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## RURAL HEALTH IN NSW

### GUEST EDITORIAL


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During the 1990s, rural health became more prominent on the political agenda. Through the 20th century, the NSW Department of Health and its antecedents contributed to subsidies raised by local communities to attract and retain doctors; progressively increased its rural workforce; and, especially in the period following the Second World War, constructed many small rural hospitals. In the 1970s, the NSW Health Commission took the initial structural steps to decentralise health service administration to the regions. Yet, by the end of the 20th century the fundamental problems of rural health remained:

- an increasingly well-documented excess burden of injury and disease (especially among remote and rural indigenous people);
- the inability to constantly maintain an effective workforce of health professionals;
- difficulties with creating a sustainable service infrastructure.

Several promising initiatives were made by the Commonwealth and State governments during the 1990s. Some of these are described in the following articles, along with other aspects of the contemporary rural health scene.

Drawing on his experience in the Kimberleys and the Far West of NSW, Michael Douglas provides a personal view on developing health policy in the rural sector. Douglas is a public health consultant who believes that little in the way of health gains will be achieved without the active involvement of rural communities in the initiation and development of policy. Observing that health sector policy in rural Australia is largely determined by a 'top down' approach, Douglas writes that regional centres 'have an important role, both in feeding up the reality of life in a rural community to a central level, and then massaging the shape of policy that may be best developed centrally'.

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The principle of active community involvement is clearly demonstrated in the article that follows, which describes how the Far West Area Health Service successfully modified a community screening program, the *Well Person's Health Check*, to improve service delivery to an indigenous community in its area. This program was conducted by Lisa Jackson, who is proud to be the first Aboriginal person to complete the NSW Public Health Officers Training Program.

Lyn Fragar, Head of the Australian Centre for Agricultural Health and Safety, clearly outlines the pressures (such as income reduction, among others) that influence the health of people working in the agricultural sector. Essentially, due to the forces of globalisation and policies of economic rationalism, farmers have lost control over many of the factors that influence their livelihood, and hence their health and wellbeing. So mental health is an important issue along with relatively higher rates of serious injury, cardiovascular disease and some cancers. Fragar believes that the capacity building approach to health service delivery would benefit farming communities.

Capacity building is the focus of the next paper by David Lyle, Professor of Rural Health, and Charles Kerr, who emphasise new initiatives for education and vocational training in remote and rural Australia. They regard these continuing developments by Commonwealth and State governments as important investments in infrastructure that have the potential—within a capacity building framework—to improve the availability, quality and flexibility of workforce resources.

Mohamed Khadra, Director of the Greater Murray Clinical School at Wagga Wagga—the first of 10 intended rural clinical schools throughout Australia—concentrates on this initiative to attract and retain more doctors in rural practice. The intention is for substantial numbers of medical students to complete at least half their clinical education in a rural setting. Khadra presents a strong case that such arrangements can meet their objectives.

Finally, David Lyle and colleagues from the Far West Area Health Service summarise 10 year's experience of the NSW Lead Management Program in Broken Hill. Over a century of mining operation had left a persistent environmental lead hazard, manifested as relatively high blood lead levels in a proportion of children. The program, based on public health principles of minimizing harm from an environmental hazard, has been highly successful; but it needs to be maintained due to the irremedial nature of widespread lead sources.

There is much more that could be written about rural health. Nevertheless, it will be evident from this series of articles that many of the realities of rural health are being firmly addressed; and there is a cautious optimism that the people of rural and remote parts of NSW will eventually benefit from more determined and better supported efforts to improve their health.

# POLICY DEVELOPMENT IN THE RURAL SECTOR: A PERSONAL PERSPECTIVE

***Michael Douglas***
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'I wonder would the apathy of wealthy men endure
Were all their windows level with the faces of the Poor.'[1]

Although a century has passed since Henry Lawson penned these words, the truth they express still holds. The most influential determine the fate of all. This perception is not lost in the experience of the rural populations of Australia, whose livelihoods are built on conditions vastly different from those of the metropolis; and yet their opportunities are frequently determined by those who live in the metropolis.

This paper presents an opinion of policy development in rural Australia. It holds that, in spite of encouraging steps that seek to involve the rural population in the development of relevant policy, centralised decision-making remains the norm. Although international developments around the issue of meeting the needs of target groups have been achieved—and are available to policy makers—an element of maintaining the familiar practice and efficiency of systems has limited the potential for the greater involvement of rural populations in decision-making.

Also, the differentiation between rural and urban populations is commonly and inappropriately simplified. The adverse health status and other health differentials in the rural populations are not uniform across all rural areas, while sectors of the urban population also have poor health status. A set of values may be assigned to one or other group that frequently depicts an adversarial relationship; however, urban and rural populations are not as distinct as these simplifications may suggest.

The development and establishment of policy is necessary to facilitate the achievement of goals defined by stakeholders. Policy development occurs at a number of levels. These include the broad values on how the health system defines its goals; for example, the representation of key groups in specifying these goals, or the accountability of those charged to deliver them.[2] Without policies, decision-makers will be engaged in repeated debates over the same crucial issues. Policy constitutes authorisation for an agent to act in a particular way whenever a particular situation exists.[3]

The evolution of 'primary health care' in recent decades has recognised the pivotal role that policy may have in determining the outcome of better health. The fundamental principles underpinning the primary health care approach were garnered from the diverse experience of small rural-based community programs.[4] The success of this approach will only be seen when its implementation is both derived from and embedded in the domain of its target group. It follows, then, that for policy to lead to an improvement in health and social conditions in the rural sector, it must be born and driven within those communities.

This is supported by my personal experience. For a number of years, I was privileged to work in a small and remote community in the Kimberley region of Western Australia. In response to enormous adversity in social circumstances, this community set about re-building itself, outlining its vision, and showing a determination that it could fulfil its plans to achieve its goals. The success of the community in doing so became a valuable catalyst for other communities to address their issues in a similar way. Policy makers within the social sectors were willing to be challenged, and development–adaptation was achieved accordingly.

The issue of the misuse of alcohol is a good example. The community determined a raft of measures to address the social disruption caused by the excessive consumption of alcohol.[5] One such action was to restrict the availability of alcohol. This was met with opposition from the liquor industry, which further fuelled the eagerness of the community to determine the nature of their own environment. A landmark decision by the Director of Liquor Licensing in Western Australia pronounced a range of restrictions on the licensees of Halls Creek. The restrictions included a reduction in trading hours; delayed take away trading (that is, not before noon); and a limit of one flask of wine per person per day. This decision provided the community with both a sense of achievement and subsequent benefits that were measurable. This, and similar cases in other jurisdictions, have provided a good foundation for the development of policy at national level. The case demonstrates how a small community is able to influence its own destiny; share that experience with nearby communities; and, with the added and subsequent experience of other communities, collectively influence the formation of national policy. Importantly, the regional and state senior health personnel provided strong advocacy for local public health action.

As my personal circumstances required a move to the eastern states of Australia, and to a larger centre, I reasoned that if I could not work in close contact at a 'grass roots' level, then the next best thing may be to remain as an advocate of health gain for disadvantaged groups working at a level where policy decisions were cast. With this ambition, I accepted a position as director of a public health unit in western NSW, which afforded regional decision making capacity and linkages to statewide debate on policy matters. I was to learn that, in adopting such a position, I was no longer a part of the community that I aspired to serve, but rather had become one who provided advice *to* communities, with very limited capacity to be an agent of change. The policy environment was largely one of imposition; and, in my own enthusiasm for change, I became one of the central agents making decisions *for* communities. My cherished principle of health for the community by the community had somehow lost its way.

The lessons from this example should not suggest that regional or state policy makers do not have a place. Quite the contrary. Communities, and their health care providers, need guidance and a robust mechanism for sound policy development. Policy-makers have a responsibility to fulfil this task. Where there is little capacity for the foundations of policy to emerge from isolated and remote communities, regional centres have an important role, both in feeding up the reality of life in a rural community to a central level, and then massaging the shape of policy that may be best developed centrally. Public health practitioners are necessary, and are potentially rewarded, as energetic advocates of better health for disadvantaged groups.

It remains that policy in the health sector in rural Australia is largely determined by a 'top down' approach. Policy research agendae frequently reflect the interest of the producers of research, rather than a strong relation to the assessment of need. Funding allocations are made centrally. State or Commonwealth jurisdictions are substantively the policy makers of today, and the rural community is most commonly the passive recipient of their decisions. International and Australian experience has indicated the benefits of community input into their health and social welfare systems, the premise behind the Declaration of Alma Ata. 'Bottom up' development of policy, particularly in the rural sector, can be effected, and will almost certainly provide a greater opportunity for better health. The challenge remains in engaging

communities, and bringing forward a health system to be proactive in determining the rural health agenda. Opportunities exist and to a limited extent, are being exploited. Community 'health councils', rural health training, and an evolving level of rural health research are all signs for optimism.

The further groundwork for change must be laid. Ongoing recognition of stratified indicators of rural health is necessary. Most importantly, however, is the need to listen to and work with communities. Disadvantaged groups should be encouraged to actively participate in developing policy, and implementing measures intended to improve their situation.[4] These programs and interventions must be implemented in a way that supports equity and group problem solving. Regionally based, and central policy-makers need to encourage and facilitate rural communities that advocate for change. While early steps have been taken, and have provided some measure of optimism, in order to achieve a more equitable and focused policy framework to develop better rural health, a deepening of understanding and a greater willingness to be 'with' rural communities in their plight remains a priority.

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# THE EXPERIENCE OF THE *WELL PERSON'S HEALTH CHECK* IN THE FAR WEST AREA HEALTH SERVICE


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The Far West Area Health Service (FWAHS) sought to develop a new, or implement a modified, community screening methodology to assist in assessing the health needs of remote Aboriginal communities living within its area. Following a review of the literature, it was decided to examine the North Queensland *Well Person's Health Check*, which is run in collaboration between the Tropical Public Health Unit (TPHU) in Cairns and the Apunipima Cape York Health Council, a community-controlled indigenous health organisation in Far Northern Queensland. This article describes the process by which the FWAHS adopted its own Far West *Well Person's Health Check* (Far West WPHC).

## THE *WELL PERSON'S HEALTH CHECK* IN NORTH QUEENSLAND

The original *Well Person's Health Check* was developed in Far North Queensland following the publication of the *National Aboriginal Health Strategy* in 1988. Findings of the Strategy confirmed that many undiagnosed and untreated diseases such as sexually transmitted infections, diabetes, renal, cardiovascular and respiratory disease contribute substantially to excess mortality and morbidity in indigenous populations. Treatment of these diseases in the early stages can result in a cure or a reduction in morbidity. Unfortunately, because many of these diseases are initially asymptomatic, diagnosis usually occurs at a later stage.

To promote community-based primary health care, a unique partnership was formed during 1997 with the Apunipima Cape York Health Council and the TPHU. One of the outcomes of this partnership was the development of the Far North Queensland *Well Person's Health Check.* This intervention, originally targeted at remote communities, was an endeavour to:

- establish the extent of certain diseases in remote communities;
- provide early treatment and referral;
- use the data collected to inform service delivery and address local health issues.

The program is planned and implemented in conjunction with local community members and service providers. The *Well Person's Health Check* is conducted in conjunction with a community event in order to attract interest and optimise participation. *Well Person's* screening is offered together with health promotion activities, advice, treatment, and healthy food. There are protocols for consent and confidentiality, and referral and follow-up treatment are provided.

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## THE *WELL PERSON'S HEALTH CHECK* IN THE FAR WEST OF NSW

A working party consisting of representatives from Maari Ma Health Aboriginal Corporation, the University of Sydney's Department of Rural Health (Broken Hill), and the Division of Population Health (Far West Area Health Service) was convened to guide the adaptation of the North Queensland *Well Person's Health Check* to better suit the needs and resources of an Aboriginal community in the Far West of NSW. The working party decided to pilot a program in a community that fulfilled the following criteria:

- a remote community in the Far West Area Health Service;
- a majority population (75 per cent) of persons of Aboriginal descent;
- the presence of a health service, hospital or muti-purpose health facility;
- the presence of a general practitioner in residence or access to regular Royal Flying Doctor Service clinics.

Community consultation was held in two communities: Dareton, near Mildura; and Goodooga, near Lightning Ridge. Members of each community were given letters outlining the project.

All aspects of the Far West WPHC were explained to health staff, health advisory council members, and community groups including the elders, the justice committee and others. Discussion included the roles of collaborating organisations, the process of community consultation, the perceived time-line, outcomes and logistics. The Goodooga community decided to host the Far West WPHC pilot program. The following objectives arose from community expectations:

- detection and early intervention in diabetes, renal disease, hypertension, and sexually transmitted infections;
- performing a brief dental examination;
- providing health information to those at risk of disease;
- achieving a reduction in the prevalence of preventable disease;
- focussing community attention on health and related issues;
- assist future planning by providing baseline data for health service delivery throughout the region;
- building capacity of health workers, community members and local health services;
- detection and treatment of some asymptomatic diseases;
- referrals to clinics and other providers for ongoing care and treatment for those detected with disease;
- provision of brief interventions for smoking, nutrition, alcohol and sexual health matters.

### STAGE ONE: NOVEMBER 1999 TO APRIL 2000

The Health Advisory Council, the Goodooga Working Party, staff of the Goodooga and Lightning Ridge Health Services, and community members, worked together to ensure the community consultation was thorough. This took over four months, from the first contact to the first day of the Far West WPHC.

A community survey involving a simple questionnaire was done some weeks before the Far West WPHC. Each household was given a community information booklet and a large poster to keep. Individuals in the target age group (15 to 45) were identified and compared to the most recent census. This became the screening denominator.

An artwork competition valued at $250 was held for the design of a Far West WPHC T-shirt, which also served to galvanise community interest. The winning entry became the official artwork of the Far West WPHC in Goodooga.

In preparation, all people working on the Far West WPHC attended a specially designed two-and-a-half day course at the Goodooga Health Service developed by the Department of Rural Health at the University of Sydney. The emphasis was on developing the practical skills of staff and community members of the Goodooga area. A certificate of participation was awarded to each person who attended the training program.

A community event was held immediately before the Far West WPHC, which included a talent quest, ball games, races, and a band performance. Other groups, including the Aboriginal and Torres Strait Islander Commission, the police, fire brigade, and the local school, donated services and prizes to the talent quest. Elders prepared bush foods including *Emu in the Hole* (traditionally prepared bush tucker) and *Johnny Cakes* (a damper style bread). Members of the Far West WPHC team handed out brochures, leaflets and other health-related materials, and answered any questions people had about the Far West WPHC.

### STAGE TWO: MAY–JUNE 2000

The Far West WPHC was set up in the demountable building at the Goodooga Health Service. Each person went through nine stations, with each station focusing on different health related questions and examinations:

- *Consent*: Written consent was obtained from each person. Consent could be withdrawn at any time, for all or part of the Far West WPHC.
- *Registration Information*: Each person's contact details were checked so that staff could follow up on the results.
- *Blood Pressure*: Blood pressure was taken three times to calculate the average systolic and diastolic blood pressure.

- *Anthropometry*: Body Mass Index (BMI) and Waist Hip Ratios (WHR) were calculated from height, weight, waist and hip measurements.
- *Oral Health*: Visual assessment of oral hygiene, including, examination of teeth, gums, mucosa and tongue. Opportunistic feedback was given regarding oral care.
- *Blood Collection*: Fasting blood glucose levels, liver function, total cholesterol and triglicerides, red blood cells, serum folate levels, and an examination for syphilis, were conducted on the 25 ml of blood taken from each individual.
- *Urine Sample*: Mid-stream urine was collected to conduct a polymerase chain reaction (PCR) test for gonorrhea and chlamydia, and albumin creatinin ratio (ACR); and urinary iodide was also measured.
- *Lifestyle Interview*: Questions were asked about cigarette smoking, alcohol consumption, fruit and vegetable intake, and levels of exercise.
- *Exit Interview*: Questions about medical background and medication regimes were asked; and assessments were made as to whether the person would be eligible for vaccination or required referrals to other health-related services. Some feedback on the anthropometry, blood pressure, alcohol and smoking were given.

The Far West WPHC was open for 10 days from 5.00 or 6.00 a.m. to midday each day. All people over the age of 15 years were invited to attend. Between 25–35 people were screened each day.

Following completion of the check, each person received a healthy breakfast of stew, fresh fruit, cereals, breads and juices. They also received a T-shirt featuring the artwork of the Goodooga Far West WPHC.

## STAGE THREE: JUNE 2000

### Clinical follow-up

The majority of people who attended Stage Two of the Far West WPHC attended a clinical follow-up. Two confidential consultations with a clinician were provided, and immediate treatment or further investigation was offered to those with equivocal fasting blood glucose levels, or to those with any sexually transmissible infection. Vaccination against influenza and pneumonia where offered where indicated.

### Nutritional session

A nutritional session, conducted by a nutritionist from Broken Hill, was offered to each person who attended the Far West WPHC**.** An individualised booklet outlining both their self-reported and observed information (other than information related to sexually transmissible infections) was provided for each participant. Each booklet contained:

- self-reported fruit and vegetable intake, smoking and alcohol use, and amount of exercise;
- observed weight, body shape, blood pressure, and oral health status;
- laboratory results of red cell folate, blood fats, blood glucose levels, and liver and kidney function;
- health information, including nutrition and exercise tips.

A small dilly bag was given to each person, which contained other health-related information; fruit, oral care products and follow-up cards. People who could not attend this session were offered alternative sessions by the health staff who conducted the Far West WPHC program.

### Diabetic morning tea

A special diabetic morning tea was held for those interested, including newly-diagnosed diabetics, and people with equivocal blood glucose levels. An informal discussion about food, eating, exercise, and alcohol occurred, while participants made snacks and lunches from locally-acquired foods.

## COMMUNITY REPORT AND SUBSEQUENT INTERVENTIONS

Aggregated data about the Goodooga community was presented to the community both as a written and oral report during August 2000. This information has been disseminated through the Goodooga Health Advisory Council.

A number of short, community-based interventions have started locally in response to the findings of the Far West WPHC.

## CONCLUSION

Information gathered during the Far West WPHC is now the base-line data for the Goodooga community, which describes the current state of the health and wellbeing of that particular community. The community uses this data to lobby for additional services and for funding for specific projects. Service providers and the community can use this information to better plan and implement appropriate health programs, and to allocate resources more effectively.

This type of program is an important step in health service planning and delivery. During the consultation phase of the project, one man summed up the intention of the Far West WPHC:

'Our people die earlier than other Australians. People die from things that can be prevented. It is not fair. We need proper support to stop this from happening. It's not about research, it's about the stuff *we* can do to get what we need: not what others think we need.'

Programs like the Far West WPHC are an important step in supporting our health services in knowing what services remote communities need to stay well.

## ACKNOWLEDGEMENTS

We would like to acknowledge the invaluable assistance and support of the elders and residents of Goodooga; the Namitjira Avenue Working Party (Dareton); the Apunipima Cape York Health Council, the Tropical Public Health Unit in Cairns; the members of the Far North Queensland *Well Person's Health Check* Team, Pormpuraaw; the members and representative organisations of the steering committee in Broken Hill, and the dedicated team of the Far West *Well Person's Health Check* in Goodooga.

We would also like to acknowledge the NSW Public Health Officer's Training Program for giving Lisa Jackson the opportunity to work in the Far West Area Health Service.


# THE HEALTH OF THE PEOPLE IN AGRICULTURE AND ITS INTERDEPENDENCE WITH THE HEALTH OF RURAL COMMUNITIES


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This article describes the factors that are driving change in Australian agriculture, how they affect the health of the agricultural population and of rural communities as a whole.

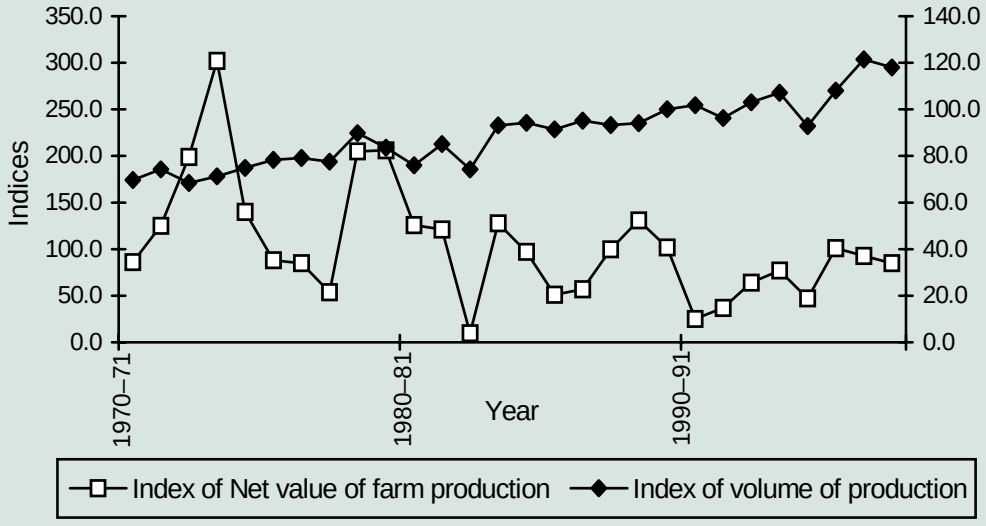

## BACKGROUND

Australian agriculture comprises a large number of discrete rural industries. While there are some similarities between these industries (such as outdoor work, the use of mobile plant and equipment, and often the structure of a family business), there are many differences between their production processes and enterprise arrangements. For example, the production processes and labour arrangements of a dairy enterprise contrast markedly with those of a cotton or vegetable enterprise.

Further, agriculture industries are in constant change and, while these changes affect the social wellbeing and health of people in those industries, constant change also affects the social and economic position of the wider rural community. A number of factors have been identified as driving change and the restructuring

**FIGURE 1**

**PRODUCTION INDICES IN AUSTRALIAN AGRICULTURE BY FISCAL YEARS, 1970–1998**




Data Source: Australian Bureau of Agricultural and Resource Economics, 1998.[4]

**TABLE 1**

**FACTORS DRIVING CHANGE IN AUSTRALIAN AGRICULTURE**

**Technological advances**

- Farm production technology, for example: mechanisation, chemical and biological control of insects.
- Communications, including telephone, computer, internet.

**Economic factors affecting the farm business**

- The volume of Australian farm production is increasing, but the real value of the Australian farm production has not grown with the growth of production (Figure 1).[4]
- Australian farmers face continual pressure from falling Terms of Trade: that is, increasing input costs and declining product prices.
- While it remains an important contributor to the Australian economy, the overall importance of agriculture to the economy is declining, with the growth of other sectors.
- Changing demands and prices for commodities produced—the 1990s saw major drop in wool prices, marked fluctuation in beef and grain prices.
- Changing demands for quality standards to be met for products.
- Industry policies: for example, dairy deregulation resulting in a sudden drop in milk prices.
- Environmental factors are increasing in importance for sustainability of the farm enterprise.

**Social factors affecting the farm family**

- Young people leaving the farm for higher education.
- Increasing feelings of loss of control over many factors, including government policies relating to taxation, environment, access to inputs (for example: water, pesticides).
- Lack of services, such as banking, retailing.

**Ongoing pressures for restructuring of farm businesses** [2,3]

- Cost-cutting on farm business and personal expenses.
- Diversification of commodities produced.
- Intensification and changes to input level use: for example, fertilisers, more cropping.
- Increasing farm size.
- Changes to marketing methods, transportation, to respond more efficiently to market demands.
- Changes in farm financial arrangements and business organisation.
- Seeking off-farm income for one or both partners.
- Bartering of goods and services with other enterprises.
- In some cases, leaving the farm.

of the agricultural sector in Australia, with flow-on effects on associated rural communities.[1] These are largely the effects of global changes. As the Australian agricultural sector is primarily supplying overseas markets, farmers tend to be 'price takers': that is, they have little capacity to influence the prices that they receive for their products. Because Australia does not provide government subsidy to mitigate the direct economic effect of global market fluctuations, farming enterprises must absorb these effects.

The factors driving change in Australian agriculture are listed in Table 1.[2,3] The cumulative effect of these factors is an ongoing reduction in the number of farming enterprises across Australia, as demonstrated in Table 2. Production indices in Australian agriculture are shown in Figure 1.[4]

## THE HEALTH OF THE FARMING POPULATION

Not surprisingly, the health status of men and women engaged in agriculture—that is, farmers and agricultural workers—is being affected by these pressures, and by a reduction in farm income. The health of the farming population is the subject of several studies at the Australian Centre for Agricultural Health and Safety.

There is early evidence from death data that Australian farmers experience higher death rates than the Australian male population. A paper presented at the National Rural Public Health Conference in 1997 reported that the age standardized death rate for male farmers aged 15–65 in the period 1990–1993 was 39 per cent greater than the working age male population.[5] Table 3 indicates that excessive higher rates of deaths of male farmers are associated with circulatory disease, neoplasms and injury.

Table 4 indicates that death rates are highest in the Northern Territory, New South Wales, Victoria and South Australia. At this stage, similar data is not immediately available for females, due to lack of valid denominator data, nor for agricultural workers. This is the subject of further investigation.

Rates of death due to injury for male farmers and farm managers are excessively high. The National Occupational Health and Safety Commission has undertaken a study of work related deaths for the period 1989 to 1992,[6]

**TABLE 2**

**NUMBERS OF AUSTRALIAN FARMING (AGRICULTURAL ESTABLISHMENTS) UNITS WITH AN ESTIMATED VALUE AGRICULTURAL OUTPUT OF $5,000**

| Year | Qld | NSW | VIC | TAS | SA | WA | NT | ACT | Total |
|---|---|---|---|---|---|---|---|---|---|
| No.farms 1986 | 33,745 | 51,728 | 43,931 | 5,199 | 18,739 | 16,004 | 267 | 103 | 169,716 |
| No Farms 1996 | 31,371 | 41,578 | 36,146 | 4,464 | 15,562 | 13,640 | 221 | 95 | 143,211 |
| Number Decrease | 2,374 | 10,150 | 7,785 | 735 | 3,177 | 2,364 | 46 | 8 | 26,505 |
| Per cent reduction | 7.0 | 19.6 | 17.7 | 14.1 | 17.0 | 14.8 | 17.2 | 7.8 | 15.6 |

Source: Australian Bureau of Statistics,[16]

and has made a preliminary report of deaths in the agriculture industry. In the period 1982–1984 there were 19 deaths per 100,000 workers in agriculture, in the period 1989–1992 the rate was 20 deaths per 100,000. These rates for work-related deaths on farms rank among the highest among Australian industries, with deaths from heavy machinery—such as tractors, machinery, aircraft and farm vehicles—being among the leading agents of injury. In addition to these deaths, there are high numbers of bystander deaths and deaths of children on farms: for example, many toddlers die as a result of drowning in farm dams or other bodies of water.[7]

Male farmers die on roads at double the rate of the Australian male population.[8] A study undertaken by the Australian Centre for Agricultural Health and Safety in association with the Australian Transport Safety Bureau has reported key factors associated with road fatalities in the farming community.[9] The study examined road traffic deaths of male farm managers and agricultural workers for the years 1988, 1990, 1992, 1994 and 1996. Female death records inadequately defined female farm managers and farm workers and were excluded from the analysis. Characteristics of the crash circumstances included: a majority of single vehicle crashes, mostly within 50 kilometres of home; low seatbelt usage; and between 31 and 46 per cent were associated with high blood alcohol levels. The role that fatigue may have played could not be examined.

Deaths through suicide of male farmers and farm workers is also around double that of the Australian male population, and is the subject of a study by Page and Fragar.[10] There is a widespread view among the agricultural population that many suicides of farmers are directly related to the economic circumstances of their farm business, and this relationship is being examined.

The factors associated with the high cardiovascular disease death rates of Australian male farmers and farm managers are also being explored further.

While death rates of farmers associated with lung cancer are lower than for the Australian population as a whole, death rates for cancers of the skin, prostate and rectum are higher.[8] These findings are consistent with international reports.[11,12]

People engaged in agricultural production are also exposed to specific environmental health risks associated with their work environment including noise, zoonoses, pesticides and organic dusts.[8]

This brief consideration of the health status of the farming population indicates a relatively poor position for a key population group in rural Australia. It is not unreasonable to suggest an association between the stresses of business and the increasing social isolation being reported by farm families, and the poor health outcomes evident in the data. Increasing loss of control over many factors

**TABLE 3**

**STANDARDISED MORTALITY RATIOS MALE FARMERS–FARM MANAGERS BY FIVE BROAD DISEASE GROUPS 1990–1993 (INDIRECT METHOD)**

| Cause of death | Standardised mortality ratio | 95% CI L | 95% CI U |
|---|---|---|---|
| Circulatory disease | 162 | 151 | 173 |
| Neoplasms (Cancer) | 120 | 112 | 128 |
| Respiratory disease | 84 | 65 | 103 |
| Injuries and poisonings | 224 | 205 | 243 |
| Other causes | 86 | 74 | 98 |
| All causes | 139 | 134 | 144 |

Source: Fragar et al. 1997 [5]

**TABLE 4**

**STANDARDISED MORTALITY RATIOS MALE FARMERS–FARM MANAGERS, ALL CAUSES BY STATE, 1990–1993 (INDIRECT METHOD)**

| State | Standardised mortality ratio | 95% CI L | 95% CI U |
|---|---|---|---|
| New South Wales | 149 | 139 | 159 |
| Victoria | 149 | 138 | 160 |
| Queensland | 118 | 107 | 129 |
| South Australia | 149 | 132 | 166 |
| Western Australia | 121 | 105 | 137 |
| Tasmania | 131 | 100 | 162 |
| Northern Territory | 158 | 40 | 276 |
| Australia | 139 | 134 | 144 |

Source: Fragar et al. 1997 [5]

associated with the farm and business seems to be a common thread that warrants further exploration.

Such a position has been espoused by a number of observers over some time. A paper presented at the United States Surgeon Generals' Conference on Agricultural Safety in 1991 described the changing face of American agriculture,[13] the physical and psychological symptoms experienced by individuals in response to the stresses of farm financial difficulty, the effects on rural community and the potential effect of the foreshadowed 'destruction of locally regionally self-sufficient food systems in favour of a globalised system'.[13]

## THE RURAL COMMUNITY AND THE AGRICULTURAL SECTOR

Socioeconomic changes in agriculture have a significant effect on rural communities:[3]

- population decline in inland and remote Australia is mainly a result of long term pressures on the agricultural sector;

- employment in primary industries is in decline in inland and remote Australia;
- there has been a significant change in the demography of inland rural communities, with loss of young people to metropolitan centres for education and employment;
- percentage growth in population is closely associated with percentage growth in employment;
- most growth is in coastal regions of Australia;
- mining is now nearly as important to employment as agriculture in 'remote' Australia.

The mutual dependence of rural townships and farms has been demonstrated in inland centres, with farmers and their families responsible for a substantial proportion of wholesale and retail turnover in north-west NSW, as well as towns providing the source of off-farm income.[14]

McKenzie investigated the effect of declining rural infrastructure on farming enterprises in the central wheat belt of Western Australia.[4] Faced with withdrawal of services from the local community, the question posed was whether these changes affect the efficiency of farm enterprises. The following effects on farm enterprises were reported:

- unreliability of services was unacceptable;
- lack of choice of service providers was unacceptable;
- while health services were generally considered adequate if not further pared, mental health was a recurring theme. Suicide was viewed as a real threat. Many participants indicated that mental health encompassed unresolved family issues and that sustained stress was having a direct effect on economic viability of the farm for some enterprises;
- access to education was reported as the major infrastructure issue that mobilises families. If adequate educational facilities are not accessible, either the child will be sent away to school, or the family will relocate;
- youth drain from communities is seen to indicate loss of community 'vibrancy and optimism';
- housing shortages pose difficulties in recruiting casual labour;
- farm people recognise the need to support and participate in local community activities, creating further pressure on time away from farm and domestic duties.

Thus a vicious cycle has been established in many inland rural communities, whereby farming enterprises are forced to purchase lower cost inputs from outside the local community, and forced to reduce labour input, causing restructuring and downsizing of smaller inland rural communities, thereby further disadvantaging farming enterprises.

## SOCIAL AND ECONOMIC POLICY FOR IMPROVED RURAL HEALTH

National health strategies for disease prevention in Australia have increasingly recognised the importance of attention to rural populations and Aboriginal and Torres Strait Islander health. Further, there is a similar and admirable tendency for inclusion of community 'capacity building' and community development approaches in such strategies. For example, while the National Environmental Health Strategy has a key focus on the physical environment,[15] it requires community participation for its implementation; and it describes strategies for community participation to achieve sustainability, for example:

- a health promotion approach;
- development of infrastructure that enables community participation;
- provision of information and development of appropriate skills.

## CONCLUSION

While recognising the importance of active community participation and capacity building in rural health policy, and the imperative for maintaining adequate health services delivery to rural populations, it is suggested that such strategies will fail to deliver reduced differentials in health status between rural and urban Australians unless active attention is given to sustaining the economic and employment base of rural communities. Rural health policy in Australia needs to be accompanied by a comprehensive policy for improved social and economic wellbeing. This requires an engagement between industry, resource allocation, business development, education and training; and it necessitates a dialogue between those who make public health policy and those who make social and economic policy.

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# BUILDING CAPACITY IN RURAL HEALTH

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Capacity building to increase health gains in defined populations is not a new concept. Nevertheless, as interpreted by Penny Hawe and her colleagues,[1] and as developed operationally by the NSW Department of Health,[2,3] enhancing regional capacity to deal more effectively with the health needs and demands of people living in rural and remote Australia offers real promise as a useful approach for improvement. Essentially, capacity building in public health involves:

- delivering high quality services;
- responses to specified situations or problems;
- developing the regional system to solve new problems and respond to unfamiliar circumstances.

This article describes what effective and sustainable infrastructure is needed to achieve this capacity, with an emphasis on recent initiatives in the education and vocational training of rural health professionals.

## THE HEALTH NEEDS OF RURAL AUSTRALIANS

Rural health has been on the political agenda for some time now.[4] The poorer health status of rural residents has been well documented; and in particular, that of Aboriginal and Torres Strait Islander peoples.[5]

Around 30 per cent of the Australian population lives outside the metropolitan centres in communities that are geographically distinct and dispersed, ranging from major regional centres, country towns, to small isolated settlements and pastoral stations. The prominence of regional centres in economic and infrastructure terms is somewhat offset by the fact that most (>85 per cent) rural and remote communities are small in size with populations ranging between 200–5,000. Access to health services in these smaller communities is often limited, and is further compounded by difficulties associated with the recruitment and retention of health practitioners.[6]

The context of rural practice, and the capacity to develop services within a specific rural or remote region, is influenced by historical and local circumstances. Nonetheless, the size and location of a rural or remote community are the main determinants of the range of resident health professionals and services being delivered locally. Population can be viewed as a proxy for availability of services, such as health and education, where government has a role in provision, funding or planning.[7] Also, proximity to, or remoteness from, other larger centres influences the accessibility of other services.

The majority of Australians have access to well-resourced urban centres where effective primary health care tends to be taken for granted and the emphasis is on secondary and tertiary levels of service. By

contrast, the focus in rural areas is for meeting basic health needs and demands, and for constructing an adequate provision of primary health care supported by transferral arrangements to centres with higher level services. The extent of the challenge for capacity building in remote Aboriginal communities can be illustrated by what several experienced health professionals in remote areas regard as a set of core activities that are required for the delivery of comprehensive primary health care services:[8]

- 24-hour emergency care;
- immunisation;
- a specific program for child health;
- antenatal care;
- a prevention and control program for sexually transmissible and HIV infections;
- referral and evaluation system;
- chronic disease surveillance and treatment;
- health worker training and support programs;
- systematic approaches to staff recruitment, orientation, support and career development;
- data collection on population, interventions and outcomes;
- evaluation of activities;
- targeted and evaluated programs to manage, reduce and prevent substance abuse.

Another set of core environmental health activities has been recommended for maintaining healthy living conditions in remote communities. It all amounts to a huge task for relatively sparse workforces operating across wide areas and consisting of medical clinicians, nurses and Aboriginal health workers; with support from public health and allied health workers, social workers and community mental health workers.

This is where the operational specifics of capacity building become so important, starting with the definition of precise program goals and objectives that constitute the basis for agreed-upon protocols for clinical care and public health system management. Then follows the creation of essential linkages, networks, multiskilling of health workers and other process requirements for focused primary health care delivery that makes optimal use of available resources. Competent and professional management is, of course, essential for program development, implementation and service delivery.

Until recently, the lack of accessible and relevant education and vocational training had long been a major concern for health professionals considering taking up rural practice, and for those already in rural practice. During the 1990s, improved regional access to education and training was established through a network of Rural Health Training Units.[9] These initial units operated on discipline-specific lines with a strong emphasis on training rural general practitioners. Subsequent units were required to provide multi-disciplinary training under a single management structure. Some units took a further step by forming inter-disciplinary teams to provide education to different professional groups using an integrated educational curriculum.[10]

The location of rural health training units in major regional centres in all states and the Northern Territory still left a number of rural and remote regions without easy access to the new educational infrastructure formed as part of this initiative. The establishment of a training unit at Broken Hill in 1995, and the subsequent unveiling of a Commonwealth government funded program to develop a network of academic Departments of Rural Health and Rural Clinical Schools represented the next phase of building educational capacity in both rural and remote areas.

For the first time both rural and remote regional centres were being targeted for development.[11] These academic units were to be responsible for ensuring that health professionals in defined regions, including those residing in the smaller settlements, have access to the new educational and support services. These services include

- library and health information facilities
- traditional academic teaching at the undergraduate and postgraduate level
- support for vocational education and ongoing professional development.

The latter role will link with the existing educational service providers to facilitate the integration of educational effort from undergraduate to vocational training and ongoing professional development.

Advances with information technology have obvious implications for capacity building especially with the development of new linkages and networked activities. Sustained utilisation depends, however, on the capabilities of rural and remote telecommunications infrastructure, and on the willingness of governments to maintain effective systems of information technology.

Another prospect for the new rural academic units is to provide on-site bases for research, particularly on the specific health needs of rural communities and the effectiveness of interventions and the resources in the different regions. Introduction of rural research capabilities will facilitate an important aspect of rural health capacity building, which is to identify such matters as how best to sustain an effective interventional program or to measure the result of efforts to engage a community's willingness to participate in a health improvement strategy.

The capacity of the rural sector is being enhanced through these educational initiatives. It reflects on a general point that where significant gaps exist in education or professional services and support, investment may be required to create new facilities, services and relationships that provide support to rural practitioners. Thus, university departments of rural health—as new infrastructure—fill a gap by attracting experienced academics to work in the bush, and through those institutions provide educational opportunities and support to rural practitioners that were not previously available.

The capacity for rural health is increased when effective collaboration occurs among individuals and organisations to provide new or enhanced services. In fact, progress with capacity building in rural health will depend on encouraging a strong level of participation among rural health workers to look beyond the limits of their established activities and to engage in constructive discussion on improving capacity. In rural areas this has the potential to combine local expertise and networks to achieve greater capacity, self-reliance and sustainability of effort. Both commonwealth and state government incentives and funding have been successful in forging collaborative ventures in local communities (for example: multipurpose services such as is planned for communities like Collarenebri, Lightning Ridge, Brewarrina, and Wilcannia in far western NSW) and at the regional level, as indicated by the recent move to establish regional models of general practice training.

In the broader context, greater regional capacity—and collaboration among rural practitioners and organisations—will enable the rural areas to become more effective in defining and then negotiating the support they require from outside the region. These links are now resulting in strategic alliances between some rural and metropolitan based health services to provide specialist outreach and referral services (such as the eye program in Bourke between the Far West Area Health Service and the Prince of Wales Hospital in Sydney). Regional units of major institutions such as university departments of rural health are also joining with their academic colleagues on main campus to establish new educational courses for rural practitioners. For those providing services and support from a non-rural setting, there is the opportunity to develop a greater awareness, understanding, and regard for the work of rural practitioners.

The three pillars of the public health system are:

- service delivery
- teaching
- research.

In rural areas the capacity to carry out all three of these functions has been limited due to inadequate regional infrastructure and human resources. While it is too early to determine what will be achieved with the most recent investment in rural education and training, when considered alongside other investments aimed at building capacity in service delivery and research, it should be the cause for greater optimism about the future of rural health.

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# RURAL MEDICAL EDUCATION: HELPING TO SOLVE THE RURAL WORKFORCE CRISIS

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There is a shortage of doctors in regional, rural and remote parts of Australia. The most immediate and sustainable increase in the rural medical workforce is likely to result from training doctors who are more likely to consider a rural career. Two key factors here are:

- increasing the numbers of students from rural backgrounds that gain entry to medical training;
- increasing the amount of exposure that undergraduate students have to rural settings.

This article describes the Greater Murray Clinical School, a school that provides a comprehensive medical education in a rural setting, which aids in the recruitment and retention of a rural medical workforce.

## BACKGROUND

There is a shortage of doctors in regional, rural and remote parts of Australia. While around 30 per cent of the Australian population live outside the metropolitan areas, only 15.6 per cent of doctors practise there.[1] There are 143.6 practising medical practitioners per 100,000 population in regional, rural and remote areas, compared with 306.3 per 100,000 population in metropolitan areas.[1] The benchmark for an adequate supply of doctors, established by the Australian Workforce Medical Advisory Committee, is 250 per 100,000 of the population.[2] The majority of doctors in regional, rural and remote areas are engaged in primary care (60.2 per cent), and shortages in specialists are even more pronounced.[1] This shortage of doctors is reflected in decreased access to health care. For example, there are 26.4 per cent more general practitioner (GP) consultations per 1,000 persons in capital cities when compared with large country towns.[3] The population per full-time equivalent GP in 1996–97 was 1,034 in capital cities compared to 2,781 in remote areas.[3] Not only does the remote GP provide a service to more people, those people are more widely dispersed. The concentration of population per square kilometre is 331 in capital cities compared with 0.1 in remote areas.

## INCREASING THE RURAL MEDICAL WORKFORCE

It is clear there is a need to increase the number of doctors in regional, rural and remote Australia. To achieve this, there are three options available:

- to attract doctors working in oversupplied areas to relocate;
- to increase the retention of doctors currently in rural practice;
- to train doctors that are more likely to consider a rural career.

The first two options are difficult to achieve in the short term.

The reasons that attract doctors to a rural career include:

- a perceived improved quality of life
- family ties
- more 'job satisfaction'
- availability of work.[4]

The reasons that cause doctors to leave rural practice include:

- overwork and burnout
- deskilling
- a partner desiring to return to the city
- the education of children.[5,6]

Hays et al. advocate several strategies to improve retention of medical practitioners in rural areas including:

- locum relief
- flexible delivery of continuing medical education
- better-managed skills training
- improved housing quality
- better educational support for families.[5]

If these strategies are to be successful, then strategic planning is necessary.

The most sustainable increase in rural medical workforce will result from training doctors who are more likely to consider a rural career. The two key factors in achieving this goal are:

- increasing the number of medical students from a rural background or with significant rural connections (students from rural backgrounds being 2.5 times more likely to enter a rural career);[4]
- increasing the exposure of students to rural medicine during their undergraduate years.[4]

However, a rural student is less than half as likely to attain the required marks to enter medical school compared with an urban student.[7] In addition, a rural student with the required marks is less likely to apply to do medicine.[7] The lack of peer pressure, lower expectations, less experienced teachers, and a relative lack of resources in

schools, may all be factors that play a part. This means that, proportional to the population, fewer students from a rural background gain entry to medicine. Of the first year cohort of medical students in 1999, only 11.4 per cent came from a rural or remote area.[1]

The Australian Medical Workforce Advisory Committee has recommended several measures to remedy this situation, including:

- the use of affirmative entry to medical school for rural high school students;
- the appointment of rural doctors to academic positions;
- exposure to rural health issues in the curriculum.[2]

Several universities in Australia are in the process of adopting these measures. For example, the University of Newcastle has had an affirmative action scheme for Aboriginal students in place for over 15 years. The University of New South Wales has had a Rural Student Entry Scheme operating since 1996, which has resulted in 21 per cent of the medical student intake in 2001 coming from a rural background.

It is important to increase a student's exposure to rural experiences.[4] Australian data show that if a medical student is exposed to a rural experience in their final year they are three times more likely to chose a rural career.[4] Data from overseas reflects similar findings. In 1971 the University of Washington decentralised its medical teaching to the rural states of Alaska, Montana, and Idaho. This redistribution of medical education throughout the region supports the hypothesis that simply increasing medical student numbers in urban Washington is not sufficient to address the maldistribution of doctors in rural areas.[8] It is necessary to train students in the rural setting; and to develop a partnership between rural areas and urban centres of medical training. The redistribution of medical education in Washington, along with other examples of similar redistributions in New Mexico and Canada, have shown that students who spend a substantial part of their undergraduate experience in a rural setting are much more likely to chose a rural career.[9]

## THE ESTABLISHMENT OF THE GREATER MURRAY CLINICAL SCHOOL

The Greater Murray Clinical School is an initiative of the Commonwealth Department of Education, Training and Youth Affairs; the University of New South Wales; and the Greater Murray Area Health Service. The School, which is based in south west NSW and north east Victoria, has campuses in Wagga Wagga, Albury, Wodonga and Griffith. The aim of the School is to provide comprehensive educational opportunities for students in a rural setting, with the objective of assisting in the recruitment and retention of doctors to these areas. The School was launched in February 2000 and has developed rapidly. Recently, the School has expanded to include the Mid North Coast and parts of the Illawarra, and it is now part of a network of new rural clinical schools and university departments of rural health in other parts of Australia.

The characteristics that determine the success of rural clinical schools are:

- their entire budget is spent in the rural and remote areas;
- the curriculum is deliverable by rural practitioners without excessive demands on their time;
- the curriculum should address both rural and indigenous issues;
- substantial numbers of students (at least 25 per cent) should spend a substantial part of their clinical years in the rural setting (at least 50 per cent).

It costs more to train a rural medical student than their urban counterpart. Rural area health services have not been funded for medical education. Libraries, information technology and educational infrastructure need to be upgraded, or in some cases created. One of the key technologies that need to be established is videoconferencing. This allows interactive educational sessions with students on placement in remote towns. Using a combination of videoconferencing and Web-based resources allows almost the entire clinical curriculum to be delivered independent of other resources present in the remote centre.

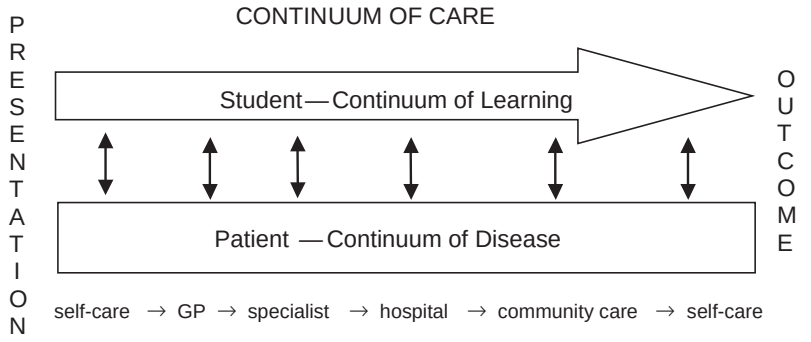
A major challenge in this regard is that videoconferencing costs are charged by distance. Telstra, for example, charges a call made between two centres 50 km apart at rates substantially more than those charged for calls made within a capital city (<25 km). This distance-based pricing policy limits access to videoconferencing technology in rural areas and creates a disadvantage for rural communities.

## THE COMMUNITY-BASED MEDICAL CURRICULUM

Choice of curriculum is paramount. It is vital that the medical curriculum is deliverable in the rural setting and is not onerous for local doctors to teach. The patient-centred, longitudinal model developed by the Greater Murray Clinical School is a community-based model where student learning is directed by the patients they see. The students are introduced to the patient by the general practitioner, emergency medicine physician or other specialist. The student then follows the patient throughout their illness. Wherever the patient interacts with the health care system, the student attends. At each contact the health care professional (doctor, nurse or allied health professional) is encouraged to identify learning

**FIGURE 1**

**A COMMUNITY-BASED MODEL OF PATIENT-CENTRED MEDICAL EDUCATION**




issues for the student relevant to their patient. No expectation exists to give a didactic dissertation on the disease. The student's responsibility is to follow up these learning issues in private study using the Web and other resources provided by the School. A substantial period of time is spent in indigenous health facilities. Apart from providing an anchor for knowledge, a relationship develops between student and patient that fosters a deeper understanding of emotional, psychological, social, community and economic effects of the disease.

A key component of the model is the so called 'integration tutorial' which is held once a week in which a tutor reviews the student experiences. The model avoids making demands on local practitioners by utilising the 'fly on the wall' approach where students sit in with doctors in their surgery. Students are assessed in the same way as their urban colleagues.

The approach at the University of New South Wales is that at least a quarter of the intake will spend half of their clinical years (the final three years) training in a rural setting. Students are given an opportunity to spend longer periods if they so desire. The idea is that students immerse themselves in the rural environment and hence make connections with the community and the setting.

## CONCLUSION

Rural medical education is in its infancy, and the first measures of success in terms of recruiting doctors into rural careers will not be known for 5–10 years. However, the presence of the Greater Murray Clinical School has attracted several practitioners to rural areas, and the School runs a large research stream and facilitates a comprehensive program of continuing medical education. The benefits of providing a diverse medical education in a rural setting will certainly assist in the recruitment and retention of a rural medical workforce.

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# NSW LEAD MANAGEMENT PROGRAM IN BROKEN HILL

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This paper describes the development of the NSW Lead Management Program in Broken Hill, which is a joint project of the Far West Area Health Service and the NSW Environment Protection Authority. The program illustrates the successful application of public health principles to deal with an environmental health problem in a rural setting.

## BACKGROUND

Broken Hill is a mining town located in the semi-arid region of western NSW. It is the site of one of the world's richest deposits of silver, lead, and zinc, where mining activities began in 1883 and continue to the present day.[1] In the early days, lead poisoning was a cause for concern, which was viewed primarily as an occupational health hazard.[2] The recommissioning of open-pit mining, and a drought in the late 1980s, saw the rise in veterinary notifications of lead poisoning in dogs; and a survey conducted among pre-school aged children in 1991 showed that one quarter of children had blood lead levels above the then revised National Health and Medical Research Council level for concern (25mg/dL).[3,4]

It was not coincidental that a re-evaluation of the lead as a public health issue occurred at that time. The emerging evidence on the health effects of lead—particularly in pre-school aged children—and the downward revision of NHMRC's level of concern, motivated the newly revitalised public health workforce in NSW to take a fresh look at the problem.[5]

In early 1992, the NSW Department of Health funded an investigation into the lead issue in Broken Hill. The investigation revealed that a lack of a single source of lead, and its widespread distribution in and around the city, meant that cleaning up the whole town and preventing the further release of lead into the environment was not feasible as a primary strategy. The situation required a more targeted approach, which dealt with specific sources that could be linked to children with a high blood lead level; both reducing the amount of hazard at the probable source, and modifying the rate or spatial distribution of release of lead that remained.

This targeted approach was supported by a range of educational, behavioural and environmental interventions aimed at children, which were specifically reinforced for young children with high blood lead levels. These interventions were designed to prevent the likelihood of lead already available in the environment being taken up by children. Medical intervention using chelation therapy was, at the time, the initial treatment of choice for the few children who had very high blood lead levels.

## LEAD MANAGEMENT PROGRAM

In 1994 the management strategy was formally launched, supported by a joint investment between the NSW Department of Health and the NSW Environmental Protection Authority over seven years until mid 2001. The lead management program aims to reduce blood lead levels in Broken Hill children to that observed in non-contaminated areas elsewhere in Australia.

The lead management program incorporates five main activities:

- monitoring and case-finding
- case management
- public education and health promotion
- remediation of public land
- evaluation, research and development.

Governance is provided through a Working Group set up with representation from:

- Far West Area Health Service
- NSW Environment Protection Authority
- Australian Inland Energy and Water
- Pasmino Mining
- Construction, Forestry, Mining and Energy Union
- community-based early childhood services
- the local member of the NSW Legislative Assembly
- Broken Hill City Council mayor and councillors
- NSW Department of Mineral Resources
- general practice in the local area.

Monitoring and case-finding activities underpin the entire strategy. Since 1994 a voluntary screening service has been offered to families with young children on a weekly basis for blood testing, to answer questions, and to give information and advice about safe lead practices and behaviours.

Initially young children identified with blood lead levels ≥25mg/dL were referred for more intensive management to effect a rapid reduction of their lead intake and blood lead levels. Children with less elevated blood lead levels (15–24 mg/dL), were offered intensive case management.

Intensive case management included a home visit by the 'lead' nurses to:

- identify potential sources and exposure pathways for an affected child: for example, environmental sampling in and around the home; behavioural assessment concerning lead safe behaviours;
- provide advice and support for parents to take action to reduce their children's exposure to, and intake of, lead.

For children with substantially elevated blood lead levels, parental action was supported by a systematic removal of sources of lead in the home environment. Home remediation included:

- removing ceiling dust;
- removing or covering contaminated soil around the home;
- stabilising flaking lead-based paints;
- cleaning or replacing carpets and cleaning soft furnishings;
- addressing structural problems in the home that did not adequately prevent dust ingress (that is, in walls, ceilings, floors).

Home remediation was subject to scientific evaluation to determine how effective it was in reducing blood lead levels.

With regard to public education and health promotion, the Broken Hill community was kept informed and involved in the lead issue through regular media reports; and through other promotional activities in preschools and to relevant groups such as new parents, pregnant women, and health professionals. Other programs aimed at modifying behaviour included curriculum-based lead education in schools, and training of local government organisations and private sector enterprises: that is, council, nurseries, hardware stores, and tradesmen. The purpose of these activities was to raise community awareness of the lead issue, to promote and encourage use of available lead management services, and to provide information and advice to parents about safe lead behaviours. Public education and health promotion activities supported the importance of increasing community understanding, and thereby enhancing commitment and responsibility to managing the health risk of lead across all sectors.

An assessment of public lands was organised to map lead concentrations and soil stability at individual sites, which were then categorised according to the perceived risk to adjacent residential areas by dispersion or direct contact. This component of the program is viewed as an adjunct to the effective handling of pre-existing contamination in and around homes and the adoption of safe lead behaviours within the community.

A population-based register of preschool children presenting for blood lead screening has been in operation since 1991 and contains information on birth cohorts from 1987. Data from that register forms part of the evaluation strategy for the lead management program. Research is used to report on the development and outcomes of the lead remediation program, to develop an understanding of the sources and pathways of lead exposure in Broken Hill, to evaluate specific components of the lead program, and to respond to emerging issues.

Following the success of the initial activity with children with established lead problems, the program is now moving to establish early intervention strategies and—with a reduced need for, and emphasis on, home remediation—to increase its investment in community-wide work. For example, in 1996 the monitoring program was extended to include the measurement of lead levels in pregnant women and neonates (via cord blood) in order to identify families where early intervention was indicated before or around the birth of the child. It was argued that modifying environmental hazards in and around the home, and adopting more appropriate safe lead behaviours from birth, may reduce a baby's overall lead level and also obviate the need for later more expensive home remediation.

## THE FUTURE

The joint investment by the NSW Department of Health and the NSW Environment Protection Authority over the past 10 years has been associated with a significant reduction in blood lead levels; and follows in the footsteps of other successful rural-based programs such as Port Pirie in South Australia.[6] While the evaluation of data indicates that real progress has been made in dealing with the lead problem in Broken Hill, continued public health action is required to bring the current proportion (16 per cent) of young children with elevated blood lead levels (15 mg/dL and greater) down to the NHMRC target of five per cent.[4] Further, the nature of the physical environment in Broken Hill means that the dispersion and redistribution of lead dust will continue to pose a potential hazard to young children for the foreseeable future. Thus, the public health imperative will demand an ongoing, organised response to the problem of lead in the city while significant numbers of young children live there.

## CONCLUSION

The basic requirements for the future management of lead in Broken Hill will draw on public health principles, with an emphasis on hazard reduction and the prevention of ill-health, and its implementation will be achieved through cooperative action across sectors and with community participation.

## ACKNOWLEDGMENTS

We wish to acknowledge the efforts of Dr Mark Jacobs and Dr John Hall, and Mr Andrew Phillips, who initiated

this program in Broken Hill between 1990–1994; the staff of the Broken Hill Environmental Lead Centre; and the Working Party. We are grateful to Dr Stephen Corbett, Environmental Health Branch, for his continuing support and assistance.

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# NSW HEALTH BECOMES A REGISTERED TRAINING ORGANISATION

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NSW Health has a strong commitment to providing learning and development services to the health workforce in NSW, including the public health workforce. In March 2000, the NSW Vocational Education and Training Accreditation Board (VETAB) issued NSW Health with a Certificate of Registration as a Registered Training Organisation (RTO) for three years. This registration was the culmination of a long process of cooperation and collaboration between the NSW Department of Health, the Area Health Services, and the New Children's Hospital. This article describes the process by which NSW Health became an RTO, and its method of delivering vocational learning and development services.

## BACKGROUND

Before NSW Health achieved RTO status, vocational training was conceived, designed and delivered independently by the Department of Health, individual Area Health Services, and the New Children's Hospital. (Although a part of NSW Health, the Ambulance Service of NSW remains a separately registered RTO.) Some of these organisations were registered to provide training, but few courses were accredited. Throughout the 1990s there was a gradual trend towards the delivery of accredited vocational training, which encompassed the notions of recognition of prior learning, competencies, workplace assessment, and articulation to higher qualifications.

The suggestion that NSW Health should become an RTO was first canvassed in the mid-1990s. The challenge was to negotiate a successful collaboration among the autonomous health organisations, which was necessary for the accreditation process. While these organisations were all part of NSW Health, there was no common charter, and many were already registered with VETAB to provide accredited training. While the impetus for a single accreditation for the whole of NSW Health came initially from the Area Health Services and the New Children's Hospital, the success of the accreditation process was very much due to the coordination and support provided by the NSW Department of Health through its then Human Resources Policy and Strategy Unit.

## THE ACCREDITATION PROCESS

Under section 22C of the Vocational Education and Training Accreditation Act 1990, VETAB registers organisations to:

- deliver vocational education and training (VET) courses
- provide assessment services
- issue qualifications.

To achieve and maintain RTO status, NSW Health must demonstrate compliance with the quality assurance and accreditation standards of national guidelines known as the Australian Recognition Framework (ARF). The Director-General and the Chief Executive Officers of the Area Health Services formally committed NSW Health to these standards in June 1999. The 12 ARF standards are listed in Table 1. The first seven standards (C1–C7) ensure that an RTO complies with quality, legislative and ethical requirements; while the remaining five standards (TD1–TD5) ensure that an RTO has the ability to deliver on-site training and assessment to the standards.

**TABLE 1**

**NATIONAL AUSTRALIAN RECOGNITION FRAMEWORK (ARF) STANDARDS REQUIRED FOR RTO ACCREDITATION**

| Code | Standard |
|---|---|
| C1 | National principles |
| C2 | Legislative requirements |
| C3 | Access and equity |
| C4 | Quality management focus |
| C5 | External review process |
| C6 | Management and administration |
| C7 | Ethical marketing and advertising |
| TD1 | Resources for delivery and assessment |
| TD2 | Identifying learning needs and designing training products |
| TD3 | Assessment |
| TD4 | Client services |
| TD5 | Issuance of qualifications and statements of attainment |

## COMPETENCY-BASED WORKFORCE DEVELOPMENT

The focus of an RTO is vocational education and training (VET); that is, on the learning needs of the workforce, and on what people need to know and do in order to function effectively in their jobs. The NSW Health RTO delivers VET as short courses developed locally to meet specific organisational needs; or, which is becoming increasingly common, as nationally endorsed training packages. All VET focuses on competency-based learning using assessment standards that, in most (but not in all) instances, result in the attainment of nationally recognised and transferable qualifications ranging from short courses, to certificates, to diplomas, and one graduate diploma. The qualifications that the NSW Health RTO is registered to offer are listed in Table 2.

Some of the benefits to NSW Health in maintaining accredited RTO status are:

- VET learning and development can be coordinated effectively across NSW Health;
- workplace performance can be recognised;
- qualifications can be articulated to other higher education programs;
- a concomitant increase in learning options and pathways to completion.

NSW Health offers a suite of VET courses, many of which traditionally had been the domain of the Technical and Further Education sector, in an array of subject areas, such as:

- health promotion
- indigenous health
- community services
- health care support services
- business and office administration
- information technology
- workforce development.

## DIVERSITY, FLEXIBILITY AND PORTABILITY

The NSW Health RTO is unique. It provides a diverse range of methods of delivery and assessment from face-to-face models to flexible delivery. The advantage of this degree of flexibility is that many different learning and development services within NSW Health can tailor an approach to delivery and assessment to meet its particular workforce development needs.

In many instances, a health worker's career can be enhanced by qualifications that combine both vocational and academic components. It is here that the NSW Health RTO has the capacity to enhance the career pathways of health workers by providing them with 'advanced standing' (that is, credits for prior learning) should they wish to enrol in an academic course in the tertiary sector. Because several universities offer NSW Health RTO students variable levels of advanced standing into undergraduate and master's courses, this brings with it real cost savings to students.

## THE DELIVERY OF NON CLINICAL VOCATIONAL HEALTH TRAINING

In the NSW Department of Health *Information Bulletin* (Number 2000/21), dated 11 October 2000, the Director-General outlines the role of the Health Service Learning and Development Centres within each Area Health Service, which are responsible for overseeing the delivery of non-clinical vocational training. In addition to providing an overview of the accreditation process, this information bulletin provides information on the role of Health Learning and Development Managers in each Area, the minimum qualification required of trainers, the method of program delivery and accreditation of new training courses, and guidelines for the issuing and articulation of qualifications.

**Role of Health Learning and Development Managers**

The Health Learning and Development Manager of each Area Health Service, and of the New Children's Hospital, is accountable for ensuring local compliance with the policies and procedures of the Australian Recognition Framework. The NSW Health Learning and Development Managers Forum is responsible for maintaining and reviewing training standards, protocols and procedures. The NSW Health RTO Standards Group, a sub-committee of the Health Learning and Development Managers Forum, is responsible for monitoring the learning and development activities of each Area Health Service, and for reporting on learning and development outcomes to the Forum.

**TABLE 2**

**QUALIFICATIONS THAT NSW HEALTH IS REGISTERED TO DELIVER THROUGH THE DEPARTMENT OF HEALTH, THE AREA HEALTH SERVICES, AND THE NEW CHILDREN'S HOSPITAL ***

**Graduate Diploma**

Applied Epidemiology (7270)

**Diploma**

Business (Administration) (BSA50197)
Community Services (Aged Care Work) (CHC50199)
Community Services (Alcohol & Other Drugs Work) (CHC50299)
Community Services (Mental Health Work-Non Clinical) (CHC50899)
Frontline Management (7042)
Information Technology (Business Analysis) (ICA50399)
Information Technology (Multimedia Integration) (ICA50599)
Information Technology (Network Engineering) (ICA50499)
Information Technology (System Administration) (ICA50199)

**Certificate IV**

Assessment and Workplace Training (B5Z40198)
Business (Administration) (B5A40197)
Community Services (Aged Care Work) (CHC40199)
Community Services (Alcohol & Other Drugs Work) (CHC40299)
Community Services (Mental Health Work - Non Clinical) (CHC40899)
Frontline Management (7041)
Health Promotion (10537NSW)
Hospitality (Food and Beverage Supervision) (THH42397)
Hospitality Operations Food & Beverage (10654N5W)
Information Technology (Client Support) (1CA40199)
Information Technology (Database Administration) (1CA40299)
Information Technology (Network Management) (1CA40399)
Information Technology (Technical Support) (1CA40599)
Management and Team Development (10990N5W)

**Certificate III**

Aboriginal & Torres Strait Islander Health (11790N5W)
Business (Office Administration) (B5A30197)
Care Support Services (Personal Assistant) (Traineeship) (5534)
Care Support Services, Nursing Assistant (5533)
Care Support Services (Nursing Assistant) Recognition Course (10407NSW)
Care Support Services Aged Care Work (15120N5W)
Community Care Ancillary Services (AQF) (4040)
Community Services (Aged Care Work) (CHC30199)

**Certificate III (continued)**

Community Services (Alcohol and Other Drugs) (CHC30299)
Community Services (Mental Health Work - Non Clinical) (CHC30899)
Frontline Management (7040)
Health (Aboriginal Health Worker & Torres Strait Islander Health Worker) (JJOJ8NSW)
Hospitality (Accommodation Services) (THH32897)
Hospitality (Food and Beverage) (THH32797)
Information Technology (General) (1CA30299)
Information Technology (Network Administration) (ICA30399)
Management and Team Development (10991N5W)
Security (Guarding) (PR530198)

**Certificate II**

Business (Office Administration) (B5A20197)
Community Services (Aged Care Work) (CHC20199)
Community Services (Alcohol & Other Drugs Work) (CHC20299)
Health Support Services (6489)
Hospitality (Operations) (THH21897)
Security (Guarding) (PRS20198)

**Certificate I**

Business (Office Skills) (B5A10197)

**Courses**

Aggression Minimisation (10365N5W)
Basic Foot Care for Nurses (12850N5W)
Communication Skills for Safety—A (1732)
Health Promotion (10538N5W)
Hyperbaric Nursing (14977N5W)
Industrial Relations in a Health Care Setting (13959N5W)
Managing Grievance and Discipline Situations (1713)
Managing Farm Safety (10490NSW)
Medical Terminology in a Health Care Setting (5875)
Performance Management (10994N5W)
Principles of EEO (90103N5W)
Occupational Health and Safety for Managers (10993N5W)
Selection Procedures (10992N5W)
Staff Selection Procedures in a Health Care Setting (14186N5W)
Supervision Within a Health Care Setting (6478)
Supervision and Management Within a Health Care Setting (6477)

* The Ambulance Service of NSW is a separately accredited RTO, and as such its accredited learning and development services are not listed here.
This list of qualifications accredited by NSW Health is correct as of October 2000. Many new qualifications have been added since then, and are continually being added.

## PROGRAM DELIVERY AND ACCREDITATION OF NEW TRAINING COURSES

Across NSW Health, Health Service Learning and Development Centres will conduct training courses and assessment processes, and issue certificates up to and including Diploma level, while the NSW Department of Health continues to issue the Graduate Diploma in Applied Epidemiology through the NSW Public Health Officer's Training Program. The accreditation of new courses and re-accreditation of expired courses will be managed by the Health Learning and Development Managers Forum.

All training must feature competency-based learning outcomes and workplace assessment procedures, and be sourced from relevant National Training Packages.

### Qualification of Trainers

As their minimum qualification, trainers responsible for the delivery and assessment of VETAB accredited training programs are required to have a Certificate in Assessment and Workplace Training (Table 2).

### Issue of Qualifications

All certificates issued for course completion, following formal assessment procedures, are issued by the Health Service Learning and Development Manager under delegation from NSW Health. All accredited training programs will be recognised for articulation to TAFE and University programs by the Health Learning and Development Managers Forum.

## FUTURE DIRECTIONS

Ensuring consistency in standards across such a large and geographically diverse RTO remains a challenge. To this end, the Learning and Development Services of different areas periodically undertake peer audit for compliance to the ARF standards outlined in Table 1. A further challenge is forging a strategic vision for learning across NSW Health. In this regard, NSW Health must provide its staff with wider choices of VET qualifications, and greater access to a variety of learning pathways, to improve the workforce development necessary to drive changes in the way health care is delivered to the people of NSW. The aim is to provide the health workforce with choices from a suite of recognised qualifications delivered through a diversity of pathways and approaches to on-the-job learning, with in-built articulation to higher level qualifications. As a training provider, NSW Health has come a long way in the last decade.

## TINNITUS AWARENESS KIT FOR HEALTH PROFESSIONALS

Tinnitus is a condition with many causes, which is experienced as noises such as a ringing, hissing or booming in one or both ears. The condition has physical, psychological and social effects that can become distressing and severely disrupt the lives and personalities of tinnitus sufferers. In Australia, it is estimated that 11 per cent of the population has tinnitus,[1] while a total of 18 per cent of the population has had tinnitus at some stage.[2] However, only about 15 per cent of tinnitus sufferers present for treatment.[3] In the United Kingdom, seven people in every 100 see their general practitioner with tinnitus as the primary cause of their visit.[1]

Tinnitus is now becoming a specialised field in medicine, audiology,[4] and psychology. A Tinnitus Awareness Kit has been produced by the Australian Tinnitus Association (NSW), to assist health professionals to better understand tinnitus; become aware of the different methods of relieving and coping with tinnitus; and learn about treatments that are available. The principle components of the Kit are:

- six information leaflets for the health professional;
- a tinnitus information handout for patients, with details of how to obtain further copies if required;
- a three-minute compact disc that plays 17 of the most common tinnitus noises;
- information on how to order books, videos, and tapes about tinnitus.

To obtain copies of the Tinnitus Awareness Kit please contact the Australian Tinnitus Association (NSW) by mail: PO Box 660, Woollahra, NSW, 1350; by telephone: (02) 8382 3331 or 8382 3338; by facsimile: (02) 8382 3333; or by email: **info@tinnitus.asn.au**. Further information about tinnitus, self-help groups, useful links, an awareness kit for teachers, an interactive site for kids, and the work of the Australian Tinnitus Association (NSW), can be obtained from the ATA Web site at **www.tinnitus.asn.au**.


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FACT*SHEET*

# GIARDIASIS

## WHAT IS GIARDIASIS?

- Giardiasis is an infection mainly of the small intestine caused by the parasite *Giardia lamblia*. Giardiasis has been reported in humans and in a variety of animals.
- Giardiasis can affect anyone; however, it is more common in infants, young children and adults aged from 20–40 years.
- Giardiasis is a notifiable condition in NSW. Laboratories confirming diagnosis must notify public health units, who take action to prevent further spread of infection. All notifications are confidential.

## HOW IS IT SPREAD?

- The giardia organism is present in the faeces of infected humans and animals. Infection occurs when a person comes into contact with faecal matter and ingests the parasite.
- Transmission is most likely to occur if hands are not washed after going to the toilet or after changing nappies; by drinking contaminated water; by handling infected animals; and, in rare cases, through eating contaminated food.
- Transmission most often occurs through person-to-person contact, in settings such as households and child care centres.
- Transmission can occur in sexual practices that include contact with faecal matter.
- A person is most infectious while they are ill and passing the organism in their stools (which may occur for months).

## WHAT ARE THE SYMPTOMS?

- The most common symptoms of giardiasis are diarrhoea, stomach cramps, bloating, nausea, loose and pale greasy stools, fatigue, and weight loss.
- Some people have no symptoms, however they can still pass the disease to others.
- The first signs of the illness will appear between 3–25 days (average 7–10 days) after a person becomes infected.
- Most people who are otherwise healthy recover in 4–6 weeks. Occasionally, symptoms last for longer periods.

## HOW IS IT DIAGNOSED AND WHAT IS THE TREATMENT?

- Giardiasis can only be accurately diagnosed through an examination of the faeces, by a test that is ordered by a doctor. See your doctor if you have symptoms.
- It is important for people with diarrhoea to drink plenty of fluids to avoid dehydration.
- Prescription drugs, including metronidazole and tinidazole, are available to treat giardiasis.

## THOSE MOST AT RISK

Those most at risk of contracting giardiasis are:

- people in contact with infected children, such as other children, parents, and child care workers;
- people who drink contaminated water, such as hikers and campers.

## HOW IS IT PREVENTED?

To avoid catching giardiasis:

- always wash hands thoroughly with soap and running water after: using the toilet, handling animals, changing nappies, other exposure to faecal matter, working in the garden; and before preparing food and drinks;
- do not drink untreated water from rivers, streams, lakes, dams and tanks. Boiling water from these sources for one minute will kill giardia and other parasites. Water purification tablets may kill giardia, but may not kill cryptosporidium. Some water filters may also remove these parasites;
- avoid consuming unboiled tap water and uncooked foods when travelling in countries where the water supply may be unsafe.

## TO AVOID SPREADING GIARDIASIS:

- Keep small children who have diarrhoea home from preschool, child care, playgroups, or swimming pools, until their diarrhoea has completely stopped.

If you have giardiasis, while you are infectious:

- do not prepare food or drink for others;
- do not use swimming pools;
- do not share linen, towels and eating utensils with others.

*For further information please contact your local Public Health Unit, Community Health Centre, or doctor.*

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EPIREVIEW

# NOTIFICATIONS OF Q FEVER IN NEW SOUTH WALES, 1991–2000

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Zoonoses are diseases in humans that are acquired from an animal source. Although there are more than 60 recognised zoonoses in Australia,[1] brucellosis, leptospirosis and Q fever present the greatest potential for epidemics and pose the greatest occupational risk. These diseases are notifiable in New South Wales. Q fever is the most frequently-notified zoonotic infection in Australia, and about 500 cases are reported nationally every year.[2]

## Q FEVER

Q fever is a rickettsial illness caused by *Coxiella burnetii*. Sheep, cattle, goats, cats, dogs, some wild animals (such as bandicoots and many species of feral rodents), birds, and ticks are natural reservoirs for the virus. In humans, the illness has an incubation period of two to three weeks, and the onset of illness is characterised by fever, headache, weakness, malaise and severe sweats.[3]

Outbreaks of Q fever have occurred in occupational groups who work with animals that are reservoirs for the disease, including stockyard workers, meat packing and rendering workers, abattoir and dairy workers, and medical and veterinary research workers. Transmission is usually through airborne dissemination of the organism in dust particles, but can also occur through direct contact with contaminated material, or the ingestion of contaminated placentas or milk. Ticks may also be involved in the transmission of the organism. Cases have occurred in individuals who have had no direct contact with contaminated animals or their bodily fluids, but who have been downwind from sources of contamination.[3–7]

## METHODS

Under the NSW Public Health Act 1991, all laboratories must notify presumptive and confirmed cases of Q fever to their local public health units (PHUs). PHU staff record the details on a confidential statewide database, the Notifiable Disease Database (NDD).

Data for this review were extracted from NDD for the period January 1991 to December 2000. We analysed the characteristics of notified cases for age, sex, area health service of residence, occupation, and date of onset. Annual age-specific notification rates were calculated using the mid-year estimated population for NSW from the Australian Bureau of Statistics for each year.

## RESULTS

During the 10 year period 1991–2000, a total of 2351 notifications of Q fever were reported in NSW, with an average annual notification rate of 3.8 cases per 100,000 population. The annual rate varied from a peak of 6.7 per 100,000 population in 1996 to 1.8 per 100,000 population in 2000 (Table 1, Figure 1).

Males accounted for 84.1 per cent of all the notifications, and the male to female ratio was 5.7:1 (Table 1). The highest age-specific notification rates were 12.1 per 100,000 for males in the 20–24 year age group, and 2.2 per 100,000 for females the 35–39 age group (Figure 2).

A total of 34 cases (1.5 per cent) occurred among children under five years of age, with an age-specific notification rate of 1.5 per 100,000 population. Most of these cases occurred in children aged one year or less (32 cases) with a male to female ratio of 4.6:1. All 32 cases were reported from one of nine rural area health services (except for one infant whose residential details were missing).

**TABLE 1**

**NOTIFICATIONS OF Q FEVER BY SEX AND AREA HEALTH SERVICES, NSW, 1991–2000**

| Area Health Service | MALES | FEMALES | TOTAL* |
|---|---|---|---|
| Central Sydney | 13 | 2 | 15 |
| Northern Sydney | 7 | 1 | 8 |
| Western Sydney | 22 | 5 | 27 |
| Wentworth AHS | 9 | 1 | 10 |
| South Western Sydney | 9 | 6 | 15 |
| Central Coast | 13 | 0 | 13 |
| Hunter | 109 | 19 | 129 |
| Illawarra | 19 | 0 | 21 |
| South Eastern Sydney | 13 | 2 | 16 |
| Northern Rivers | 228 | 45 | 273 |
| Mid North Coast | 265 | 66 | 348 |
| New England | 419 | 77 | 496 |
| Macquarie | 366 | 47 | 414 |
| Mid Western | 119 | 11 | 131 |
| Far West | 145 | 28 | 174 |
| Greater Murray | 70 | 7 | 79 |
| Southern | 102 | 24 | 126 |
| Not Stated | 19 | 1 | 20 |
| NSW | 1947 | 342 | 2315 |

*Includes cases whose gender was unknown.

**FIGURE 1**

**NOTIFICATION RATES OF Q FEVER BY YEAR AND MONTH, NSW, 1991–2000**

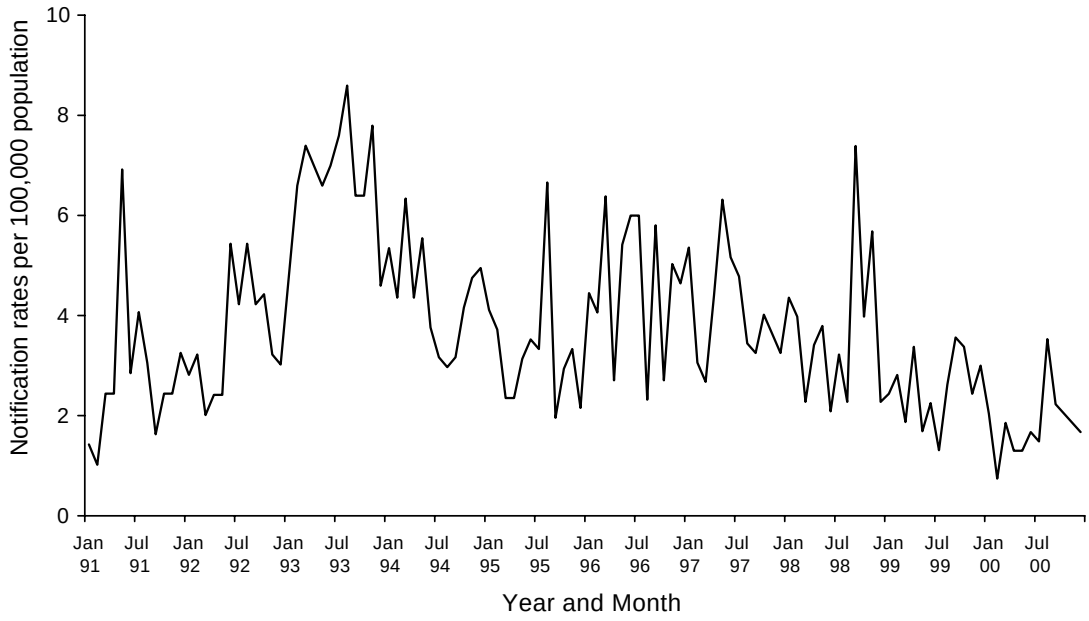



**FIGURE 2**

**NOTIFICATION RATES OF Q FEVER BY AGE GROUPS, NSW, 1991–2000**

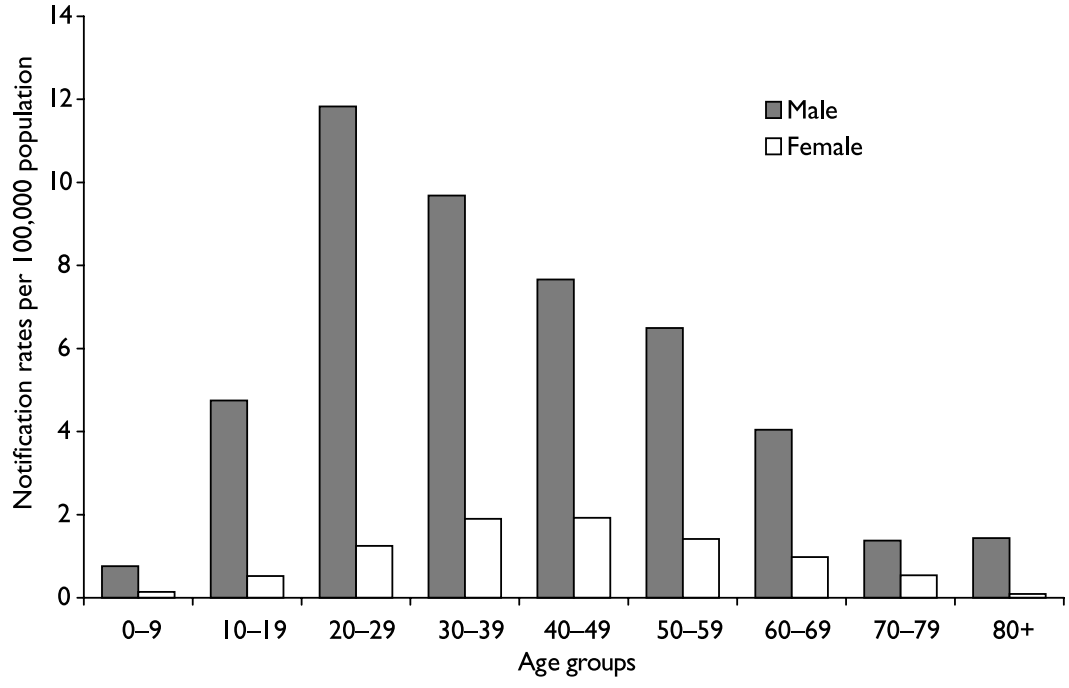
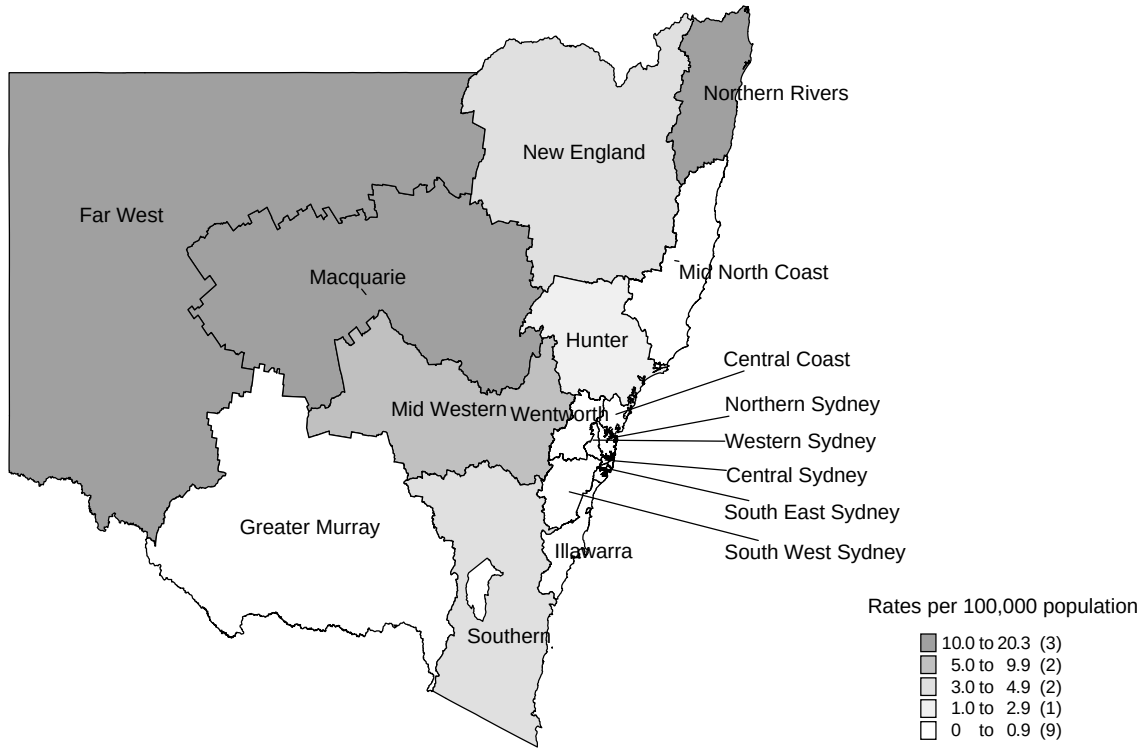


**FIGURE 3**

**NOTIFICATION RATES OF Q FEVER BY AREA HEALTH SERVICES, NSW, 1991–2000**




New England, Macquarie and Mid North Coast area health services accounted for 21.4 per cent, 17.9 per cent and 15.0 per cent of all the cases respectively. The highest notification rates of disease by area health service were Macquarie (40.3 per 100,000), Far West (34.5 per 100,000) and New England (27.5 per 100,000) (Figure 3, Table 1).

Occupational information was provided for 1526 (66 per cent) notifications. Among these, the most frequently reported occupations were animal-related occupations such as abattoir or meat workers (51.4 per cent); and agriculture related occupations, such as farmers, shearers and dairy farmers (29 per cent). Notifications among abattoir and other animal-related workers have decreased significantly from a peak of 123 cases (30.4 per cent of the total annual notifications) in 1993 to 13 cases (13.5 per cent) in 2000. In contrast, notifications for farmers and other agricultural-related occupations remained steady from 25 cases (7.5 per cent) in 1993 to 26 cases (27.1 per cent) in 2000.

## DISCUSSION

Like other zoonoses, Q fever can produce non-specific clinical signs and symptoms. Therefore, a definitive diagnosis depends on appropriate laboratory investigation. It is estimated that only about 50 per cent of cases of Q fever were diagnosed by health professionals, so the true figure of the disease is likely to be under-reported.[8–9]

Q fever notifications reached their lowest level in 2000, with a rate of 1.8 per 100,000 population. Q fever has a strong association with particular occupational groups such as abattoir workers. Immunisation against Q fever has been available in Australia since 1989, and provides an effective prevention for high risk occupations. Notifications have particularly decreased among abattoir workers, which may be due to the introduction of effective immunisation. In 2000, the Commonwealth Minister for Health and Aged Care has announced a National Q Fever Management Program to be conducted over three years. The Program will commence in NSW in 2001 and will provide immunisation for abattoir workers, those closely associated with the meat processing industry, and shearers.

## CONCLUSION

Surveillance of Q fever is vital to help monitor its incidence and the effectiveness of prevention programs such as immunisation. Public health units are encouraged

to collect detailed case risk data (most importantly, occupation). Changes in risk factors over time can then be evaluated to ensure immunisation is targeted at those most at risk of the disease.

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# COMMUNICABLE DISEASES, NSW: JUNE 2001

### TRENDS

Analysis of notifications of persons with communicable diseases through to April 2001 (Table 2, Figure 1) indicates that both **arboviral** and **salmonella** infections began their expected declines with the onset of cooler weather. The notable exception to this trend was the Hunter Area Health Service, which experienced an increase in Ross River virus infection notifications in April. Notifications of **pertussis** also declined markedly to baseline levels from the three-year peak in mid-2000. Conversely, notifications of **gonorrhoea** have remained high among men in South Eastern Sydney.

### NSW INFLUENZA SURVEILLANCE

The NSW Influenza Surveillance Program commenced in the first week of May. This enhanced surveillance program runs from May to October each year. Data sources for 2001 include:

- clinical reports of influenza-like illness (ILI) by NSW general practitioners (GPs) from the Australian Sentinel Practice Research Network (ASPRN), as well as three area health services (Southern, Northern Sydney and New England);
- virological and serological reports of influenza, parainfluenza, adenovirus, rhinovirus and respiratory syncytial virus (RSV) by six major public laboratories: South Eastern Area Laboratory (SEALS), Institute of Clinical Pathology and Medical Research (ICPMR), South Western Area Pathology Service, Pacific Laboratory Medicine Services, Hunter Area Pathology Service, and the New Children's Hospital Laboratory;
- the Directed Virological Surveillance (DVS) scheme that involves 32 general practioners—from four metropolitan and 5 rural area health services—who submit samples from patients with ILI for viral testing at SEALS and ICPMR;
- information on international influenza activity, which is regularly updated from the World Health Organization's FluNet.

In the week ending May 4, 2001, four laboratory diagnoses of influenza were reported: two influenza A and two influenza B infections. Sentinel GPs reported some levels of activity of ILI in NSW. In April 2001, little influenza activity had been reported from elsewhere in the Southern Hemisphere.

### ARBOVIRUS ACTIVITY

Data from the NSW Arbovirus Surveillance and Mosquito Monitoring Program indicate that after March Kunjin and Murray Valley encephalitis viruses were no longer active in western NSW (Table 1). The decline in flavivirus activity followed a general drop in mosquito numbers across inland NSW. No acute human cases of either of these infections have been reported in NSW during 2001. Reports of

**TABLE 1**

**RESULTS OF MOSQUITO TRAPPING AND SENTINEL CHICKEN TESTING, NSW, NOVEMBER 2000–APRIL 2001**

| Month | Mosquito traps | Mosquitoes trapped | Viruses detected in mosquitoes | Chicken flocks tested (no. birds) | Chicken flocks with flavivirus seroconversions |
|---|---|---|---|---|---|
| **November** | 48 | 15845 | 0 | 9 (393) | 0 |
| **December** | 125 | 73021 | 6 Sindbis | 9 (489) | 0 |
| **January** | 162 | 28963 | 13 Sindbis<br>1 Ross River | 10 (189) | 2 KUN (2 flocks)<br>4 MVE (3 flocks)<br>3 both (2 flocks) |
| **February** | 173 | 58916 | 5 Sindbis<br>4 Ross river<br>2 Kunjin | 10 (405) | 7 KUN (4 flocks)<br>1 MVE (1 flock)<br>1 both (1 flock) |
| **March** | 160 | 24860 | 1 Kokobera | 10 (672) | 24 KUN (8 flocks)<br>2 MVE (1 flock)<br>1 both (1 flock) |
| **April** | 77 | 12512 | 0 * | 12 (339) | 0 |

* There was one detection of Ross River virus in mosquitoes collected from Homebush Bay, although this site is not part of the NSW Arbovirus Surveillance Program.

human infections with Ross River virus were most common in the northern coastal areas and south west of the state (Table 1).

For complete surveillance results, consult the NSW Arbovirus Surveillance Web site at: **www.arbovirus.health.nsw.gov.au**.

## THE NATIONAL NOTIFIABLE DISEASES SURVEILLANCE SYSTEM

The National Notifiable Diseases Surveillance System (NNDSS) was established in 1990 under the auspices of the Communicable Diseases Network Australia New Zealand (CDNANZ) now called the Communicable Diseases Network Australia (CDNA). The system coordinates the national surveillance of more than 60 communicable diseases or disease groups endorsed by the National Public Health Partnership. Under this scheme, notifications are made to the health authority of each state or territory under the provisions of their public health legislation. Computerised, de-identified unit records of notifications are supplied to the Department of Health and Aged Care for collation, analysis and publication in *Communicable Diseases Intelligence* (*CDI*).

NNDSS aims to provide timely information about the incidence of communicable diseases in Australia to inform and assist those with responsibility for communicable disease control in a wide variety of settings. From 2001 onwards, the NNDSS will be supplemented by enhanced datasets on communicable diseases of national priority.

Reports on NNDSS data are published in *CDI*. *CDI* is a joint publication of the Communicable Diseases and Environmental Health Branch of the Commonwealth Department of Health and Aged Care, and the Communicable Diseases Network Australia. It is published quarterly. An electronic version of *CDI* is available in PDF (Acrobat) and HTML formats.

NNDSS data can be accessed on the Internet at: **www.health.gov.au/pubhlth/cdi/nndss/nndss2.htm**.

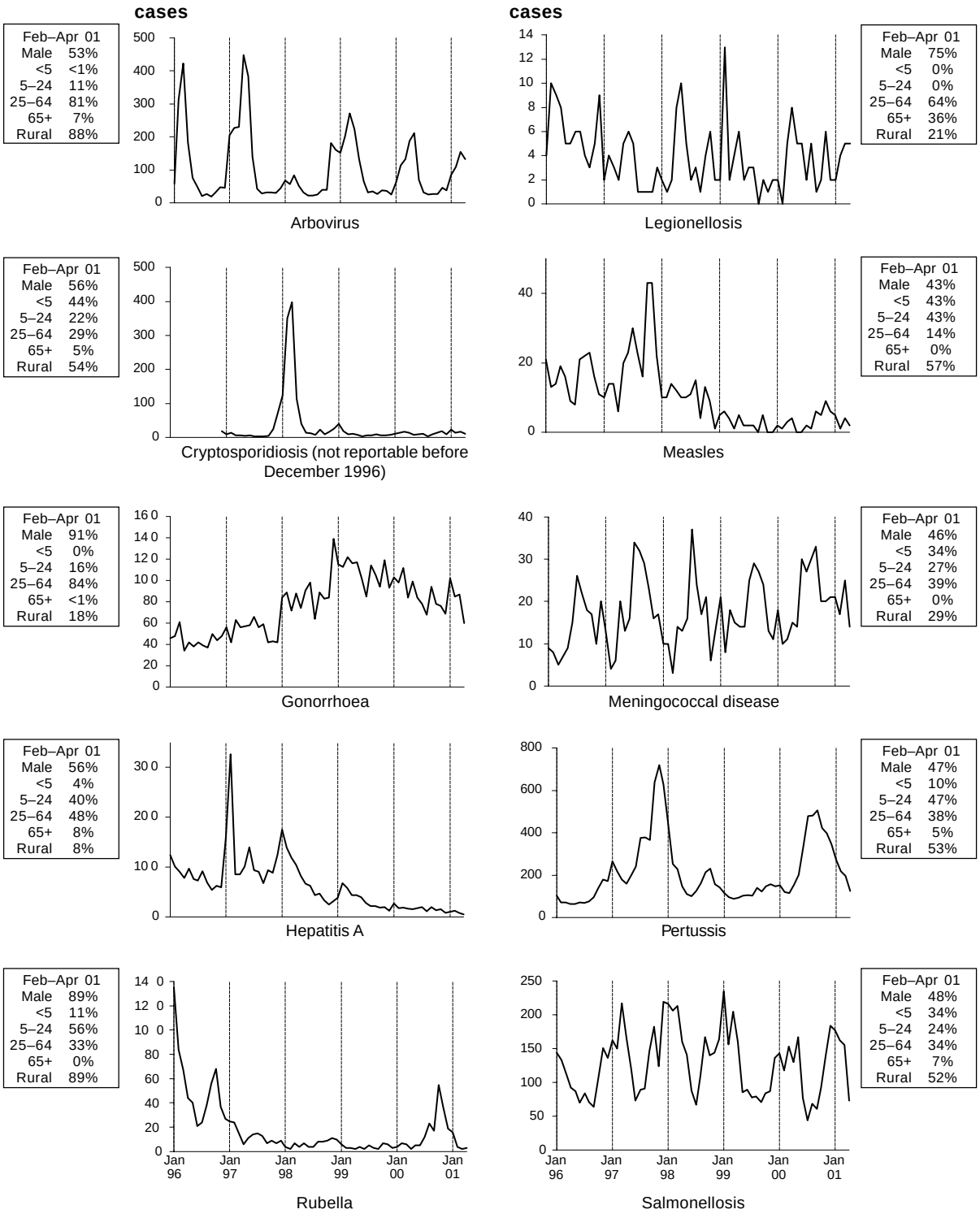
*CDI* can be accessed on the Internet at: **www.health.gov.au/pubhlth/cdi/cdihtml.htm**.

**FIGURE 1**

**REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JANUARY 1996 TO APRIL 2001, 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.

| 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 2 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN APRIL 2001 BY AREA HEALTH SERVICES

| Condition | Area Health Service (2001) CSA | NSA | WSA | WEN | SWS | CCA | HUN | ILL | SES | NRA | MNC | NEA | MAC | MWA | FWA | GMA | SA | CHS | Total for Apr† | Total To date† |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Blood-borne and sexually transmitted** | | | | | | | | | | | | | | | | | | | | |
| AIDS | 1 | - | - | - | - | - | 1 | - | 3 | - | - | - | - | - | - | - | - | - | 5 | 48 |
| HIV infection* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 33 |
| Hepatitis B - acute viral* | 2 | - | - | - | - | - | - | - | 3 | - | - | - | - | - | - | - | - | - | 5 | 31 |
| Hepatitis B - other* | 62 | 64 | 72 | 8 | 69 | 3 | 4 | 5 | 124 | - | 2 | 1 | - | 1 | 1 | 1 | 1 | 1 | 420 | 1,327 |
| Hepatitis C - acute viral* | 9 | - | 2 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 12 | 44 |
| Hepatitis C - other* | 84 | 43 | 13 | 44 | 78 | 37 | 45 | 15 | 240 | 21 | 11 | 14 | 1 | 5 | 5 | 8 | 10 | 24 | 701 | 2,753 |
| Hepatitis D - unspecified* | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 2 | 6 |
| Hepatitis, acute viral (not otherwise specified) | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chancroid* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Chlamydia (genital)* | 46 | 54 | 43 | 20 | 11 | 10 | 28 | 13 | 95 | 16 | 6 | 10 | 12 | 4 | 4 | 16 | 4 | - | 395 | 1,340 |
| Gonorrhoea* | - | 5 | 8 | 6 | 10 | 1 | 2 | - | 56 | 1 | - | 2 | 3 | - | 1 | - | 1 | - | 98 | 354 |
| Syphilis | 15 | 2 | 8 | 4 | 8 | 2 | 0 | 0 | 12 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 56 | 198 |
| **Vector-borne** | | | | | | | | | | | | | | | | | | | | |
| Arboviral infection (BFV)* | - | - | - | - | - | - | 2 | 4 | - | 8 | 7 | 1 | 1 | - | 1 | - | 8 | - | 32 | 96 |
| Arboviral infection (RRV)* | 1 | 5 | 8 | 22 | - | 9 | 27 | 8 | 2 | 17 | 15 | 7 | 2 | 5 | 3 | 10 | 5 | - | 146 | 361 |
| Arboviral infection (Other)* | 1 | - | - | - | - | 1 | - | - | 2 | - | - | - | - | - | - | - | 1 | - | 5 | 11 |
| Malaria* | - | 3 | 2 | - | 1 | - | - | - | 3 | 1 | - | 4 | - | - | - | - | - | - | 16 | 58 |
| **Zoonoses** | | | | | | | | | | | | | | | | | | | | |
| Anthrax | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Brucellosis* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Leptospirosis* | - | - | - | - | - | - | 1 | - | 2 | 1 | - | 1 | - | - | - | - | - | - | 5 | 24 |
| Lyssavirus | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Psittacosis | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 | 9 |
| Q fever* | - | - | - | - | - | - | 1 | - | - | 1 | 1 | 2 | 2 | - | 1 | - | - | - | 8 | 43 |
| **Respiratory and other** | | | | | | | | | | | | | | | | | | | | |
| Blood lead level* | - | 1 | - | 1 | - | - | 12 | - | 4 | - | 2 | - | 3 | - | 5 | - | 1 | - | 29 | 176 |
| Influenza | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 6 |
| Invasive Pneumococcal Infection | - | 2 | - | - | - | 5 | 6 | - | 3 | - | - | - | - | - | - | - | - | - | 16 | 38 |
| Legionnaires' Longbeachae* | - | - | 1 | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 2 | 7 |
| Legionnaires' Pneumophila* | - | - | 2 | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 3 | 9 |
| Legionnaires' (Other)* | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | - | - | 1 | 1 |
| Leprosy | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 |
| Meningococcal infection (invasive) | 1 | 3 | 2 | - | - | 1 | - | 2 | 2 | - | - | - | - | - | - | - | 1 | - | 13 | 79 |
| Mycobacterial tuberculosis | 3 | 3 | 2 | 1 | 1 | - | 1 | 1 | 7 | - | 2 | - | - | - | - | - | - | - | 21 | 121 |
| Mycobacteria other than TB | - | 2 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 3 | 19 |
| **Vaccine-preventable** | | | | | | | | | | | | | | | | | | | | |
| Adverse event after immunisation | - | - | 1 | - | - | - | 3 | 1 | 2 | - | 1 | - | - | - | - | - | 2 | - | 10 | 25 |
| H.influenzae b infection (invasive)* | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | - | 1 | 2 |
| Measles | - | 1 | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 2 | 12 |
| Mumps* | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | 2 | 9 |
| Pertussis | 8 | 23 | 29 | 24 | 17 | 9 | 16 | 7 | 23 | 21 | 6 | 2 | 8 | 7 | 2 | 10 | 2 | - | 214 | 1,014 |
| Rubella* | - | - | - | 1 | - | 2 | 1 | - | - | 1 | - | - | - | - | - | - | - | - | 5 | 33 |
| Tetanus | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| **Faecal-oral** | | | | | | | | | | | | | | | | | | | | |
| Botulism | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cholera* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Cryptosporidiosis* | - | - | - | - | - | - | - | - | 9 | 1 | - | - | - | - | - | - | 1 | - | 11 | 65 |
| Giardiasis* | - | 32 | 19 | 13 | 7 | 6 | 14 | 5 | 23 | 5 | 1 | 2 | 1 | 1 | 1 | 3 | 1 | - | 135 | 348 |
| Food borne illness (not otherwise specified) | - | - | - | - | - | - | - | - | - | - | - | - | 1 | - | - | - | - | - | 1 | 16 |
| Gastroenteritis (in an institution) | - | - | 8 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 8 | 193 |
| Haemolytic uraemic syndrome | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 5 |
| Hepatitis A* | - | 1 | 1 | - | 1 | - | - | - | 3 | - | - | - | - | - | - | - | - | - | 6 | 39 |
| Hepatitis E* | - | - | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | 1 | 6 |
| Listeriosis* | - | - | - | - | - | - | - | - | 2 | - | - | - | - | - | - | - | - | - | 2 | 9 |
| Salmonellosis (not otherwise specified)* | - | 14 | 1 | 4 | 10 | 1 | 6 | 4 | 15 | 14 | 4 | 4 | 4 | 4 | 7 | 2 | 3 | - | 97 | 644 |
| Shigellosis | - | 1 | - | - | - | - | - | - | 9 | - | - | - | - | - | - | - | - | - | 10 | 37 |
| Typhoid and paratyphoid* | - | 1 | - | - | 1 | - | - | - | 1 | - | - | - | - | - | - | - | - | - | 3 | 16 |
| Verotoxin producing Ecoli* | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

* 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
CHS = Corrections Health Service

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