICULTURAL COMMUNICATION

Terry Chesher and Michelle Young
NSW Multicultural Health Communication Service

This article describes the development of the NSW Multicultural Health Communication Service (Multicultural Communication) since its creation in 1997. The development and rationale of the service are described, as are its goals and core functions.

HOW THE SERVICE HAS DEVELOPED

For a number of years the NSW Department of Health produced and distributed multilingual health information through the former Health Translation Service. In 1997 Multicultural Communication was established as a statewide service whose mandate includes the multilingual aspects of all health communication. It is funded by the Multicultural Health Branch and Health Promotion Branch of the NSW Department of Health, and is based in the South Eastern Sydney Area Health Service.

In the first triennium following its inauguration, Multicultural Communication has focused on establishing processes, systems and a strong knowledge base to enable capacity-building throughout the NSW Health system for the communication of information about health and health services to people of culturally and linguistically diverse (CALD) backgrounds. This has been assisted by a management committee—with representation from the NSW Department of Health, the South Eastern Sydney Area Health Service, and the Area-based Multicultural Coordinators—and by advisory committees. These management and advisory committees oversee the effective dissemination of multilingual resources.

Multicultural Communication supports the NSW Department of Health by:

- ensuring that statewide campaigns are tailored to reach speakers of languages other than English;
- providing expert advice on the development of communication strategies for CALD communities;
- implementing those strategies through campaigns when required, for example: tobacco cessation, physical activity, food safety, and nursing recruitment.

From the outset there has been strong demand for research and marketing services in public health initiatives for CALD communities. In response to this demand Multicultural Communication has developed a consultancy role to the area health services, other health outlets, and non-government organisations, to facilitate and evaluate cross-cultural communication.

RATIONALE OF THE SERVICE

In recognition of the heterogeneity of the CALD communities in NSW, Multicultural Communication was set out by the NSW Department of Health as part of its commitment to the principles of access and equity. According to the 1996 Census of the Population of NSW:

- 15.8 per cent were born in a non-English speaking country
- 17 per cent speak a language other than English
- 3.8 per cent have a low proficiency in English or do not speak English at all.

Immigrants of non-English speaking backgrounds face many linguistic and cultural barriers when trying to utilise health services. Lack of proficiency in English is a major contributing factor to low health literacy. 'Health literacy represents the cognitive and social skills which determine the motivation and ability of individuals to gain access to, understand and use information in ways which promote and maintain good health.'[1] Studies in Australia and overseas have identified low health literacy as a risk factor for poor health outcomes and a poor understanding of preventive health practices (for example, the cessation of smoking).[2] Higher rates of inappropriate use of health services are also associated with low health literacy.

GOALS OF THE SERVICE

The goals of Multicultural Communication are to:

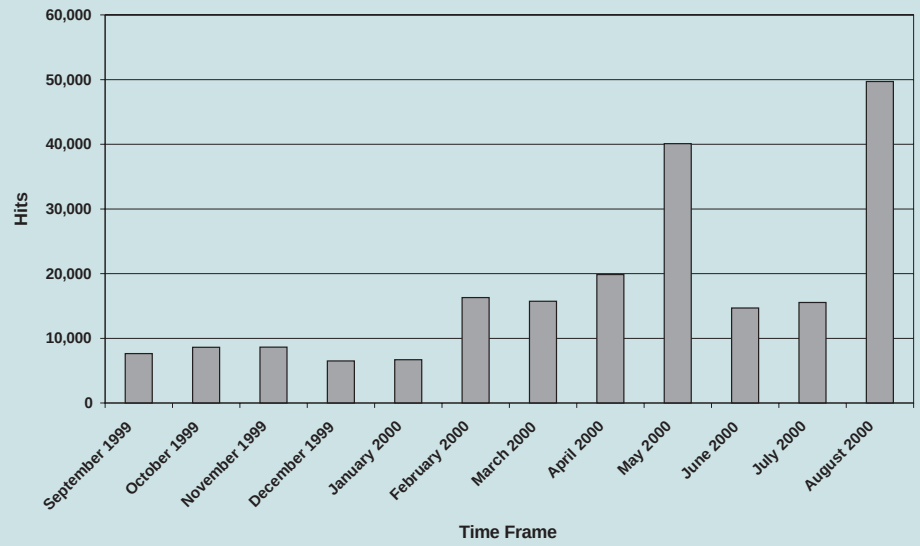
- improve the quality of communication between the health system and communities from CALD backgrounds;
- provide advice to the health system on effective communication strategies;
- provide a central point for the collection and exchange of knowledge about multicultural communication.

In its policy advice and development role, Multicultural Communication strives to raise awareness and implement the principles of, the State government's Charter of Principles for a Culturally Diverse Society, through identifying and addressing barriers to access by CALD communities to health information and services. For example, having identified that due to a lack of awareness the production of new resources was being duplicated by area health services, a new policy document entitled *Standard Procedures for Areas Developing Multilingual Resources* was produced for dissemination throughout the health system. A protocol to ensure currency of all multilingual publications has also been promulgated. To support these policies, guidelines on producing multilingual resources and on checking translations, have also been produced and are available both in hard copy and on the Multicultural Service's Web site.

Multicultural Communication performs an advisory role to NSW Health, maintaining close contact with coordinatiors in Areas who have responsibility for multicultural health. Through this network Multicultural

FIGURE 1

MULTICULTURAL COMMUNICATION WEB SITE: NUMBER OF VISITS SEPTEMBER 1999–AUGUST 2000



Communication provides advice on the communication needs of CALD communities, including the particular need for new multilingual information. An annual survey is conducted in conjunction with the collection of data for the Ethnic Affairs Priority Statement, in which the area health services are asked to report on:

- new resources they have produced
- resources 'in the pipeline'
- priorities for the production of new multilingual health resources.

The service has also provided advice on the translation and/or production of various resources. For example, Multicultural Communication worked with the Epidemiology and Surveillance Branch of the NSW Department of Health on the translation and adaptation of the NSW Health Survey to languages other than English.

RESEARCH ACTIVITIES

Multicultural Communication is committed to practices that are informed by evidence-based research and the sharing of knowledge. Examples include:

- market research with Arabic and Khmer speakers to establish media preferences within the community;[3,4]
- management of a survey to evaluate a resource produced by the Central Sydney Area Health Service for Chinese-speaking migrants designed to improve knowledge in that population of important health issues and of the NSW Health System;
- research with communities in South Western Sydney to assist with the development of new service delivery models for CALD communities in the Families First Multicultural Project.[5]

INFORMATION SERVICES

To meet the challenge of ensuring access to health information and services for CALD communities, Multicultural Communication has invested in a range of strategies to ensure that the available resources are better known and accessible to all parts of the health system.

Web site

Multicultural Communication's multilingual Web site was developed and launched in 1997. That same year the Web site won the Australian Financial Review–Telstra Australian Internet Award for the best professional services site. The Web site contains:

- multilingual health information
- an online catalogue called Catalogue Online
- a directory of multicultural health promotion projects and research (which health staff can add to by completing and forwarding forms online)
- a searchable catalogue of ethnic media (television, radio and print)
- *Guidelines for health staff producing multilingual information*
- *Seven Steps: guidelines for health staff checking translations*
- Strategic Plan (1999–2002)
- news, including copies of the quarterly newsletter *Polyglot*.

The online catalogue lists all available publications accessible through the Web site and is continually updated as new material is uploaded. Over 400 publications in up to 35 languages can be downloaded directly from the Web site by health staff.

Figure 1 shows the number of visits to the Web site over the last 12 months. The number of visits has increased over a 12 month period. However it should be noted that over the first three years, the number of publications downloaded in English far exceeded the quantity accessed in other languages. This may indicate that employees of NSW Health are not aware that they can download from the Web site any publication in any language, without the need for special software.

Multicultural Communication promotes its Web site as the preferred distribution mechanism of multilingual information. However, printed resources are also distributed and promoted through each area health service for those without internet or intranet access.

Facsimile service

For the benefit of NSW Health staff without access to the intranet or internet, multilingual information will shortly be provided via the Health Faxback Service. For the cost of a local call the Health Faxback Catalogue is faxed to users, who can use a touchtone phone to order copies of publications which are then faxed back to them in the languages they select.

Ethnic press service

In 1997 Multicultural Communication assumed management of an existing program, the Health Column project, which involved publication of articles on a weekly basis in the ethnic press in 16 community languages. Research with the Arabic and Khmer communities suggested the need to move the Health Columns project from its previous media focus on the ethnic press to a greater emphasis on other printed publications as a tool for health staff working with CALD communities.[3]

Radio service

Access to information is a high priority for all CALD communities, but particularly for newly arrived groups. This can be enhanced through broadcasting on ethnic radio. Radio health segments for new arrivals were developed in conjunction with the NSW Refugee Health Service's Health Information Program for Bosnian and Somali audiences. The purpose was to extend the reach of that program across NSW, particularly to listeners who traditionally rely on oral communication.

Marketing and communication campaigns

Social marketing and communication campaigns are arranged for public health issues, using research to identify the specific areas of need within a community and developing ethno-specific messages and communication strategies. The service has developed successful social marketing campaigns in areas such as smoke alarms,[6] as well as the Multilingual Communication Campaign for the NSW Cervical Screening Program (1999). These projects, along with other statewide campaigns undertaken for NSW Health, have involved provision of media training to bilingual workers, thus building a network of skilled communicators on which the health system can draw.

FUTURE DIRECTIONS

As Multicultural Communication moves into its fourth year, a new Strategic Plan has been developed, following recommendations from an independent review of the Service. Membership of the Management Committee has been reviewed, and advisory committees amalgamated. Due to proposed building alterations on the Royal South Sydney Community Health Complex site, Multicultural Communication was relocated in August 2000 to new premises at Sydney Hospital and Sydney Eye Hospital.

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Further information about the services provided by Multicultural Communication can be obtained from NSW Multicultural Health Communication Service, Level 1, North Block, Sydney Hospital and Sydney Eye Hospital, Macquarie Street, Sydney NSW 2000.

Postal address: GPO Box 1614, Sydney NSW 2001;

email address: mhcs@sesahs.nsw.gov.au;

telephone: (02) 9382 7516; facsimile: (02) 9382 7517;
Faxback Service: 1300 859 659.

The Multicultural Communication Web site can be accessed via the internet at HealthWeb: **www.mhcs.health.nsw.gov.au**, or via the intranet at HealthNet: **internal.health.nsw.gov.au/health-public-affairs/mhcs**.

THE POTENTIAL OF THE NSW POISONS INFORMATION CENTRE FOR SURVEILLANCE OF UNINTENTIONAL POISONING IN YOUNG CHILDREN

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National Poisons Register

This article reports information collected routinely by the NSW Poisons Information Centre (NSW PIC), and comments on its potential to enable the monitoring of episodes of unintentional poisoning in NSW children. Unintentional poisoning is a major cause of morbidity in infants and young children. In NSW in 1995–96, unintentional poisoning was the second most common cause of injury-related hospitalisation in children aged under five years.[1] Despite this, there is a dearth of information in NSW describing the substances and risk factors involved in serious poisoning.

The NSW PIC provides expert advice on the appropriate management of poisoning, and the handling of toxic substances, to both the general public and clinicians. The service is available to the population of NSW 24 hours a day, seven days a week. Information collected by the NSW PIC may be useful in informing poisoning prevention activities and for setting prevention priorities.

METHODS

The NSW PIC maintains a database of information describing each phone enquiry (or 'exposure call') for assistance with the management of a person who has ingested or been exposed to a toxic substance. Information on 'exposure calls' originating from NSW for patients aged 0 to 4 years was extracted from the database for the 1996 calendar year.

Information collected included:

- the substance involved
- patient age and sex
- route of exposure (ingestion, inhalation, skin, eyes)
- time since exposure
- initial symptom assessment
- the outcome of the call (or 'call handling').

Circumstantial information, such as the packaging type or means of access to the substance is not routinely collected. The severity of the exposure is not explicitly recorded in the database. However, the outcome of the call (or the 'call handling') provides a proxy indication of the severity of the poisoning. The advice given is categorised as:

- stay home
- refer to general practitioner
- refer to hospital
- remain in hospital.

Where the advice is 'refer to hospital', the exposure is potentially more serious than those advised to remain at home or consult a general practitioner. Where a call originates from a hospital or general practitioner, no additional information about the call outcome is recorded.

This analysis was restricted to the toxic substance involved and the advice given, as these were considered to be the most relevant for informing prevention activities in NSW. Data were analysed using SAS statistical software.[2]

RESULTS

In 1996, the NSW PIC handled 24,707 'exposure calls' that originated in NSW and related to potential exposures to poisoning substances in children aged under five years. Of these, the majority (20,461, or 83 per cent) were advised to stay at home, and a small proportion (1,041, or four per cent) were referred to hospital. Approximately 10 per cent of calls originated from hospital staff or general practitioners (Table 1).

As shown in Table 2, the most common substances involved in all 'exposure calls' were:

- paracetamol (1,024 calls, four per cent);
- cough–cold preparations containing no paracetamol or aspirin (782, three per cent);
- all-purpose hard surface cleaners (767, three per cent).

Among calls resulting in advice to attend hospital, paracetamol (143, or 14 per cent) and cough–cold preparations containing no paracetamol or aspirin (63, six per cent) remained the most common exposures. Antihistamine exposure, which was the sixth most common among all 'exposure calls', is the third most

TABLE 1

ADVICE PROVIDED TO PHONE ENQUIRIES TO THE NSW PIC FOR POISONING EXPOSURES IN CHILDREN AGED UNDER FIVE YEARS, 1996.

'Call handling'	No. calls	%
Stay home	20,461	82.8
Refer to general practitioner	278	1.1
Refer to hospital	1,041	4.2
Already at hospital	1,965	8.0
Already at general practitioner	434	1.8
Other	84	0.3
Not stated	444	1.8
Total	24,707	100.0

TABLE 2

TEN MOST COMMON EXPOSURES, ALL CALLS TO NSW PIC COMPARED WITH CALLS REFERRED TO HOSPITALS, CHILDREN AGED UNDER FIVE YEARS, 1996

All calls to NSW PIC			Calls referred to hospitals		
Substance/product	**No. calls**	**% of calls (*n* = 24,707)**	**Substance/product**	**No. calls**	**% of calls (*n* = 1,041)**
Paracetamol	1,024	4.1	Paracetamol	143	13.7
Cough/cold preparations not containing paracetamol/ aspirin	782	3.2	Cough/cold preparations not containing paracetamol/ aspirin	63	6.1
Cleaner: all purpose/ hard surface	767	3.1	Antihistamines	40	3.8
Oral contraceptives	627	2.5	Iron (non-multivitamin)	30	2.9
Silica gel	580	2.3	Tricyclic antidepressants	26	2.5
Antihistamines	485	2.0	Eucalyptus oil	25	2.4
Perfume, cologne, aftershave	484	2.0	Battery: disc/button type	24	2.3
Hand dish detergents	480	1.9	Paracetamol/narcotic combination analgesic	23	2.2
Vaporiser fluids and inhalants	404	1.6	Calcium antagonists	22	2.1
Toilet bowl cleaner/ deodoriser: cage type	401	1.6	Anticholinergic drugs: other/unknown	17	1.6
Total	6,034	24.4	Total	413	39.7

common substance (40, 3.8 per cent) resulting in advice to attend hospital. The 10 most common substances resulting in all 'exposure calls' accounted for only a quarter of all calls made, reflecting the wide variety of substances available in the community. In comparison, the 10 most common substances resulting in advice to attend hospital accounted for 40 per cent of 'exposure calls' in that category (Table 2), reflecting the smaller subset of substances in the community which have potentially dangerous effects.

DISCUSSION

Paracetamol is the substance most commonly identified in calls to the NSW PIC relating to the unintentional poisoning of young children. While accounting for less than five per cent of all exposure calls, it accounts for 14 per cent of exposures referred to a hospital. This is consistent with information obtained from the NSW Inpatient Statistics Collection (ISC). In 1995–96, 16 per cent of NSW hospitalisations for unintentional poisoning due to drugs and medicines in children aged under five years were the result of paracetamol poisoning.[1]

Many of the substances commonly leading to NSW PIC inquiries, such as oral contraceptives and cleaning agents, do not generally lead to referral to hospital. When analysing NSW PIC information, the 'call handling' provides a convenient marker of the severity of the exposure, and identifies substances implicated in more serious incidents of poisoning.

The information collected by the NSW PIC does not include information describing the circumstances of the poisoning, such as packaging type and availability, which limits its use for routine surveillance. Further, population-based poisoning rates cannot be calculated because the proportion of all poisonings in NSW covered by the NSW PIC is unknown. The categorisation of 'call handling' presents difficulties because for calls made from hospitals and general practitioners only the call source is recorded, not the call outcome.

Collection of the telephone number of the caller could provide a potential means of obtaining more detailed information through later follow-up. This method has been used in Victoria to obtain detailed risk information for several substances.[3–5]

The other routinely collected source of information that describes non-fatal poisoning in NSW is the NSW ISC.[6] Information on hospitalisations due to poisoning can be readily obtained, including the age and sex of patients, and population-based rates,[1] but its usefulness is limited by the difficulty of identifying specific substances involved, and the lack of information about the circumstances of the poisoning event. In particular, the International Classification of Diseases, Clinical Modification,[7] used in the coding of hospital statistics in NSW, does not adequately permit the distinction of substances involved in poisoning exposures. For example, antihistamine poisoning would be coded under the diagnosis of *Poisoning by primarily systemic agents—antiallergic and antiemetic drugs* and would be given an external cause of injury code of *Accidental poisoning by other drugs—primarily systemic agents.* In comparison, the index of substances used by the NSW PIC is based on pharmaceutical categories that are more readily understood in terms of Australian

prescribing patterns and substances used in Australian homes.

As a result of poisoning there were 933 hospitalisations of children aged under five years in NSW in 1995–96.[1] For this age group there were more than 3,000 calls to the NSW PIC which were either made from a hospital or which resulted in advice to attend hospital. It is likely, therefore, that the NSW PIC database is adequately representative of most poisoning exposures in this age group.

CONCLUSION

Of more than 20,000 calls relating to young children in NSW each year, more than 80 per cent result in the advice to 'stay home', thus possibly avoiding a considerable additional burden on health services. The data that is currently collected provides limited but useful information which can assist in setting priorities in poisoning prevention activities, and guide the investigation of risk factors associated with poisoning. The NSW PIC is in a unique position to collect additional specialised poisoning risk information which could enhance prevention activities.

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PREVENTION INTERVENTIONS FOR CHILD AND ADOLESCENT MENTAL HEALTH: NSW RESOURCE DOCUMENT

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This article describes a new resource, *Prevention initiatives for child and adolescent mental health: NSW Resource Document*, produced by the Centre for Mental Health, that provides information on a range of programs designed to prevent the development of mental health problems and disorders in children and young people. Based on a literature review of the current research in prevention initiatives for child and adolescent mental health, it includes: initiatives aimed at the prevention of mental health problems, early intervention programs and services for young people with depression and related disorders, and first onset psychosis and suicide prevention.

BACKGROUND

Effective prevention programs have been identified which may help to reduce the risk of children developing a mental problem or disorder. Some prevention programs are even more effective than later treatments, particularly in the area of conduct disorders. Significant advancements can be made when both the early years of life and the early stages of disorders are targeted.

Mental health prevention and early intervention are relatively new fields in mental health. Progressing these initiatives involves supporting health and related staff and the community in the acquisition of the knowledge and skills needed to meet the challenges of new service directions and programs, including the provision of resources to assist implementation.

The NSW Department of Health is playing a leading role in national prevention initiatives in mental health, including the *National Mental Health Promotion, Prevention and Early Intervention Action Plan,*[1] for the *Second National Mental Health Plan*.[2] The *NSW Resource Document* will help to guide the implementation of the National Mental Health Reform Incentive Funding that has been provided to NSW over the next five years to help progress implementation of the Second National Mental Health Strategy.

THE NSW RESOURCE DOCUMENT

The *NSW Resource Document* is divided into eight sections:

Section 1 provides an introduction to the research and policies that have influenced the growing interest in evidence-based prevention initiatives for child and adolescent mental health.

TABLE 3

PREVALENCE OF MENTAL HEALTH PROBLEMS AMONG 4–16 YEAR OLD CHILDREN AND ADOLESCENTS, FROM THE 1996 WESTERN AUSTRALIAN STUDY*#

Mental Health Problem	Prevalence
Delinquent problems	9.5%
Thought problems	8.6%
Attention problems	6.3%
Social problems	5.9%
Somatic complaints	5.0%
Aggressive behaviour	3.7%
Anxiety/depression	3.6%
Withdrawn	2.6%
Overall Prevalence	18%

* Figures based on caregivers and teacher reports about 4–16 year olds using the Child Behaviour Checklist (CBCL).[5]

\# Many children and adolescents have multiple problems and therefore are represented in more than one category.

Source: Zubrick et al. (1996).[6]

Section 2 provides a general overview of prevention, partnerships and programs. The *Mental Health Intervention Spectrum for Mental Disorders* is introduced,[3] as are national and state policy and research frameworks. Classification systems for prevention are identified. Effective methods for successful partnerships and programs are discussed.

Sections 3, 4, 5 and 6 review the developmental life stages of children and adolescents. A summary of international and national research in mental health programs provides an appraisal of effective, evidence-based prevention initiatives. Risk and protective factors are discussed along with other positive child attributes for coping, such as resilience and optimism. Multiple components of these effective programs are outlined. Where possible, Australian programs have been described which demonstrate effective child and adolescent mental health interventions in progress.

Section 7 describes prevention and early intervention initiatives and programs for children, adolescents and their families experiencing traumatic and adverse life events. Families may be affected by events such as death of a family member, marital discord or separation, environmental disasters and economic disadvantage. Children and adolescents may require interventions to ameliorate the effects of abuse or neglect, parental substance abuse or mental health problems or domestic violence.

Section 8 provides a reference list of the literature and studies mentioned in the document.

EXTENT OF MENTAL HEALTH PROBLEMS AND DISORDERS

The recently completed Child and Adolescent Component of the National Survey of Mental Health and Wellbeing highlights the need for action.[4] Almost 20 per cent of all children and adolescents are affected by mental health problems and at least half of these show impaired schooling and social development. Mental health problems and disorders manifest in a wide range of emotional, behavioural and thinking difficulties.

When discussing ill health, two terms are useful. **Mental health problems** is used to describe a broad range of emotional and behavioural difficulties that may cause concern or distress. These problems are relatively common and encompass **mental disorders** which are more severe and/or persistent mental health conditions. The term

TABLE 4

INTERNATIONAL COMMUNITY-BASED PREVALENCE STUDIES OF MENTAL HEALTH PROBLEMS AMONG CHILDREN AND ADOLESCENTS

			Prevalence of DSM-III Disorders (rounded to whole percentages)							
Study	**Sample Size**	**Age**	**ADD**	**CD**	**OPP**	**OAN**	**SAN**	**PHO**	**DEP**	**ALL**
Anderson et al. (1987)	782	11	7%	3%	6%	3%	4%	2%	2%	18%
McGee et al. (1990) (NZ, longitudinal study)	943	15	2%	7%	2%	6%	2%	5%	2%	22%
Bird et al. (1988) (Puerto Rico)	777	4–16	10%	2%	10%	N/A	5%	2%	6%	18%
Costello et al. (1988) (Pennsylvania)	789	7–11	2%	3%	7%	5%	4%	9%	2%	22%
Offord (1987) (Canada)	2,679	4–16	6%	6%	N/A	10%	N/A	N/A	N/A	18%
Velez (1989) (New York)	776	11–20	4%	5%	7%	3%	5%	N/A	2%	18%

Note: ADD = Attention deficit disorder; CD = Conduct disorder; OPP = Oppositional disorder; DEP = Depression/Dysthymia; OAN = Overanxious; PHO = Phobia; SAN = Separation anxiety

Source: Costello (1989).[7]

TABLE 5

RISK EXPOSURES THAT MAY INTERACT TO PRECIPITATE MENTAL HEALTH PROBLEMS OR DISORDERS

Critical Risk Exposures	Protective Influences
Biological dysmaturation	Nurturing, affectionate and secure attachments
Unstable attachments	Affectionate and supportive family environment
Inadequate parental skills	Positive relationships with at least one parent
Poor quality child care	Supportive relationship with another adult, for example a teacher, aunt or uncle
Family discord, exposure to domestic and other violence and stress, and parental separation and family breakdown, and in some circumstances, sole parenting	Connectedness and positive and rewarding school environments
Experience of stressor effects of parental mental illness, personality disorder, substance use disorders or antisocial behaviours	Positive personal achievements such as academic or sporting
Lower levels of social support	Positive 'temperament'
Exposure to psychological trauma (eg. abuse, accidents, burns, disaster)	
Physical illness or disability	
Extended adolescent dependency	
Eroding social capital	
Poverty	

'mental disorder' describes a clinically recognisable set of symptoms or behaviours associated in most cases with distress and which interfere with personal functions.

Mental health problems will contribute significantly to the global burden of disease in the 21st century,[8] and for adolescents, are already as common as some physical health problems such as asthma. The tables summarise some of the morbidity findings. Table 3 presents the prevalence of common mental health problems as found by the Western Australian Child Health Survey (1996).[6] Table 4 summaries the findings of several international studies from which the prevalence of specific child and adolescent mental health problems and disorders has been estimated. In addition, it is estimated that one per cent of children and adolescents suffer from obsessive compulsive disorder, and a further one per cent of adolescents suffer from eating disorders (Kurtz et al. 1996).[9]

These figures suggest that mental health problems and disorders are of significant concern. They are increasingly contributing to the burden of disease across all age groups, both within Australia and internationally.[4,6,7] Among children and adolescents, problems such as child abuse and neglect, conduct disorders, alcohol and drug abuse, depression, attention deficit disorders, and suicide are all becoming more common.[10,11,12] Furthermore, mental disorders (notably depression) are appearing at an younger age and they also seem to be increasing in severity.[11,13]

Children and adolescents with mental health problems are:

- twice as likely to report feeling 'very stressed'
- three times more likely to have poor or fair physical health
- three times more likely to perform below grade level at school
- three times more likely to use alcohol and other drugs
- six times more likely to think about killing themselves.[6]

The major contribution of social and environmental variables to the development of disorders in children and adolescents remains a cause for concern. Further, there is a growing recognition of the potential contribution of genetic factors in increasing the vulnerability of some children and young people to environments of stimulus and stress.[14] Bearing in mind these issues, Zubrick et al. (2000),[13] and Nurcombe (2000),[15] have suggested risk exposures that may interact to precipitate mental health problems or disorders, as outlined in Table 5. Zubrick et al. (2000) highlight the need for further research of these variables with opportunities to develop appropriate measures and to explore gene-environment interactions.[13]

Supporters of the population health approach to mental health have consistently advocated primary prevention of children's problems. However, awareness, education and training is required for recognising that childhood and youth constitute defined developmental phases, and that problems in this period are often interactive, contributing to the escalation of vulnerability to mental health problems or disorders. The aim of prevention and early intervention is to be able to alter this trajectory. Thus, it is essential that a comprehensive prevention agenda build on an alliance of health, education and social agencies in our communities.[16]

For many health, education and community workers this requires a new way of thinking about mental health. The focus must shift from individual clinical casework to a broader population mental health understanding including:

- epidemiology
- multifactorial aetiology
- risk and protective factors
- socio-environmental determinants of health and mental health such as poverty and unemployment
- socio-cultural processes.

In particular, professionals employed in mental health services must be aware that in prevention, the proximal social environments that are most pertinent to population health problems are:

- family
- school
- workplace
- media
- social organisations
- professional organisations
- community organisations
- peer and other social groups.

CONCLUSION

The *Prevention initiatives for child and adolescent mental health: NSW Resource Document* was developed through extensive consultation conducted with child and adolescent mental health specialists, area mental health directors, child and adolescent mental health coordinators, as well as with other branches of NSW Health. It has collated information from national and international sources. As some of the programs outlined in the *NSW Resource Document* are still being developed and evaluated, contact details have been provided so that clinicians using the *NSW Resource Document* may follow up the outcomes from the programs and initiatives.

The next stage is the translation of these studies and findings to prevention programs in the community in order to extend these benefits to the population as a whole. This will require commitment to the integrity of programs, their adaptation for and engagement with local communities, and the incorporation of evaluations of program effectiveness. More attention is now being given to the need for programs to provide quality norms for good practice that are determined by theory, evidence-based outcomes, cost effectiveness and feasibility of widespread implementation.[17] The *NSW Resource Document* will provide an important resource to assist the implementation of innovative and effective mental health initiatives in this relatively new field in mental health services for children and young people across NSW.

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A STATEWIDE 'OUTBREAK' OF ASTHMA IN NSW, FEBRUARY 1999

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Surveillance data have shown that in February of each year there are recurrent and distinct peaks of admissions for asthma to hospitals in Sydney.[1] Anecdotal reports suggested that during February 1999 admission rates for asthma to the intensive care units of the Sydney Children's and New Children's Hospitals were unusually high, even when allowing for seasonal peaks in admission. This article describes the preliminary results of an investigation of this apparent increase in the expected number of cases (or 'outbreak') of asthma in Sydney in February 1999. The aim of the investigation was to gauge the magnitude and extent of this outbreak and to describe the characteristics of people attending hospital with asthma during the period of the outbreak.

METHODS

NSW Department of Health maintains a centralised Emergency Department Data Collection (EDDC) which was accessed through the Health Outcomes Information Toolkit (HOIST).[2] There are 50 hospitals throughout NSW that have an EDDC. All attendances to these emergency departments with a diagnosis of asthma (ICD-493) in patients 1–45 years, for the period February 1995 to February 1999 were examined. The analysis was limited to this age group, as before the age of one year and in older age groups the diagnosis of asthma can be confused with other conditions. The variables examined were:

- gender
- country of birth
- language spoken at home
- primary diagnosis
- hospital and area health service attended
- postcode of residence.

Data describing hospital separations attributed to asthma were obtained from the Inpatient Statistics Collection (ISC), also on HOIST, for the period July 1993–June 1999. The variables accessed were:

- age
- gender
- hospital attended
- date of admission
- primary diagnosis
- country of birth.

A comparison of hospital attendances and separations in the years for which both were available (1995–1999) was also made. Data were analysed using SAS Version 6.12.

RESULTS

The total number of attendances at emergency departments in NSW in February 1999 were 105,885, and 3,151 (three per cent) of these were for asthma. Of the 21,145 emergency department attendances for children aged between 1–14 years in this month, 2,026 (9.6 per cent) were for asthma. The number of attendances for asthma in February 1999 was compared to the attendances in February for the four preceding years (1995–1998) in hospitals where reporting rates for all diagnoses seemed consistent over time. An increase of attendances for asthma in children 1–14 years of 100 per cent or more in February 1999 compared to mean attendance of February 1997 and 1998 was found in most Sydney hospitals, as well as hospitals in the Hunter, Illawarra and north and south coast regions, and also at Dubbo and Orange Base hospitals.

Construction of an epidemic curve of daily asthma attendances in NSW from January 1 1999 to February 28 1999 showed a steep increase beginning in early February. The increase was more marked in children

TABLE 6

HOSPITAL ATTENDANCES FOR ASTHMA IN CHILDREN 1–14 YEARS, JAN–FEB 1999.

	January 1999	February 1999
Sydney	327	1,409
Illawarra	32	118
Hunter	38	164
Central Coast	29	103
Mid North Coast	30	46
Northern Rivers	16	34
New England	11	20
Macquarie	8	19
Mid Western	13	44
Far West	8	18
Greater Murray	17	40
Southern	2	11
Total	**531**	**2,026**

Source: HOIST, Emergency Department Data Collection

TABLE 7

COMPARISON OF FEBRUARY HOSPITAL ATTENDANCES AND SEPARATIONS FOR ASTHMA IN CHILDREN 1–14 YEARS (TOTAL NSW), 1995–99.

	1995	1996	1997	1998	1999
Attendances	1,104*	1,930	1,053	972	2,026
Separations	1,248	1,525	739	688	1,633

* In 1995 there were large numbers of missing diagnoses for attendances in several locations.

Source: HOIST, Emergency Department Data Collection and Inpatients Statistics Collection.

1–14 years. For the Sydney area health services, daily attendances for this age group more than doubled over the January baseline between 31 January and 6 February, and increased further through February, with a distinct peak from 16 February to 21 February (Figure 2). A similar pattern was seen in the Illawarra, Hunter and north coast areas. In the mid-west region, the attendance rate started to increase from 8 February. While other areas did appear to have higher attendances for asthma in February compared to January, there was no clear evidence of an outbreak (Table 6). Similarly, there was no evidence of an outbreak for adults in the age group 15–45 years, although attendances in Sydney did peak between 20–22 February in a similar pattern to that for children.

Review of the patterns of attendance in Sydney hospitals for asthma related to age and gender in February 1999 showed an increase in the proportion of attendances by the youngest age group (1–4 year olds), which represented 65 per cent of children's asthma attendances, compared to a mean of 57 per cent over all months studied. The gender ratio did not differ from the usual pattern, with 57 per cent male patients. Similarly, stratification by country of birth and language spoken at home did not reveal any change to the expected patient characteristics. Analysis of postcode of residence also showed a similar pattern compared to other months.

Hospital separation data broadly reflected the patterns found in emergency department attendance data (Table 7). February 1996 had the highest number of monthly separations for children 1–14 years for asthma (1,525) for any year prior to the outbreak in February 1999. February 1996 also had a high total number of asthma separations for the 1–45 years age group (2,323), which were exceeded only by regular high levels of monthly separations in May of each year (Figure 7). While there is little variation in total children's hospital separations from year to year, February is the only month with significant variability, varying from a low of 677 in February 1998 to 1,633 in February 1999.

DISCUSSION

This review of emergency department attendances for asthma in 50 NSW hospitals demonstrated a sharp increase in attendances and admissions for asthma in children aged 1–14 years that began in early February 1999 and involved areas along the NSW coast and some inland centres. Possible precipitating factors are the commencement of the new school year, with the rapid transmission of a virus predisposing to asthma attacks,[3,4] high levels of grass pollen resulting from high summer rainfalls, or other environmental causes related to meteorological conditions.[5,6] Localised factors, such as air pollution, or industrial contaminants,[7] are not likely to be implicated, as children were affected over a large area of the state. The northern- and southern-most boundaries of the outbreak have not yet been defined.

Separation data suggest that each year there are recurrent and distinct peaks of admissions for asthma to hospitals in NSW. To identify opportunities for prevention of asthma, the Environmental Health Branch is continuing the investigation of asthma 'outbreaks' in children in February, including:

- defining the geographical extent of this outbreak through records of asthma admissions in Victoria and Queensland;
- a case-control study of 'outbreak days', defined appropriately, to examine possible meteorological and other environmental precipitating factors;
- a case-control study of children admitted with asthma to Sydney Children's Hospital during and in the preceding months to the outbreak.

FIGURE 2

DAILY ASTHMA ATTENDANCES FOR CHILDREN AGED 1–14 YEARS, JANUARY AND FEBRUARY 1999

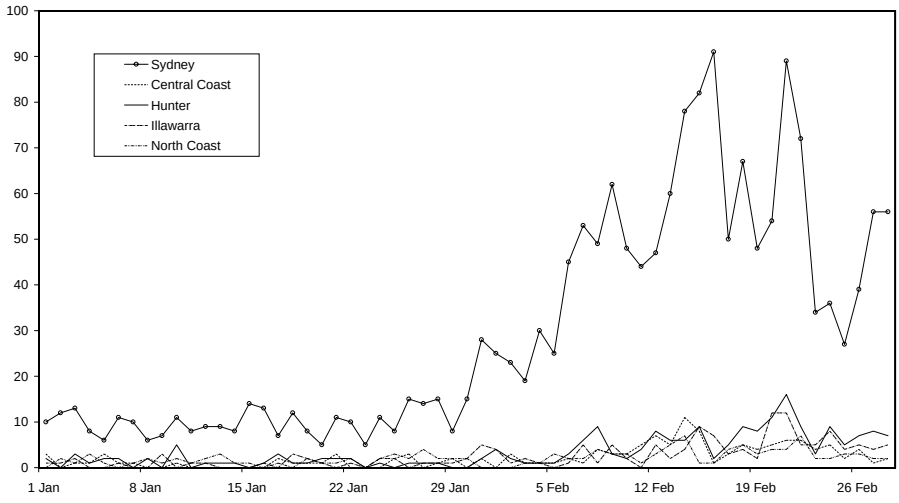
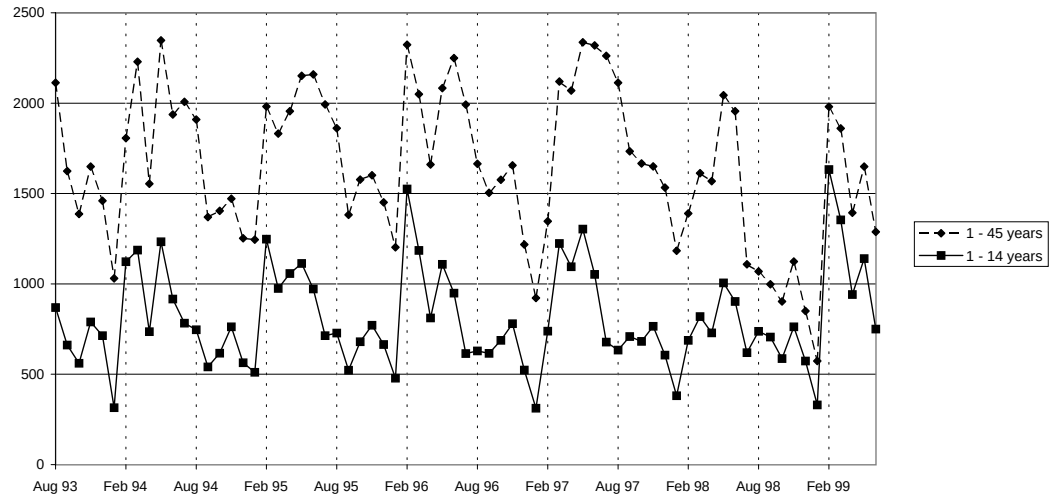


FIGURE 3

MONTHLY SEPARATIONS FROM NSW HOSPITALS, WHERE PRIMARY DIAGNOSIS IS ASTHMA. AUGUST 1993 – JUNE 1999.



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NSW HEALTH SERVICES COMPARISON DATA BOOK 1998–1999

The *NSW Health Services Comparison Data Book 1998–1999*, the 'Yellow Book', was released on HealthWeb on 6 October 2000.

The prime purpose of the Yellow Book is to inform the people of NSW about the efficiency, effectiveness, accessibility and appropriateness of NSW public health facilities in the supply of health services to the community, and the nature of services provided by these facilities.

The Yellow Book contains comparative data for key activity, staffing and financial measures of performance for all public hospitals in NSW and for private hospitals treating public patients under contract with NSW Health. Hospitals are grouped according to their peers to enable comparison of performance to be made for the year 1998–1999.

This is the first edition of the Yellow Book to include a set of comparative tables at the Area Health Service (AHS) level to supplement the hospital comparative tables. The AHS tables focus on the provision of health services by *facilities* within the AHS, rather than on the health of *residents* of the AHS. The inclusion of the AHS level data means that facilities other than hospitals, such as community health centres, are incorporated within the Yellow Book for the first time.

The 1998–1999 Yellow Book is available from the NSW Department of Health's internet site HealthWeb at **www.health.nsw.gov.au**. Hard copies can be purchased for $70 from the Better Health Centre by telephone at: (02) 9816 0452.

ARBOVIRUSES IN NSW, 1991 TO 1999

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Arthropod-borne viruses, or arboviruses, are transmitted mainly by mosquitoes and ticks. Worldwide, more than 100 arboviruses have been recognised as causing disease in humans, representing a subset of an even greater number that circulate in other species. Arboviruses are believed to migrate among animal species (zoonosis), including between animals and humans.[1] Arboviral diseases are notifiable to public health units (PHUs) in NSW. This article reports available data on the occurrence of notified arboviral diseases in NSW for the period 1991–1999.

Arboviral diseases present as four main syndromes in humans:

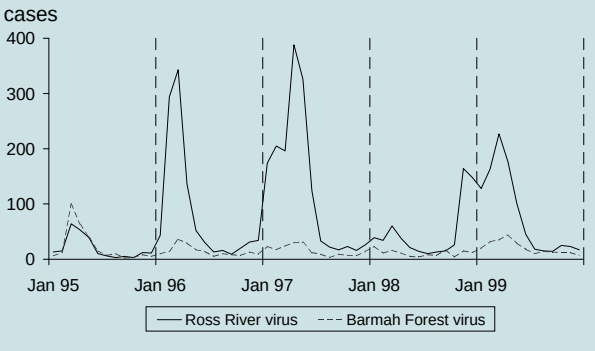
TABLE 8

NSW RESIDENTS NOTIFIED WITH ROSS RIVER OR BARMAH FOREST VIRUS INFECTION BY YEAR, NSW, 1991–1999

Year of onset	Ross River virus	Barmah Forest virus
1991	292	6
1992	316	6
1993	592	25
1994	324	40
1995	234	271
1996	1,021	172
1997	1550	185
1998	582	133
1999	952	246
Total	**5,863**	**1,084**

FIGURE 4

NOTIFICATIONS OF ROSS RIVER AND BARMAH FOREST VIRUSES, NSW, 1995–1999, BY MONTH OF ONSET



- acute central nervous system disease, which can span a severity range that includes mild meningitis to fatal encephalitis;
- haemorrhagic fevers, which can lead to liver damage and death;
- acute uncomplicated fever which may proceed to the more severe syndromes above;
- polyarthritis (multiple joint inflammation) and rash, with or without fever.[1]

The most potentially severe arboviruses recognised in Australia are from the *flaviviridae* family and include the Murray Valley encephalitis and Kunjin viruses, which can cause encephalitis and have been reported in parts of northern Australia. Dengue virus, which can cause haemorrhagic fever, and Japanese encephalitis, have also been reported but are not believed to be endemic to Australia. The more common Ross River and Barmah Forest viruses are from the *togaviridae family* and lead to milder disease such as polyarthritis and rash. Ross River virus infection has been reported in all states of Australia, and Barmah Forest virus infection has been reported in all states except Tasmania.[1,2]

METHODS

Under the NSW Public Health Act 1991, all laboratories must notify suspected cases of arboviral diseases to the local PHU. Selected severe arboviral infections must be notified by hospitals.[3] PHU staff record details of cases on a confidential statewide database. We selected cases of arboviral infection notified to PHUs for the years 1991 to 1999 inclusive. Only cases notified between 1995 and 1999 were used in the analysis of case characteristics due to the possibility of under-reporting in earlier years. Under-reporting was likely to be due to a lack of awareness in the community about arboviruses and the relatively recent availability of serological tests for Barmah Forest virus. Incidence rates were calculated using the average of the estimated mid-year population for each of the years 1995 to 1999.

RESULTS

During the period 1991–1999, 5,863 cases of Ross River virus infection and 1,084 cases of Barmah Forest virus infection were reported among NSW residents. Ross River virus infection was most frequently reported in 1997 (1,550) and Barmah Forest in 1995 (234) (Table 8). There were 119 reports of Dengue virus infection, two reports of Kunjin virus infection, and one report of Murray Valley encephalitis. The case of Murray Valley encephalitis is known to have been acquired during travel outside of NSW, as is likely for Dengue virus infections. There were

TABLE 9

CHARACTERISTICS OF NSW RESIDENTS NOTIFIED WITH ROSS RIVER VIRUS OR BARMAH FOREST VIRUS INFECTIONS, 1995–1999

Case characteristics	Ross River virus		Barmah Forest virus	
	Cases (% total)	Average annual rate per 100,000	Cases (% total)	Average annual rate per 100,000
Residence				
Sydney area	463 (11)	2.5	37 (4)	0.2
Other NSW	3,876 (89)	30.1	970 (96)	7.5
Sex				
Male	2,160 (50)	13.9	561 (56)	3.6
Female	2,167 (50)	13.7	442 (44)	2.8
Unknown	12 (0)		4 (0)	
Age group				
<15	150 (3)	2.3	33 (3)	0.5
15-24	414 (10)	9.4	73 (7)	1.7
25-34	806 (19)	16.7	136 (14)	2.8
35-49	1,568 (36)	22.5	420 (42)	6.0
50-64	997 (23)	21.7	248 (25)	5.4
>64	403 (9)	10.2	97 (10)	2.4
Unknown	1 (0)		0 (0)	
Total	**4,339 (100)**	**13.8**	**1,007 (100)**	**3.2**

no reports of Japanese encephalitis during the period. There were 178 reports of other or unspecified arboviral infections.

The average annual incidence of Ross River virus infection for the period was 13.8 per 100,000 persons, and of Barmah Forest virus infection 3.2 per 100,000. A distinct seasonal pattern is evident for both diseases, with peaks in late summer and autumn (Figure 4).

The incidence of Ross River virus infection increased with distance from Sydney, which had a reported rate of infection of 2.5/100,000. The highest rates were reported in residents of the Far West Area Health Service (114.4/100,000, Figure 5). The distribution of Barmah Forest virus infection was different, with low incidence areas including Sydney (0.2/100,000) into the Central Coast (0.3/100,000), Mid Western (0.5/100,000), and Hunter (1.0/100,000) Areas. The highest incidence of Barmah Forest virus infection was in the Mid North Coast (28.2/100,000) and Northern Rivers (22.0/100,000) Areas (Figure 6).

The age distribution of the cases was similar between the two diseases, with rates of reporting increasing with age up to the highest rates in persons aged 35–49 years (Ross River: 22.5/100,000, Barmah Forest: 6.0/100,000), and then declining in older age groups (Table 9). Ross River virus infection was reported equally frequently in men and women. However, there was a slightly higher rate of reporting of Barmah Forest virus infection in men (Table 9).

There was only one reported death associated with Ross River virus infection over the nine year period, and this was in an older person who was admitted to hospital. The virus was unlikely to be the underlying cause of death.

DISCUSSION

Ross River virus infection is frequently reported in NSW, and occurs with increasing frequency with distance from the Sydney metropolitan area. PHUs report that illness reported in Sydney residents was usually acquired during travel to rural areas. Barmah Forest is less common in NSW, but occurs most frequently in the northern coastal regions of the State. Both diseases most commonly affect people of middle age and occur at similar rates in both sexes. The seasonal pattern is marked, with notifications, particularly of Ross River virus infection, increasing dramatically in late summer and autumn.

The reports of Dengue virus infection are most likely to have been in travellers, since the mosquito vector for this infection (*Aedes aegypti*) does not reside in NSW.[2]

The low reporting of Barmah Forest virus infection in the years 1991–1994 may be due to the relatively recent availability of a serological test for the disease. Levels of media interest in these diseases may also influence rates of reporting.

FIGURE 5

AVERAGE ANNUAL NOTIFICATION RATES FOR ROSS RIVER VIRUS INFECTION, NSW, 1995–1999, BY AREA HEALTH SERVICE OF RESIDENCE

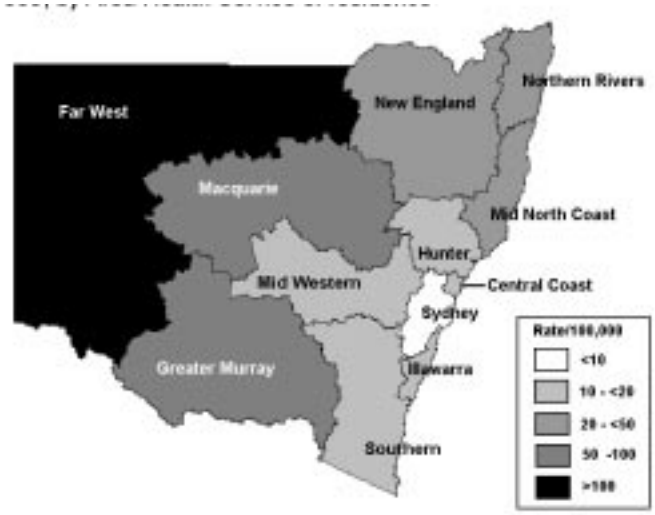


FIGURE 6

AVERAGE ANNUAL NOTIFICATION RATES FOR BARMAH FOREST VIRUS INFECTION, NSW, 1995–1999, BY AREA HEALTH SERVICE OF RESIDENCE

The relatively high rates of reporting of arboviral infections in rural areas indicate a need for prevention messages to be targeted at rural residents and visitors to rural areas, particularly in the high-risk seasons of summer and autumn. Residents of, and visitors to, the western and north western regions and the northern coastal areas of NSW should be especially cautious as they are most at risk of acquiring Ross River or Barmah Forest virus infections.

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FACT*SHEET*
NSW HEALTH

WHOOPING COUGH (PERTUSSIS)

WHAT IS WHOOPING COUGH?

- Whooping cough is a disease caused by infection with the bacteria *Bordetella pertussis*.
- Whooping cough occurs in people of all ages but is most serious (and can be fatal) in young children.
- Whooping cough tends to occur in epidemics where large numbers of people become infected. Before immunisation was available, many young children died from whooping cough. Immunisation of children against whooping cough is the best way to protect them against this disease.

HOW IS IT SPREAD?

- Whooping cough is easily spread by droplets produced by coughing or sneezing, or by direct contact with the secretions of the nose or mouth. A person with whooping cough will be able to spread it to other people for up to three weeks after the onset of the illness unless they are treated.
- The time between contact with the disease and becoming sick is usually seven to 10 days, but can be as long as 21 days.
- People living in the same household as someone with whooping cough are more likely to catch it.

WHAT ARE THE SYMPTOMS OF WHOOPING COUGH?

- Whooping cough usually begins like a cold: with a runny nose, tiredness and sometimes a mild fever.
- Coughing then develops. The cough usually occurs in bouts followed by a big deep gasp. This sometimes produces a 'whooping' sound. Sometimes people also vomit after coughing.
- Whooping cough can be very serious in young children. Sometimes they might go blue or even stop breathing during coughing attacks. Children may need to be treated in hospital.
- Older children and adults may have a less serious cough that occurs in bouts and continues for many weeks. It is important to remember that anybody who has an ongoing cough may have whooping cough.

HOW IS WHOOPING COUGH TREATED?

- If a doctor thinks someone has whooping cough, a swab from the back of the nose or a blood test may be done to help confirm the diagnosis.
- An antibiotic called erythromycin is the best treatment for whooping cough, as it stops an infectious person from spreading whooping cough to other people. This will happen after the person has been treated for five days. Until then, the infectious person can still spread whooping cough and so they must stay away from work or school and stay away from children and babies. Antibiotics should be continued for seven days.
- Coughing often continues for many weeks even though, after being sick for three weeks or after five days of treatment, the person is no longer able to spread whooping cough to other people.

CAN WHOOPING COUGH BE PREVENTED?

- Whooping cough can be prevented by immunisation. There is a vaccine available for children that stops them from getting whooping cough.
- Children need to be immunised at ages two months, four months, six months, 18 months and at four years of age.
- The protection that the vaccine gives against whooping cough only lasts a few years. This means that those immunised as young children can still get whooping cough later in life.
- Whooping cough can be prevented by treating those in contact with the disease. To stop the spread of whooping cough, people who live in the same house as someone with whooping cough will usually also need to take antibiotics.

HOW CAN I PROTECT MYSELF AND MY FAMILY FROM WHOOPING COUGH?

- Make sure all children are fully immunised. If a child under eight years of age has missed an immunisation they can 'catch up' by seeing their local doctor.
- See your doctor if you or your child has a coughing illness that lasts more than a few days.
- If you have a baby in your family, make sure you don't let anyone with a coughing illness visit your baby. The best way to protect babies is to keep them away from anyone who may have whooping cough.

For more information please contact your local public health unit, community health centre, or doctor.

COMMUNICABLE DISEASES, NSW: NOVEMBER 2000

TRENDS

Notifications of cases of **pertussis (whooping cough)** have continued to increase with the onset of spring (see below), prompting the Chief Health Officer to write to doctors in NSW urging diagnostic vigilance, early treatment, and notification of cases to public health units. Reports of **meningococcal disease** also increased through winter and early spring in line with seasonal expectations. New **fact sheets** on both these diseases are now available on the internet at www.health. nsw.gov.au/health-public-affairs/factsheets, and this issue of the Bulletin also contains a fact sheet on pertussis.

Reports of **influenza** declined in the later half of September, following a peak in both influenza isolates reported from major laboratories in NSW (Figure 7) and in reports of influenza-like illness from sentinel general practitioners in the first half of September. Influenza A has been the most common influenza virus isolated this season, although influenza B has been persistently reported in low numbers. Of the influenza A viruses, the A/Sydney-like (H3N2) strain still predominates.

NEW RECOMMENDATIONS FOR TREATING PERTUSSIS

The soon-to-be-released 11th Edition of the *Therapeutic Guidelines: Antibiotics*, published by Therapeutic Guidelines Limited, Melbourne has new recommendations for treating pertussis. These include the administration of erythromycin to patients for seven days, rather than 10 to 14 days as previously recommended. These recommendations are based on data from a Canadian study that indicated treatment for seven days was as effective as 14 days for the eradication of *Bordetella pertussis*, the bacteria that causes whooping cough.[1]

The NSW Department of Health convened an expert group that endorsed these guidelines in light of the growing pertussis epidemic in this State (see *NSW Public Health Bulletin* 2000; 11: 174). Anecdotal evidence suggests that poor compliance with a such a long course of antibiotics is likely to be a barrier in the effective control of pertussis, and that a shorter course of therapy, if effective, may improve compliance rates.

The new recommendation for the treatment of pertussis cases and their contacts is erythromycin (40–50mg/kg per day orally in four divided doses, up to a maximum of 1g per day) given for seven days. If erythromycin cannot be tolerated, trimethoprim-sulfamethoxazole or roxithromycin given for seven days are possible, although unproven, alternatives.

OUTBREAK OF INFUENZA-LIKE ILLNESS ON BOARD A CRUISE SHIP

On Thursday 7 September 2000, the South Eastern Sydney Area Health Service received a report from a cruise ship company that a person travelling on one of their cruise ships had been diagnosed with Legionnaires disease. The ship had left Sydney for a routine cruise in August 2000 bound for Noumea and other islands. Five people had been taken off the ship with illness in Noumea. One of these people subsequently died. Two others were diagnosed with Legionnaires disease by doctors in Noumea. The ship was due to arrive back in Sydney on Saturday 9 September.

The NSW Department of Health immediately assembled a team to investigate this problem. The doctors in Noumea were asked to send additional specimens from the people in hospital to Sydney for further testing. In the meantime, the NSW Department of Health provided information for the ship's passengers and crew, and organised for a team of five experts in epidemiology (including two doctors) and environmental health to meet the ship 10 hours before it docked in Sydney.

The team undertook an investigation on board the ship that included a review of medical records, and a study of some 50 passengers who had attended the ship's clinic because of flu-like illness. Fifty other passengers and 50 crew members were also studied as comparison groups. Throat, urine and blood samples were collected from most of these passengers and crew. The team also evaluated any environmental risks on board. Interviews with passengers and crew indicated that there was a peak in the onset of illness which occurred about 2–3 days into the cruise.

When the ship disembarked in Sydney, seven passengers were taken to hospital, some of whom had chest infections. All were subsequently discharged. As of 21 September the Department has received reports that eight other passengers with chest infections were admitted to hospital. One of these had died of heart disease, six others had been discharged and one remained in hospital.

The investigation by the NSW Department of Health is continuing. The environmental evaluation of the ship found no likely source of Legionnaires disease. All water samples taken on board the ship have been negative for the bacteria that causes Legionnaires disease. As an added precaution, the ship's water supply was disinfected.

So far no person who was on the ship has tested positive for Legionnaires disease from the tests conducted in Sydney. However, a significant number of passengers and

some crew have tested positive for the influenza virus. Further tests are being undertaken in the two people initially thought to have Legionnaires disease. Further serological tests are being done on the approximately 100 passengers involved in the initial health study on board the ship, and a follow-up questionnaire has been sent to all the passengers to determine the extent of illness associated with the cruise. Due to the nature of these and other tests, results are unlikely to be finalised for some weeks.

The evidence indicates that Legionnaires disease is not the cause of the outbreak of illness among the passengers. The most likely explanation is influenza (the flu) brought onto the ship by people boarding in Sydney. Influenza is caused by a virus that is easily passed from person-to-person (rather than from the environment) by coughing and sneezing. Older persons, and people with other underlying medical conditions (especially of the chest, heart or immune system) are at increased risk of severe complications, such as pneumonia or heart failure, if they catch influenza. There was a high proportion of people with underlying medical conditions on the ship. Further, influenza was common in many parts of Australia in August and September.

MENINGOCOCCAL DISEASE

Meningococcal disease is an uncommon but serious illness. In NSW approximately 200 cases are diagnosed each year. While it can affect any age group, the highest rates of disease are seen in young children and young adults. Cases are more common in winter and early spring.

The early treatment of suspected cases is the key to the prevention of serious complications.

Diagnosis can be difficult, but should be considered in patients presenting with a combination of symptoms. Early signs and symptoms may include fever, headache, vomiting and neck stiffness. Other features may include: a skin rash, photophobia, drowsiness, confusion, joint pain, fitting and coma.

Clinical features may vary over time, and may be altered by medications. Even where the diagnosis is considered unlikely, it is prudent to inform the patient and their family or friends of clinical changes that should necessitate a medical review.

Suspected cases should be treated with benzyl-penicillin (100 000U [60 mg]/kg up to 4 grams, IVI stat) or ceftriaxone (50 mg/kg IVI stat for adults or 100 mg/kg IVI stat for children) before they are transported to hospital. Only where it is not possible to administer treatment intravenously should intramuscular therapy be used. Specimens for blood, cerebro-spinal fluid and throat cultures are important to assist with diagnosis, but their collection should not delay treatment.

All suspected cases should be notified by telephone to the local public health unit. Public health unit staff will help identify and arrange for the education and administration of prophylaxis for close contacts of cases who may be at increased risk for infection.

AN OUTBREAK OF LEPTOSPIROSIS FOLLOWING AN INTERNATIONAL SPORTS RACE

Melanie Boomer
NSW Public Health Officer Training Program

In early September, the United States Centers for Disease Control and Prevention (CDC) alerted the Commonwealth Department of Health and Aged Care to a cluster of febrile illness among participants of the Eco Challenge Race that was held in Sabah, Malaysia from 20 August to 3 September 2000. This event attracted participants from around the world, including three teams from Australia, which comprised 12 people from NSW, Victoria, Queensland and Tasmania. The event involved jungle trekking, open water swimming, river and ocean paddling, mountain biking, canyoneering, scuba diving, and caving. Serum and urine specimens were obtained from two hospitalised athletes in Los Angeles which showed leptospirosis infection.

Leptospirosis is a bacterial disease characterised by acute onset of high fever, chills, headache and severe muscle aches, particularly in the calves and thighs, which affects humans and animals.[2] Infection in humans occurs primarily through contact of the skin (especially if abraded) or mucous membranes with water, soil or vegetation contaminated with the urine of infected animals. Infection can also occur through direct contact with the urine or tissues of infected animals, and occasionally through ingestion of food contaminated with the urine of infected rats.[3] Outbreaks of leptospirosis can occur among people exposed to fresh water in lakes, rivers, streams and canals contaminated by the urine of infected animals.[3] The incubation period is usually 10 days, with a range of four to 19 days.[2] Clinical illness can last from three days to three weeks or longer. Severe cases can result in haemolytic anaemia, hepato-renal failure, jaundice, mental confusion and depression, myocarditis and pulmonary involvement.[2] Transmission from person to person is rare, but infection in pregnancy can result in the infection of and damage to the foetus and spontaneous abortion.[3]

Leptospirosis infection can be treated with a number of antibiotics.[3] While spontaneous remission in mild cases occurs, the case-fatality can be as high as 20 per cent in

patients who develop jaundice or kidney damage and who are not treated. Death is due to damage to vital organs caused by the leptospires.[2,3] Prophylactic treatment with doxycycline has been shown to be effective in people at risk of exposure to leptospirosis,[3] such as the Eco Challenge participants.

Leptospirosis is a notifiable disease in Australia. In NSW in 1999, 55 cases of leptospirosis were notified, predominantly reported from the Northern Rivers and Mid North Coast Areas. Occupational infection is the primary mode of infection in Australia, with workers from rice fields, sugar cane fields and abattoirs being most affected.

In response to a request for assistance from CDC, via the Commonwealth Department of Health and Aged Care, four NSW Eco Challenge race participants were contacted. Each participant was advised of the outbreak of illness among race participants, interviewed regarding their symptoms and exposure, and given information relating to the symptomatology and treatment for the illness. All NSW race participants were asymptomatic at the time of interview, which occurred three weeks after the race concluded. All reported that they had taken doxycycline as prophylaxis for malaria while participating in the race, at doses higher than required for prevention of leptospirosis infection.

The public health significance of this outbreak of leptospirosis is twofold. First, the risk of leptospirosis infection for the Eco Challenge race participants was high, due to the likelihood of coming into contact with contaminated water sources with poor skin integrity (skin abrasions were common due to the activities undertaken). Second, leptospirosis infection is commonly misdiagnosed due to the non-specificity of the symptoms. While the illness can be self-limiting, prompt treatment with antibiotics is recommended, as severe cases can lead to irreversible damage to vital organs due to infiltration of the leptospires. The risk to the foetus from leptospirosis infection during pregnancy is a further reason to encourage prevention and early treatment where possible.

The investigation initiated by the CDC was primarily to advise race participants of their risk and identify cases of leptospirosis infection to increase early treatment seeking and to avoid the complications of severe untreated disease. The CDC study is aimed at furthering the knowledge of leptospirosis infection. Control and prevention of leptospirosis is complicated by the possible transmission of the disease through wild animal hosts, such as rats. Preventive measures for people exposed to occupational risk, such as farmers and abbatoir workers, include protective clothing and eyewear and ensuring any skin abrasions are covered.[3] Adventure travellers may be exposed to contaminated water sources through sporting activities such as rafting. In these cases prophylactic treatment is advised.[3]

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NSW PUBLIC HEALTH BULLETIN

The *NSW Public Health Bulletin* is a publication of the NSW Department of Health.
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Dr Michael Giffin is managing editor.

The *Bulletin* aims to provide its readers with population health data and information to support effective public health action.

Submission of articles

Articles, news and comments should be 1000 words or less in length and include a summary of the key points to be made in the first paragraph. References should be set out in the Vancouver style, described in the *New England Journal of Medicine*, 1997; 336: 309–315. Send submitted articles on paper and in electronic form, either on disc (Word for Windows is preferred), or by email. The article must be accompanied by a letter signed by all authors. Full instructions for authors are available on request from the managing editor.

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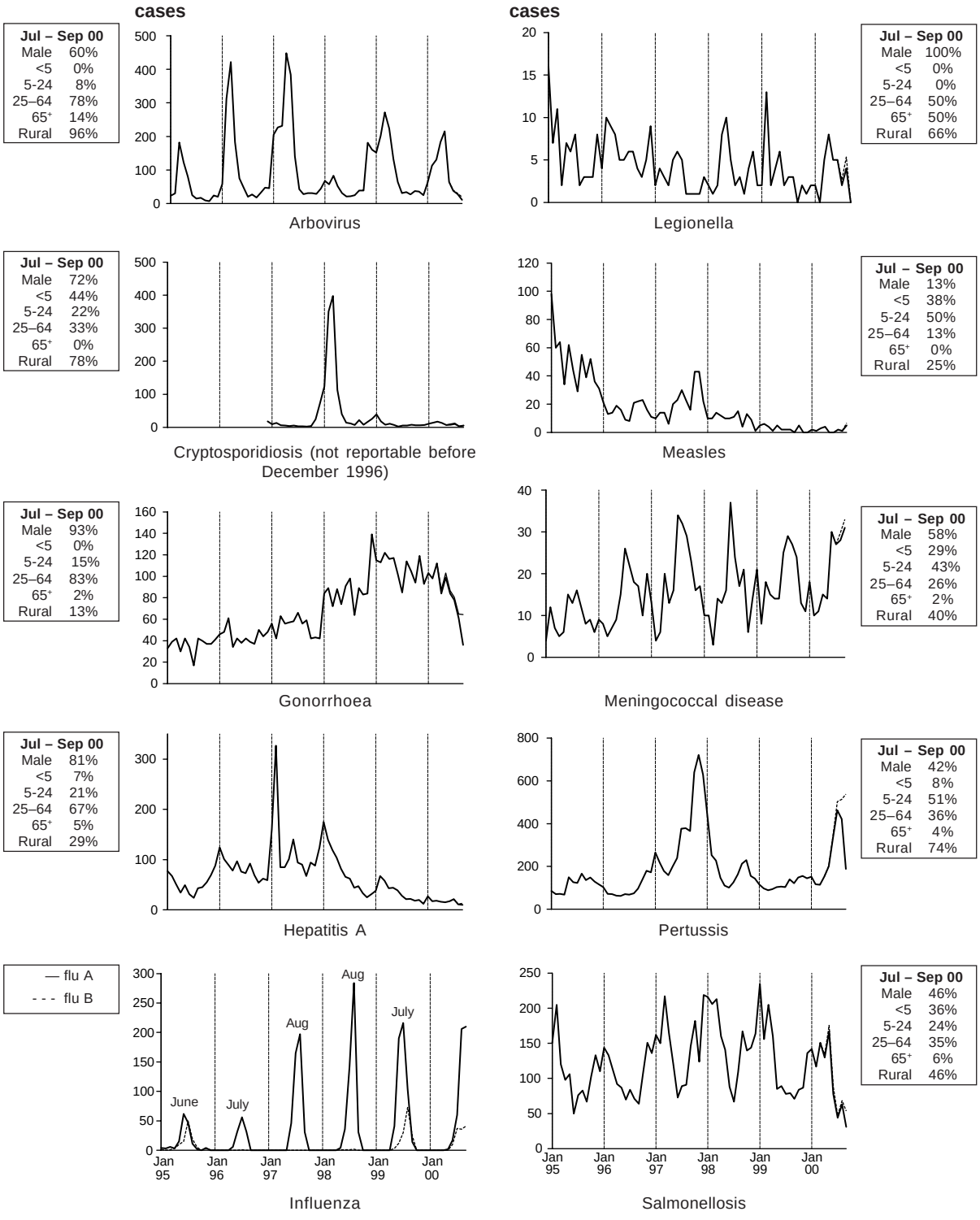
FIGURE 7

REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JANUARY 1995 TO SEPTEMBER 2000, BY MONTH OF ONSET

These are preliminary data: case counts for recent months may increase because of reporting delays. Laboratory-confirmed cases, except for measles, meningococcal disease and pertussis — actual — predicted after adjusting for likely reporting delays

NSW population	
Male	50%
<5	7%
5–24	28%
25–64	52%
65+	13%
Rural*	42%



* For definition, see *NSW Public Health Bulletin*, April 2000

TABLE 10 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN AUGUST 2000 BY AREA HEALTH SERVICES

Condition	Area Health Service (2000)																		Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS	for Aug†	To date†
Blood-borne and sexually transmitted																				
AIDS	2	-	2	-	-	1	-	-	-	1	-	1	-	-	-	-	-	-	7	80
HIV infection*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	205
Hepatitis B - acute viral*	-	-	-	6	1	-	-	-	-	1	1	1	-	-	-	-	-	-	10	58
Hepatitis B - other*	28	23	55	-	75	3	5	8	34	-	1	7	-	1	5	2	1	8	257	2,705
Hepatitis C - acute viral*	-	1	-	-	-	-	-	1	-	2	-	-	-	-	-	-	-	1	5	70
Hepatitis C - other*	45	28	55	37	60	21	28	21	76	29	24	10	12	11	7	8	18	69	569	5,607
Hepatitis D - unspecified*	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	5
Hepatitis, acute viral (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	45	29	27	6	16	5	24	11	58	14	26	20	6	12	7	12	13	-	332	2,043
Gonorrhoea*	19	2	5	1	1	2	-	-	33	1	2	2	-	1	-	-	-	-	69	755
Syphilis	11	-	10	3	7	-	-	1	17	2	-	2	1	2	1	1	-	1	59	371
Vector-borne																				
Arboviral infection (BFV)*	-	-	1	-	-	-	3	1	-	2	11	-	-	-	-	-	-	-	18	147
Arboviral infection (RRV)*	-	-	-	-	1	1	6	1	-	4	2	1	1	2	2	1	-	-	22	643
Arboviral infection (Other)*	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	26
Malaria*	2	2	2	2	11	-	1	-	1	-	-	-	-	-	-	1	1	-	23	173
Zoonoses																				
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptospirosis*	-	-	-	-	-	-	-	-	-	1	-	2	-	-	-	-	-	-	3	35
Q fever*	-	-	1	-	-	-	1	-	-	4	1	-	3	1	1	-	-	-	12	73
Respiratory and other																				
Blood lead level*	3	-	-	1	15	-	4	-	2	1	-	-	1	-	29	-	1	-	57	730
Legionnaires' Longbeachae*	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	7
Legionnaires' Pneumophila*	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	21
Legionnaires' (Other)*	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2	4
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Meningococcal infection (invasive)	3	-	3	1	4	-	1	5	4	1	-	-	3	-	-	1	-	-	26	153
Mycobacterial tuberculosis	3	2	9	-	3	-	-	-	12	-	-	-	-	-	-	-	-	-	29	266
Mycobacteria other than TB	8	3	-	-	2	-	-	3	4	1	2	-	-	1	-	2	-	-	26	248
Vaccine-preventable																				
Adverse event after immunisation	2	-	2	-	-	1	-	-	-	1	-	1	-	-	-	-	-	-	7	13
H.influenzae b infection (invasive)*	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	2	5
Measles	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	13
Mumps*	2	3	3	-	1	1	-	-	1	-	1	-	-	-	-	1	-	-	13	71
Pertussis	14	22	23	21	32	24	225	9	29	25	4	20	28	49	-	36	31	-	592	1,871
Rubella*	1	2	2	-	-	-	-	1	4	-	-	-	-	1	-	-	2	-	14	50
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Faecal-oral																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	-	-	-	2	-	-	-	-	1	1	-	-	-	-	-	-	-	-	4	83
Giardiasis*	5	4	6	4	5	-	3	-	15	11	3	3	4	1	-	3	-	-	67	682
Food borne illness (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	111
Gastroenteritis (in an institution)	57	-	16	-	-	-	34	-	-	-	-	-	-	-	-	-	-	-	107	305
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Hepatitis A*	2	2	6	-	-	-	-	-	2	-	-	-	-	1	-	-	-	-	14	145
Hepatitis E*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Listeriosis*	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8
Salmonellosis (not otherwise specified)*	1	8	-	1	7	5	2	1	6	7	-	2	2	2	-	4	1	-	49	926
Typhoid and paratyphoid*	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	33
Verotoxin producing Ecoli*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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

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NRA = Northern Rivers Area
MNC = Mid 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
CHS = Corrections Health Service

TABLE 11 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN SEPTEMBER 2000 BY AREA HEALTH SERVICES

Condition	Area Health Service (2000)																		Total	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS	for Sept†	To date†
Blood-borne and sexually transmitted																				
AIDS	-	-	-	-	-	-	-	-	15	2	-	-	-	-	-	-	-	-	18	96
HIV infection*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	226
Hepatitis B - acute viral*	-	2	1	-	-	-	2	-	3	-	-	1	-	-	-	2	-	-	11	69
Hepatitis B - other*	66	53	66	13	50	5	5	9	57	-	-	3	-	1	2	1	5	9	352	3,081
Hepatitis C - acute viral*	-	3	-	-	-	-	-	-	1	1	-	-	-	1	-	-	-	1	7	88
Hepatitis C - other*	78	39	102	32	31	44	59	31	103	28	27	13	4	15	7	13	9	67	709	6,356
Hepatitis D - unspecified*	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	2	9
Hepatitis, acute viral (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlamydia (genital)*	30	35	31	12	6	11	32	12	69	16	14	5	4	11	6	5	7	-	308	2,365
Gonorrhoea*	15	3	1	1	2	3	2	1	37	2	-	-	-	2	1	-	-	-	70	825
Syphilis	5	2	8	1	8	2	1	-	3	1	1	-	1	1	3	-	-	2	39	403
Vector-borne																				
Arboviral infection (BFV)*	-	-	-	-	-	-	-	2	-	2	4	-	-	-	-	-	1	-	9	156
Arboviral infection (RRV)*	-	-	-	-	-	-	2	-	1	-	1	-	-	1	2	-	-	-	7	686
Arboviral infection (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	26
Malaria*	-	4	-	2	3	-	4	-	2	3	-	-	-	1	-	-	-	-	20	194
Zoonoses																				
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Leptospirosis*	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	2	37
Q fever*	-	-	-	-	-	-	-	-	-	2	3	-	2	2	2	-	1	-	12	85
Respiratory and other																				
Blood lead level*	-	4	-	-	9	1	5	3	1	-	1	1	-	-	3	-	-	-	28	766
Legionnaires' Longbeachae*	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	8
Legionnaires' Pneumophila*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Legionnaires' (Other)*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Meningococcal infection (invasive)	3	3	2	2	4	3	-	2	3	1	-	-	1	3	1	1	3	-	33	184
Mycobacterial tuberculosis	1	7	1	1	3	-	1	-	11	-	-	-	-	1	-	-	-	-	26	297
Mycobacteria other than TB	10	5	-	1	-	-	7	-	1	2	2	-	-	-	-	-	2	-	30	279
Vaccine-preventable																				
Adverse event after immunisation	-	-	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	3	15
H.influenzae b infection (invasive)*	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	2	7
Measles	-	1	-	-	1	-	-	-	1	-	-	-	-	-	1	1	-	-	5	18
Mumps*	-	1	1	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	4	75
Pertussis	8	13	21	10	28	15	139	5	23	8	21	8	15	61	-	18	7	-	400	2,282
Rubella*	-	-	2	-	1	-	6	-	10	1	-	-	-	-	-	-	-	-	20	71
Tetanus-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Faecal-oral																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cryptosporidiosis*	-	-	-	-	-	-	-	1	-	2	-	2	-	-	-	-	-	-	5	88
Giardiasis*	2	5	7	4	4	6	3	3	6	7	5	4	4	-	-	3	1	-	64	749
Food borne illness (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	145
Gastroenteritis (in an institution)	50	-	6	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-	58	383
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Hepatitis A*	-	-	1	1	2	1	3	-	2	-	-	1	-	1	-	-	1	1	15	160
Hepatitis E*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Listeriosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
Salmonellosis (not otherwise specified)*	4	7	15	3	2	2	3	3	8	5	3	2	-	1	2	2	-	-	64	991
Typhoid and paratyphoid*	2	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	4	39
Verotoxin producing Ecoli*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	1

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

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