



## A REGIONAL TRAUMA SYSTEM IN SYDNEY: THE FIRST THREE MONTHS

**O**n March 29, 1992 a component of the State's new Trauma Services Plan was activated in Sydney Health Areas. This report reviews the first three months of operation and shows the plan is performing well.

In Sydney trauma services have been reorganised to ensure seriously injured patients are transported with the minimum of delay to hospitals that provide the necessary definitive treatment. Experience overseas shows that the early delivery of seriously injured patients to a specialist hospital improves the chances of survival<sup>1</sup>.

Thus within each Health Area a regional network of acute care hospital facilities has been established to deal with all types of trauma. Area Trauma Hospitals (ATHs) form the central hub of these networks, taking on a coordinating role as well as providing specialist care for seriously injured patients. New practices have been put in place at ATHs so trauma patients receive high-quality management. For example, a hospital-based trauma team is called to resuscitate and assess all potentially seriously injured patients on their arrival at the Emergency Room, and to organise early definitive treatment.

To ensure the right patient is taken to the right hospital and in particular that seriously injured trauma cases are taken directly to an ATH, ambulance officers use a set of assessment guidelines (trauma triage guidelines), to sort trauma patients according to the presence or risk of serious injury. Patients with minor injuries and those who are dying are transported to the hospital which is nearest in road time, whereas all patients with definite signs of serious injury are taken to the nearest ATH, even if this means bypassing a closer hospital. Ambulance officers use their judgment to determine the destination of remaining patients who are at high risk of serious injury, with the assistance of criteria specified by the guidelines.

This paper reports on the performance of the plan during its first three months and reviews:

- the number of patients bypassing local hospitals;
- transport times for trauma patients selected to bypass local hospitals; and
- the effect of the new transport arrangements on the Ambulance Service.

The NSW Ambulance Service supplied data for the review. Information on patients triaged as serious (i.e. those with definite signs of serious injury, or who were at high risk of serious injury) or dying were taken from a special database set up to monitor closely the early stages of implementation. Details of overall ambulance numbers and transport times have been extracted from the NSW Ambulance Dataset.

### FINDINGS

#### Bypass transports

In Sydney 317 trauma patients bypassed local hospitals during the first three months. The weekly average of 23.6 patients is comparable to predictions from the pilot study<sup>2</sup> of around 25 cases a week.

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## A regional trauma system in Sydney

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Most of the trauma bypass patients (80 per cent) were aged 13 years and older. Western Sydney, Northern Sydney and South West Sydney had the largest number of bypass cases, each with an average of 4-5 cases a week (Table 1).

Trauma bypass cases accounted for 3.2 per cent of the total primary trauma transports (9,793 cases) handled by the Ambulance Service and represent a decrease of 1 in 20 primary trauma transports to local hospitals (Table 2).

**TABLE 1**

NUMBER OF CASES BYPASSING LOCAL HOSPITALS IN THE METROPOLITAN HEALTH AREAS, APRIL-JUNE 1992

Health Area	Month			Total Number	%
	April*	May	June		
Central Sydney	10	8	23	41	12.9
Eastern Sydney	2	4	3	9	2.8
Northern Sydney	25	20	20	65	20.5
Southern Sydney	11	9	11	31	9.8
South Western Sydney	25	16	18	59	18.6
Wentworth	11	18	16	45	14.2
Western Sydney	26	18	23	67	21.1
TOTAL	110	93	114	317	100.0

\* Trauma bypasses covering the period March 29-April 30, 1992.

**TABLE 2**

NUMBER OF EMERGENCY AMBULANCE TRANSPORTS FOR TRAUMA IN SYDNEY, APRIL-JUNE 1992

Transport Destination	Month			Total Number	%
	April*	May	June		
To local hospital	1,655	1,971	1,861	5,487	56.1
To Area Trauma Hospital (ATH)	1,459	1,221	1,121	3,801	38.8
Serious case Bypass to ATH	110	93	114	317	3.2
Serious case ATH nearest hospital	50	77	61	188	1.9
TOTAL	3,274	3,362	3,157	9,793	100.0

\* Trauma transports covering the period 29 March-30 April 1992.

### Transport times for bypass transports

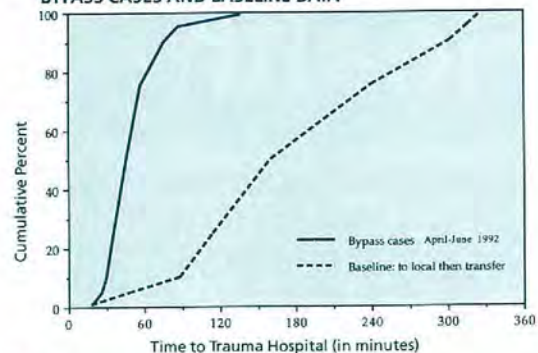
Four-fifths (81.6 per cent) of the trauma bypass patients arrived at an ATH within 60 minutes of an ambulance being called to assist. We compared the transport times for these cases with transport times for major trauma patients who, under the previous system, were taken to a local hospital then transferred on to an ATH (Figure 1). The latter times were derived from a review of ambulance trauma work in western Sydney conducted during 1988 and show that only 6 per cent of these cases made it to an ATH within the hour<sup>3</sup>. This comparison illustrates that the plan has brought about a sizeable reduction in time taken to deliver potentially seriously injured patients to the right hospital.

### Impact on the ambulance service

Ambulance response and transport times did not deteriorate following introduction of the new transport arrangements. Nearly three-quarters (71.6 per cent) of ambulances dispatched to an accident site took less than 10 minutes to reach the patient (1991 figure, 74.4 per cent), and almost all (95.9 per cent) of these patients were delivered to hospital within one hour of the call for assistance (1991 figure, 96.3 per cent).

**FIGURE 1**

TIME TO TRAUMA HOSPITAL — BYPASS CASES AND BASELINE DATA



### DISCUSSION

The metropolitan component of State Trauma Plan is performing well and no major untoward effects have occurred within the Ambulance Service.

The number of trauma patients selected to bypass local hospitals is an important indicator of the effects and operation of the plan in the Sydney area, as the patients represent a change in workload for the Ambulance Service and ATHs. The number of bypass cases going to ATHs is a small proportion (3.2 per cent) of all trauma cases and thus the redistribution of trauma cases between local hospitals and ATHs has been small. In addition, the fact that most bypass cases (81 per cent) were delivered to an ATH within one hour of injury should offer these patients the best chance of survival<sup>4</sup>.

Evaluation of the plan continues, including a review of trauma bypass cases and interhospital transfers, and a review of injury-related deaths in Sydney for 1991-1992.

The review of bypass cases will be used to determine whether the triage guidelines result in the right patients going to the right hospital. Many patients with major trauma take time to develop definite signs of serious injury, so not all trauma bypass cases will, on review, have major trauma and some major trauma cases will be missed. While the guidelines should minimise these effects, some changes may be required to improve their accuracy.

The injury-related death review is a joint project of the Injury Research Unit at Westmead Hospital and the Epidemiology and Health Services Evaluation Branch and aims to determine whether the plan resulted in better outcomes (survival) for seriously injured patients. These two investigations will report in mid-1993.

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# THE NSW HEALTH OUTCOMES PROGRAM

**T**raditionally State health systems in Australia have monitored their achievements by measuring the throughput of patients and related activities. There has been little systematic attempt to determine the impact of public health and clinical services on the health of people, i.e. to assess the health outcomes of these services and to use this information for improving their effectiveness.

The overall objective of the NSW Health Outcomes Program is to reorient the planning, implementation and evaluation of health and related services towards optimal health outcomes within available resources.

A health outcome is a change in the health of an individual, group of people or population which is attributable to an intervention or series of interventions. The health change can refer to a wide variety of manifestations, ranging from death, injury and disease to intermediate determinants which may themselves influence the occurrence of injury and disease. Examples of these are individuals' health experiences such as symptom levels, behavioural and lifestyle factors such as smoking and sun exposure, and knowledge and understanding of health issues.

If decisions about health and related services are to be based on their health outcomes, it is essential to specify markers of health which can be measured with sufficient reliability and precision to detect change. These markers are referred to as health indicators. Some indicators are clearcut and well established, e.g. overall and disease-specific mortality rates, and rates of disease and injury occurrence. Indicators for other types of health outcomes are less clearcut. For example, what types of indicators can be used to determine the health outcome of hospital admissions for asthma? To be useful, a health indicator should be chosen or designed to serve a clearly defined purpose, and it should be valid and reliable for that purpose. Indicator data should be readily interpretable, and should help to determine whether (and what) action is needed to improve the related health outcome.

The reorientation towards health outcomes has four major elements:

- information, based on health indicator and systematic cost-effectiveness data;
- the organisation of public health and clinical services (or the maintenance of existing service configurations where appropriate) which are built on the information derived from indicator and cost-effectiveness data;
- continuous monitoring of services, using indicator data; and
- subsequent adjustment of services.

Accordingly, the NSW Health Outcomes Program comprises the following:

1. A series of short-, medium- and long-term demonstration projects which show how health indicator and cost-effectiveness data can be obtained and used to develop, monitor and improve the organisation of public health and clinical services.
2. Incorporation of the service configurations and associated monitoring processes from successful demonstration projects into the NSW health system.
3. Dissemination of indicator data for use throughout the health system.
4. Systematic review of knowledge in the topic areas covered by the demonstration projects, and of parallel

health outcomes-oriented developments in other Australian and overseas health systems.

While the program is focused on the health of the population of NSW, it is consistent with national and worldwide concern to enhance understanding of the relative costs and effectiveness of interventions employed in the prevention, diagnosis and treatment of disease.

## DEMONSTRATION PROJECTS FOR 1992-93

The NSW Health Department will soon invite expressions of interest for the conduct of demonstration projects under the NSW Health Outcomes Program. The projects should show how an outcome-oriented approach in the planning, implementation and evaluation of public health and clinical services can produce measurable improvements in health outcomes at a local level. They should also serve as models which could be adopted in other localities or integrated into the NSW health system. For 1992-93 demonstration project proposals will be considered in the following topic areas:

- overall quality of hospital care;
- prevention and/or management of ischaemic heart disease;
- the organisation and delivery of critical care services;
- management of asthma;
- prevention and management of tuberculosis; and
- the organisation and delivery of immunisation programs.

Meritorious proposals which contribute to the Health Outcomes Program in other topic areas will be considered. While projects may be confined to one or more NSW Health Areas and Regions, the results of any locally-based projects should be applicable to other NSW localities. Preference will be given to projects which:

- involve or lead to collaboration among different sectors of the health system, e.g. public health and clinical services, or between primary, secondary and tertiary services; and
- include consultation with consumers.

Two major benefits of the demonstration projects are envisaged. First, completed demonstration projects will exemplify the practical utility of an outcome-oriented approach in the planning, implementation and evaluation of public health and clinical services. Second, they will provide functional models of health service organisation in major topic areas of importance which will be adaptable elsewhere in NSW and Australia.

## EXAMPLE OF A DEMONSTRATION PROJECT

There is good evidence from Australian and overseas studies that people with serious injuries are much more likely to survive if they receive prompt treatment in centres which can provide specialist trauma care. The length of the delay before receiving highly expert services is an important determinant of the outcome. The first hour — known as the 'golden hour' — is crucial.

One important health outcome of trauma services is increased survival rates after major trauma. Because survival is so strongly associated with rapid access to major trauma centres, a valid intermediate outcome is an increase

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# SUCCESSFUL PUBLIC HEALTH NETWORK CONFERENCE

The first Public Health Network Conference held at Westmead Hospital on November 23 and 24, 1992 was an outstanding success. Opening speeches were followed by five keynote presentations by invited speakers, and 38 presentations by staff of the network and related organisations.

About 80 people attended each day, and 60 went to the conference dinner. Distinguished guests from interstate and overseas were Dr Aileen Plant, of the National Centre for Population Health, and Dr John McLeod, Censor-in-Chief of the New Zealand College of Community Medicine.

The objectives of the conference were to:

- show the work of Public Health Officers and other staff in the Public Health Network, and relate this to improving health in NSW;
- increase the profile and cohesiveness of the Public Health Network;
- facilitate linkages between staff of the network; and
- provide an efficient mechanism for discussion and selection of potential 1993 assignments by Public Health Officers.

Those attending the conference considered the objectives had been met.

The Director-General of the NSW Health Department, Dr Bernie Amos, opened the conference and affirmed the importance of public health to NSW. The Chief Health Officer, Dr Sue Morey, spoke on the past and future of public health in NSW and was followed by Professor Peter Baume, who spoke about public health and the political process. The Director of the New England Region Public Health Unit, Dr John Rooney, spoke on localising public health initiatives.

The keynote presentations covered Aboriginal health (Ms Liz Williams), pesticides and public health (Dr Lyn Clarke), evaluating diagnostic tests (Professor Les Irwig), screening for postnatal depression (Professor Phillip Boyce) and improving immunisation in NSW (Professor Margaret Burgess).

Other presentations were grouped as follows: Health Services and Health Economics (five presentations), Environmental Health (twelve presentations), Chronic Diseases and Injury (five), Maternal and Child Health (three) and Infectious Diseases (nine). Topics included handling data deficiency in economic evaluation (Mr Richard Smith of CHERE), monitoring asthma management in the Illawarra (Dr Victoria Westley-Wise, Illawarra PHU), telephone risk factor surveys (Dr Christine Roberts, Western Sector PHU), improving screening for Downs syndrome (Dr Lee Taylor, Epidemiology Branch) and the epidemiology and control of meningococcal disease in New Zealand (Dr Michael Baker, NZCDC). Abstracts from all presentations will be printed in a forthcoming issue of the *Public Health Bulletin*.

## A KIWI'S REFLECTIONS

I consider that the NSW Public Health Network is an excellent model for public health in Australasia.

Your conference was made most enjoyable by a high general standard of presentations, the obvious talent of the participants and their emerging professionalism. The sessions highlighted our continuing need as public health professionals to strive to clearly identify the important issues, to advance public health principles in all areas of health service and to handle risk communication well. The latter is particularly crucial to re-establishing the credibility of public health in Australia and New Zealand. The presentations also highlighted clearly a number of opportunities for public health professionals to broker improved linkages among clinicians, politicians, community groups and other stakeholders.

With these comments in mind I offer the following suggestions for even greater future success. First, consider having a conference theme which addresses a current high priority issue and have several invited presentations around this theme. Follow this with submitted papers of high standard. Second, ensure that presentations facilitate clear understanding of the issues by public health decision makers and action implementers — all presentations should have a public health action message. Third, presentations and visuals should be of a high standard without the distractions of complicated graphs and unreadable tables, presenters standing in front of overheads and slowly reading information on slides. Presenters should ensure a sense of conviction about the material being presented to give that added touch of professionalism which is essential if public health practice is to be taken seriously. Fourth, important discussions should be encouraged by allowing adequate discussion time after each paper. All presenters should be required to stick to their allotted time.

I look forward to your next conference.

*John W McLeod, General Manager, Planning Northern Regional Health Authority, and Censor-in-Chief, New Zealand College of Community Medicine*

Professor Charles Kerr, from Sydney University, and Dr McLeod gave enjoyable speeches at the conference dinner.

At an evaluation session to consider ways of improving the conference in future years, members of the audience agreed that:

- the conference should be held annually;
- presentations be given only by staff of the Public Health Network and related organisations (e.g. CHERE, NCEPH, NZCDC);

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## Successful conference

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- the format of presentations should be ten minutes speaking time with five minutes for questions, with the ten-minute limit strictly adhered to;
- breaks between sessions should be longer, to facilitate contact among people;
- the location and facilities of Westmead Hospital Education Block were well suited to the conference;
- more presentations should be encouraged in Aboriginal health, epidemiological methods, health promotion, mental health and chronic diseases;
- presentations should be more action-oriented and should conclude with a summary of the public health actions taken or recommended;
- staff working in the fields of HIV/AIDS, Drug and Alcohol and Mental Health, as well as local council staff and general practitioners and other clinicians, should be encouraged to attend the conference;
- the conference should where possible avoid parallel streams, to maintain a generalist understanding and outlook among network members;
- panel discussions, following a group of related presentations, should be included for important issues; and
- high standards of visual presentation should be encouraged.

The recommendations will be taken into account in the organisation of the next network conference.

In conclusion, the first NSW Public Health Network Conference was very successful and has provided a solid foundation for high-quality annual network conferences in the future.

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### EDITORIAL COMMENT

Congratulations and thanks go to Mark Bek for his outstanding efforts to make the conference the great success it was. With the able assistance of Marion Haas, Mark organised the funding, venue, program, speakers and support activities. — *Editor*.

## The NSW Health Outcomes Program

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in the proportion of seriously injured people who receive definitive trauma care within the 'golden hour'.

In the conventional service configuration, seriously injured people are taken by ambulance to the nearest hospital which, in most instances, is a lower-level hospital and not a major trauma centre. The injured person is assessed at this hospital as having a serious injury, given initial treatment to stabilise his or her clinical condition, and then transferred to a trauma centre, arriving there after some considerable delay. Studies in western Sydney in 1988 showed that this service configuration was likely to affect outcomes adversely; only about 6 per cent of seriously injured patients reached the definitive place of care within an hour.

Consequently a reorganisation of trauma services in western Sydney was proposed, with the following elements: (i) triaging of injury cases at the place where the injury occurred by ambulance officers, using a set protocol, and (ii) immediate transport of seriously injured patients (as judged by the triage protocol) direct to major trauma centres, bypassing the local hospital. Modelling of this new approach suggested that the proportion of seriously injured patients reaching a major trauma centre within the 'golden hour' would rise from 6 per cent to 80 per cent. The modelling also showed that the shift in patient load could be managed with modest resource enhancement. The new approach was implemented in March 1992, and a preliminary evaluation has confirmed that the anticipated benefits are being realised.

This is an example of how appropriate health indicator data on a health outcome (in this instance, an intermediate outcome) have been used to identify and assess a problem, develop a plan for a new service configuration that would improve health outcomes, and then evaluate the new service when it was implemented. The plan clearly defined the roles and responsibilities of the relevant service providers such as the Ambulance Service and hospital trauma services. Further clinical indicators are being developed for continuous monitoring of the effectiveness of the service.

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The Bulletin's editorial advisory panel is as follows:

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The editor is Dr George Rubin, Director, Epidemiology and Health Services Evaluation Branch, NSW Health Department.

The Bulletin aims to provide its readers with population health data and information to motivate effective public health action. Articles, news and comments should be 1,000 words or less in length and include the key points to be made in the first paragraph. Please submit items in hard copy and on diskette, preferably using WordPerfect 5.1.

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Suggestions for improving the content and format of the Bulletin are most welcome. Please contact your local Public Health Unit to obtain copies of the NSW Public Health Bulletin.



# DECISION MAKING IN HEALTH AND MEDICINE

There is growing interest in the science of decision theory in both health and medicine. Although there have been sporadic papers in the medical literature using these techniques<sup>1,2,3</sup>, the emergence of learned societies devoted to decision theory in medicine in both the United States and Europe has given impetus to the incorporation of these techniques into medical and surgical research. The European Society for Medical Decision Making held its fourth biennial conference in Marburg, Germany, in June this year. The range of topics was vast and the level of discussion impressive.

The meeting began with a choice of courses on decision theory and its mathematical background. An elementary course in fact dealt with Bayes's theorem, construction of the standard gamble and the elements of the decision tree. The advanced course introduced the concepts of neural networks in computer assisted decision making. The rest of the meeting was devoted to seminars and free papers on a variety of topics that have been considered with the use of decision-making techniques.

Decision theory deals with the science of decision making under various degrees of uncertainty. It attempts to provide methods for optimising decisions that have to be based on probabilistic data as happens with most decisions in both public health and medicine. Its basic mathematical tool is Bayes's theorem, which allows the revision of probabilities of occurrences in the light of new information. In technical terms it converts prior probabilities into posterior probabilities by a number of simple algorithms, which can be programmed into a computer. Given accurate knowledge of probabilities, it becomes possible to advise clinicians about optimal strategies in a given clinical situation. It is also possible to combine the probabilities of outcome with data describing quality of life and utilities, and to give measurements of benefit from a treatment program. Similar models can be used to examine the cost implications of all kinds of health policy decision.

There is no question that these techniques possess great power, and that they should be widely available in Australia to help those who make decisions at all levels of the health care system. They allow data from many sources to be pooled and used in an intelligible way so vast quantities of information can be harnessed and used to guide policy decisions.

It was generally agreed at the Marburg meeting that computers used with these methods assisted clinical decision making, but could not replace the clinician. The value of computer assistance varied inversely with the experience of the clinicians using the computer aid. Less experienced clinicians, for example, made fewer wrong diagnoses with computer assistance when confronted with patients who might have acute appendicitis; but experienced clinicians were not helped at all. As things stand, the computer can only help to educate the clinician — but this is no small achievement, and Dr Dallos from London produced objective evidence that interns trained with computer assistance learned faster than those trained conventionally.

Decision-making technology is useful in examining conventional practice for effectiveness and cost efficiency. Kievit from Leiden, for example, presented a study on ankle injuries, demonstrating that x-rays were not necessary unless a few simple clinical criteria were fulfilled. Avoiding x-rays for the majority of ankle injuries represented

significant cost savings for the Accident and Emergency Department of his hospital. Habbema from Rotterdam reanalysed a previous trial of treatment in subarachnoid haemorrhage, using information from a later study to reevaluate the decisions recommended by the original trial. Habbema demonstrated that the advice originally recommended was wrong for some groups of patients who stood to benefit from intervention. This capacity of decision-making techniques to combine information — after the style of a meta-analysis — is one of its most striking facets and one of its greatest powers.

The impact of this science on the larger scene is well illustrated in Dr David Eddy's review in the *American College of Surgeons Bulletin* of June 1992<sup>4</sup>. Dr Eddy presents a forceful critique of clinical decision making by conventional means, and a compelling reanalysis of the North American National Cholesterol Education Project. By resetting action levels in the protocol recommended by the study group, he has been able to show great cost savings with exactly the same patient benefit in terms of coronary occlusions prevented. Dr Eddy's work has attracted such attention that he is retained by the University of North Carolina as a Professor of Health Policy Research, although he lives about 3,200km from the university, and provides consultative services to many health agencies.

Decision-making techniques can benefit clinical practice, medical education and health policy formulation. Unfortunately they do not, yet, have an answer to the greatest continuing problem for both the individual clinician and the individual patient. This was confirmed by the single session at the Marburg meeting that was devoted to this problem. Medical information is essentially probabilistic, and all that these techniques can do is to narrow the confidence limits on the probabilities of any given outcome. To say to a patient with metastatic liver cancer that he or she has a 25 per cent chance of benefiting from surgical resection is meaningless for the individual patient. The response to that information will depend on the risk-taking propensities of both patient and doctor. Information of this kind will be presented in different ways by different clinicians, and will be interpreted in widely different ways by individual patients.

Dr Eddy<sup>4</sup> foresees a brave new medical world, with a computer terminal on every clinician's desk top dispensing information that is constantly updated on the 'best' treatment for each condition. It may be some time before that vision is realised, but it would be something fine to aim for. For those dealing with health rather than medical practice, and for those who deal with large groups of people in their clinical research, the new era promises most. For the clinician dealing with someone with their own unique distress, the numerate future promises much less.

J. Miles Little,  
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# MEETING THE NEEDS OF MOBILE COMMUNITIES

Throughout Australia more than 300,000 people live in caravan parks and manufactured home communities. Since 1986 the Hunter Caravan Project has worked with families in these communities in the Hunter Region of NSW. The project has drawn attention to the health and social needs of these previously forgotten or ignored Australians and has built up a level of expertise recognised at a national and international level.

The Hunter Caravan Project has received funding for a three-year National Dissemination Program from the National Health Promotion Program of the Department of Health, Housing and Community Services and the Bernard van Leer Foundation, an international philanthropic organisation based at The Hague.

This article outlines in brief:

- issues faced by residents living in caravan parks and manufactured home communities and implications for health services;
- innovative health programs developed by the Hunter Caravan Project to overcome perceived gaps in services; and
- the aims and strategies of the National Dissemination Program of the Hunter Caravan Project.

The Australian dream of home ownership has slipped from the grasp of many families. There are high rental costs, long waiting lists for government housing, economic uncertainty and high unemployment. Caravans, mobile homes and manufactured homes (either owned or rented) have become one type of alternative accommodation.

It has been the experience of the Hunter Caravan Project that caravan parks and manufactured home communities can be nurturing and supportive environments. When physical conditions, management style and community perceptions are favourable communities work together in a very positive way. However, caravans in particular were designed for short-term occupancy and are often unable to meet the long-term needs of family groups. Parks often lack adequate and safe amenities, social and play areas.

The general community perceives such families as marginal and transient and so they are often overlooked by existing community services including health services. Yet more and more families are choosing, or being forced to choose, this "affordable" housing option. Issues faced by residents of these communities include:

**Health and education factors:** There is often poor nutrition and inadequate health care (e.g. children not fully immunised), lack of confidence, low social skills often exacerbated by a mobile lifestyle, and poor access to health care, education, child care and job prospects.

**Mobility:** People lack knowledge of community services and what they do, and there is inhibited access to community services and a poor image of "authority" as people are wary of interference.

**Security of tenure:** There is a fear of eviction. Despite legislation to ensure rights of residents, there is a feeling of powerlessness. Residents won't raise issues of concern with managers/owners, who can prevent access of community services to the parks.

**Isolation:** Residents are located on fringes of towns/cities often on low-grade land (e.g. reclaimed swamps). There is inadequate transport (often only the school bus), and poor access to services and social networks.

**Environmental factors** include poor drainage at some parks, unsatisfactory amenities (particularly for family

groups), cramped living conditions, safety hazards for children, lack of sheltered areas and/somewhere else to go at the park for adults and children, as well as problems with condensation and mould.

**Negative community perceptions:** Residents are unable to receive certain goods and services with a caravan park address, and they are still seen by some as second-class citizens.

Since 1986 the Hunter Caravan Project has worked towards better health and social equity for residents of caravan parks and manufactured home communities. The original focus of the project was on the development of children in the 0-8 age group and their families. It was soon recognised that health and nutrition were important elements affecting the lives of all residents in these communities.

A range of innovative strategies has been used to determine ways in which health needs of mobile communities can be met and problems of access to services overcome. They are:

- inclusion of Family Health Worker in the team of early childhood workers at the Hunter Caravan Project;
- surveys of residents in individual communities to determine their health needs;
- health information days organised on several parks with health professionals providing specific health information, screening programs and clinical consultations;
- project worker living on parks for short periods to establish a more sensitive rapport with the residents and a greater awareness of their health needs;
- establishment of links with health services to increase awareness of the needs of mobile communities and the need to re-evaluate their own role in service delivery; and
- recruitment and training of long-term residents as health information providers at their own parks — to strengthen the networks between local community health services and park residents.

The National Dissemination Program offers an opportunity for the Hunter Caravan Project to provide a national network linking mobile communities with health professionals, local government, caravan park owners and managers and key government decision-makers.

The program aims to:

- provide information on health needs of caravan parks and manufactured home communities to other States and Regions;
- share effective strategies developed by Hunter Caravan Project and other services to meet the health needs of these populations;
- collect and analyse information gathered through the network process to present an overview of the Australian situation; and
- advocate for better health provisions and improved social equity for such populations.

Strategies include development of a national newsletter, consultation and input into training of health care workers through workshops, seminars and conferences, and provision of information and resources to those concerned with problems faced by mobile communities.

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# INFECTIOUS DISEASES

## NOTIFICATIONS

### TIMELINESS AND COMPLETENESS OF REPORTING

The following table lists the number of weekly reports made to the Epidemiology and Health Services Evaluation Branch in the past two months, i.e. from Epiweek 40 to Epiweek 48.

**TABLE 3**

NUMBER OF WEEKLY REPORTS MADE TO EPIDEMIOLOGY BRANCH: OCTOBER-NOVEMBER 1992

Public Health Unit	Number	Status
Central/Southern Sydney	9	Complete
Eastern Sydney	9	Complete
South Western Sydney	6	Complete
Western Sector	9	Complete
Northern Sydney	9	Complete
Central Coast	7	Complete
Illawarra	9	Complete
Hunter	9	Complete
North Coast	8	Complete
New England	9	Complete
Orana and Far West	8	Complete
Central West	7	Complete
South-West	9	Complete
South-East	9	Complete

**TABLE 4**

PERCENTAGE OF NOTIFICATIONS WITH INCOMPLETE INFORMATION BY VARIABLE AND PUBLIC HEALTH UNIT OCTOBER-NOVEMBER 1992

Public Health Unit	Age	Sex	Aboriginality <sup>1</sup>
Central Sydney	Complete	0.7	50.0
Southern Sydney	Complete	0.7	44.8
Eastern Sydney	3.6	2.4	75.0
South Western Sydney	2.0	15.0	43.9
Western Sydney	Complete	1.7	23.3
Wentworth	Complete	2.0	Complete
Northern Sydney	5.0	Complete	100.0
Central Coast	3.8	1.9	71.4
Illawarra	2.0	Complete	65.8
Hunter	Complete	2.4	94.1
North Coast	0.7	2.7	16.7
New England	1.6	1.6	64.7
Orana and Far West	3.4	Complete	18.0
Central West	2.5	2.5	21.4
South-West	Complete	Complete	Complete
South-East	Complete	Complete	25.0

<sup>1</sup> Reportable only on notifications from medical practitioners and hospital Chief Executive Officers.

## VACCINE PREVENTABLE DISEASES

### PUBLIC HEALTH AMENDMENT ACT 1992

The Public Health Amendment Act 1992 was passed by both Houses of Parliament on November 26. Included in the provisions of this Act is the requirement for school entrants and children entering day-care facilities to provide documentation of immunisation. Those whose immunisation status was not verified would be excluded from school if a case of a vaccine preventable disease occurred within the school or day-care facility.

### RUBELLA

Rubella (German measles) continues to be reported nationally at rates up to 10 times the rates of historical

data for the period. Rubella became a laboratory notifiable condition in NSW in November 1991.

For 1992, 164 notifications have been received for rubella.

Six Areas and Regions notified a total of 20 cases during November, for a rate of 4.1 cases per 100,000 population.

The Hunter Area notified seven cases, for a rate of 17.2 cases per 100,000 population.

The current epidemic is a predicted result of past immunisation strategies, which targeted adolescent girls only. Since 1989 all children have been offered measles-mumps-rubella vaccine at the age of 12 months.

All women of child-bearing age should be screened for rubella immunity. Women who have low, or absent, titres should be immunised. Immunisation is not recommended during pregnancy — in fact, pregnancy should be avoided for three months after immunisation.

### MEASLES

There have been 473 cases of measles notified to date — the highest number of notifications since the disease became notifiable in 1981. The notification pattern reveals that Statewide, measles has become an endemic condition with localised epidemics. The notification rate for the year to date is 8.7 notifications per 100,000 population.

Eleven Areas and Regions notified a total of 76 cases of measles in November, for a rate of 15.5/100,000 population. Orana and Far West notified measles at a rate of 308.1/100,000 population.

### LISTERIA

The National Health and Medical Research Council has requested that information on *Listeria* be made available to the general public and the medical community.

*Listeria monocytogenes* is a bacterium that is widespread in nature and has been found in many fresh and processed foods (for example, vegetables, dairy products, processed meats, smoked seafood and smoked shellfish). It has been recognised as a human and animal pathogen since the late 1920s, but its significance as a cause of food poisoning has become apparent only in the past decade. The increasing incidence of listeriosis may be due in part to greater awareness of the problem but is also likely to be related to changes in farming practice, changes in dietary preference (more fresh products and products without preservatives) and increased reliance on refrigeration.

Outbreaks of listeriosis have been traced to contaminated dairy products (such as soft cheeses) and certain prepared meat products (such as pate). *Listeria* can grow under refrigeration at temperatures as low as 0.5 degrees Celsius and can withstand a wide range of pH and salt concentrations up to 10 per cent NaCl.

Listeriosis causes mortality in high risk groups, particularly in fetuses and neonates. Those most at risk from listeriosis are pregnant women, the immunocompromised, the frail aged and the very young, but the disease also occurs in otherwise healthy young adults. The case fatality rate in neonates is 30 per cent to 50 per cent. In a food-related outbreak in Perth in 1990, which was related to liver pate, the mortality rate in fetuses and neonates born to infected mothers was 55 per cent.

Infection of the foetus occurs about three days after maternal infection. In older adults and neonates it may present as septicaemia, meningitis or pneumonia.



Listeriosis has not been frequently identified in Australia (46 cases were notified in five States in 1991), but it is likely that many cases are undetected. Most cases are subclinical but some patients may present with influenza-like symptoms. About 5 per cent of the population are asymptomatic carriers.

Because it does not usually cause typical food poisoning symptoms, foodborne *Listeria* infection is often not diagnosed. The incubation period has been reported to vary between 1 and 90 days. This incubation period makes it difficult to establish an association with a particular contaminated food.

#### Laboratory diagnosis

The organism can be identified in blood, cerebrospinal fluid, meconium, lochia, gastric washings and from other sites of infection.

A firm diagnosis of listeriosis in an adult is usually possible in cases of septicaemia or other obvious infection. Infection of a foetus can be identified by histological examination of the placenta and by culture of the organism.

#### Treatment

Antibiotic treatment is effective. Amoxycillin is the treatment of choice. In mild adult cases where infection is demonstrated or strongly suspected, oral amoxycillin should be given in a dosage of 1 gram 8 hourly for 10 to 14 days.

#### Advice to patients

Patients should be told that *Listeria* infection is common and usually asymptomatic. Accurate clinical diagnosis is difficult in most cases in healthy adults. Minor illnesses in pregnancy do not warrant speculative treatment with antibiotics because of concern about listeriosis.

The main protection against *Listeria* infection is through careful attention to food preparation and storage and personal hygiene. The most important aspects of this are:

- Freshly prepared foods are the safest and *Listeria* are readily destroyed by cooking.
- *Listeria* bacteria can grow in refrigerated products, so pregnant women should not eat at-risk foods that have been stored for more than 24 hours, even under refrigeration. They should not eat foods where there is some doubt about the quality of food preparation or storage.
- Cross-contamination between raw and processed foods can occur during preparation, and care should be taken to keep these items separate — for example by using separate implements and cutting boards.
- Fruit and vegetables that will be eaten raw or used to make salads should be thoroughly washed.
- Adequate refrigeration of all prepared foods — especially prepared salad such as coleslaw, meat products and dairy products — is enough to protect the public under most circumstances.
- Foods that are not safe for those at high risk: Foods which should not be eaten by pregnant women and the immunocompromised are unpasteurised dairy products, pates, meatloaf products (such as pre-sliced chicken loaf), cooked diced chicken as used in sandwich shops, uncooked smoked seafood, smoked shellfish, soft cheeses (such as brie, camembert and ricotta), and previously prepared coleslaws and salads. These foods pose only a minor risk to those other than pregnant women and the immunocompromised.
- Most foods are safe for those at risk and freshly

#### INVESTIGATION OF RISE IN *SALMONELLA HADAR*

Twenty-seven notifications of *S. hadar* have been received to December 1, 1992. Eight of these were in October, which represents 13 per cent of Salmonella notifications for this month. Six notifications were received for November. The age range of notifications in 1992 has been from under 12 months to 62 years, but five notifications (19 per cent) have been from those under one year old and 14 (52 per cent) under five years. Mean age has been 16 years. No geographical relationship between cases is apparent.

Questionnaires have been sent to all cases or their parents and eight replies have been received. Three replies have identified an infant food produced by the same manufacturer as the food the parents believed caused the illness in their children. This may be a coincidence as the food is a low-risk fruit-based product, but further investigation would appear warranted — particularly when the incidence in young children is considered. One reply reported overseas travel.

Food Inspectors have submitted quality control samples of the infant food for analysis. No results are yet available.

All recent notifications are being investigated by Food Inspectors from relevant Public Health Units using standardised interview forms. Community and family controls will also be sought.

#### *Salmonella hadar*

*S. hadar* was first notified in Australia in 1982 and was associated with overseas travel, generally from South-East Asia. The rate of notifications has steadily increased and in 1991 there were 80 notifications Australia-wide. Overseas travel was associated with 19 (24 per cent) of the Australian notifications of *S. hadar* recorded by the National Salmonella Surveillance Scheme (NSSS) in 1991. Of the 80 notifications in 1991 there were 13 reported from NSW, which represented 5 per cent of salmonella notifications for the State.

*S. hadar* is commonly associated with poultry. The first Australian isolation from poultry was in 1989. In 1990 there were 28 poultry isolations and in 1991 there were 114 poultry isolations. The organism has also been isolated from animal feed — soy meal.

A previous rise in incidence of *S. hadar* was investigated by Food Branch in late 1991. This rise appeared to be a possible outbreak centred around the Liverpool area. No relationship between cases could be found other than living or travelling to the Liverpool area.

cooked foods are safest. In regard to dairy products, hard cheeses, fresh pasteurised milk, UHT milk and yoghurt may be considered to be free of *Listeria*.

#### Veterinary risks

*Listeria* infection causes abortion in farm animals so it is important that pregnant women avoid contact with aborted animal foetuses on farms or in veterinary clinics.

#### Notification

Listeriosis is a laboratory notifiable condition under the Public Health Act 1991. Because contaminated food may cause outbreaks, it is vital cases be notified immediately.

**Note:** The NHMRC has also prepared a statement, "The risk of *Listeria* infection from contaminated food — special advice for pregnant women, transplant patients and other immunocompromised persons", for distribution to patients. Copies are available from your Public Health Units.



TABLE 5

NOTIFICATIONS FOR INFECTIOUS DISEASES  
BY HEALTH AREA AND REGION  
NOVEMBER 1992

DISEASE NAME	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	OTH/UK	TOTAL
Adverse event after immunisation	2	3	-	-	2	-	-	1	-	1	5	7	-	1	2	5	-	29
AIDS infection	-	-	1	-	-	-	-	1	-	8	-	-	-	-	-	-	-	10
Arboviral infection	-	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-	3
Foodborne illness (NOS)	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
Gastroenteritis (instit)	-	-	-	-	1	-	-	-	-	-	-	-	3	-	-	-	-	4
Gonorrhoea infection	-	1	6	-	-	-	2	1	-	3	-	-	-	-	1	1	-	15
H. Influenzae epiglottitis	-	-	-	-	-	-	1	-	-	1	-	1	-	-	-	-	-	3
H. Influenzae infection (NOS)	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2
H. Influenzae meningitis	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-	-	2
Hepatitis A — acute viral	-	2	-	-	-	-	-	-	3	-	3	1	2	-	-	-	-	11
Hepatitis B — unspecified	2	21	-	2	7	-	6	1	3	4	2	-	-	3	1	-	-	52
Hepatitis C — unspecified	11	3	3	1	10	2	5	1	5	15	13	1	-	-	-	5	-	75
HIV infection	5	-	18	-	1	-	3	1	-	1	-	-	-	-	-	1	11	41
Measles	2	3	-	9	8	7	3	2	-	3	2	1	36	-	-	-	-	76
Meningococcal infection	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	1
Meningococcal meningitis	-	-	-	1	-	-	-	-	-	1	-	-	-	2	-	-	-	4
Meningococcal septicaemia	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	1
Mycobacterial infection (NOS)	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	2
Mycobacterial tuberculosis	1	1	-	-	1	-	1	2	-	-	1	1	-	1	-	-	-	9
Pertussis	-	-	-	-	1	-	-	-	1	-	1	-	-	1	-	1	-	5
Q fever	-	-	-	-	-	-	-	-	-	1	1	2	-	-	-	-	-	4
Rubella	-	-	-	-	-	-	4	4	-	7	-	3	1	-	-	1	-	20
Salmonella (NOS)	-	1	-	-	-	1	-	-	1	2	2	1	-	1	2	-	-	11
Syphilis infection	-	2	-	4	-	-	1	-	-	-	-	3	1	-	-	-	-	11

### HEPATITIS B IMMUNISATION SCHEDULE

The recommended protocol for the hepatitis B immunisation schedule for infants and children at high risk of acquiring hepatitis B is outlined in the NSW Health Department's Information Bulletin 92/53.

#### Primary hepatitis B immunisation schedule

All infants born into high risk groups should receive three doses of hepatitis B vaccine at birth, one month and six months of age. Interruption to the primary immunisation schedule is not advisable. The interval between the first and second doses should not be less than one month and should not exceed three months.

The third dose gives an optimal response if given six months after the first dose. Doses at three or twelve months, after the first dose, have given satisfactory responses in limited clinical trials. Therefore, delay in administration of the third dose does not warrant restarting the course, if given within 12 months of the first dose.

#### Administration of vaccine

The vaccine should be administered by intramuscular (IM) injection. For infants, the anterolateral aspect of the thigh is the preferred site. The deltoid muscle is the preferred site in older children. The gluteal area *should not* be used in infants or children. Children under 10 years of age should be given a 0.5 mL dose of hepatitis B vaccine by IM injection, irrespective of the vaccine brand used.

#### Note:

*Recombivax* (MSD) paediatric hepatitis B vaccine contains 5 µg of HBsAg per 0.5mL

*Engerix-B* (SKB) paediatric hepatitis B vaccine contains 10 µg of HBsAg per 0.5mL

#### Hepatitis B booster doses

In the absence of international consensus or local data the following recommendation is made. It may change as data become available. A booster dose should be given every five years. The booster, for children under 10 years of age, is a single dose (0.5 mL) of hepatitis B vaccine given by IM injection.

#### Infants born to hepatitis B positive mothers

All infants born to hepatitis B surface antigen (HBsAg) positive mothers should receive hepatitis B immunoglobulin (HBIG) within 12 hours of birth and begin the course of hepatitis B vaccine as soon as possible after birth. The vaccine may be administered at the same time as HBIG but at a different site.

TABLE 6

SUMMARY OF NSW INFECTIOUS DISEASE NOTIFICATIONS  
NOVEMBER 1992

Condition	Number of cases notified			
	Period		Cumulative	
	Nov. 1991	Nov. 1992	Nov. 1991	Nov. 1992
Adverse reaction	N/A	-	N/A	29
AIDS	23	10	339	162
Arboviral infection	6	5	473	595
Brucellosis	-	-	2	1
Cholera	-	-	-	-
Diphtheria	-	-	-	-
Foodborne illness (NOS)	175	2	2756	216
Gastroenteritis (instit.)	35	4	80	380
Gonorrhoea	42	15	388	417
H influenzae epiglottitis	3	3	21	44
H influenzae B — meningitis	4	2	59	94
H influenzae B — septicaemia	-	-	10	22
H influenzae infection (NOS)	9	2	119	33
Hepatitis A	162	11	1019	858
Hepatitis B	138	52	1258	2764
Hepatitis C	150	75	639	3571
Hepatitis D	N/A	-	N/A	6
Hepatitis, acute viral (NOS)	4	-	241	15
HIV infection*	75	42	715	604
Hydatid disease	-	-	7	4
Legionnaires' disease	1	-	26	81
Leprosy	-	-	-	5
Leptospirosis	2	-	31	15
Listeriosis	N/A	-	N/A	13
Malaria	12	-	185	104
Measles	56	76	360	473
Meningococcal meningitis	6	4	48	75
Meningococcal septicaemia	3	1	15	13
Meningococcal infection (NOS)	2	1	39	12
Mumps	N/A	-	N/A	19
Mycobacterial tuberculosis	35	9	316	341
Mycobacterial — atypical	8	-	104	245
Mycobacterial infection (NOS)	10	2	158	46
Pertussis	4	5	44	129
Plague	-	-	-	-
Poliomyelitis	-	-	-	-
Q fever	9	4	172	168
Rubella	14	20	56	164
Salmonella infection (NOS)	96	11	1179	684
Syphilis	47	11	561	753
Tetanus	1	-	5	2
Typhoid and paratyphoid	10	-	60	23
Typhus	-	-	-	-
Viral haemorrhagic fevers	-	-	-	-
Yellow fever	-	-	-	-

\*Data to October only



**TABLE 7**

**NOTIFICATIONS FOR INFECTIOUS DISEASES  
BY HEALTH AREA AND REGION  
CUMULATIVE JANUARY-NOVEMBER 1992**

CONDITION	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	OTH	TOTAL
Adverse event after immunisation	2	3	-	-	2	-	-	1	-	1	5	7	-	-	2	5	-	29
AIDS infection	34	3	18	5	11	5	34	7	6	10	13	4	1	3	5	3	-	162
Arboviral infection	1	2	-	-	7	6	6	7	8	23	113	34	58	10	27	-	-	302
Ross river	1	2	-	-	6	6	6	4	8	23	110	31	58	10	25	-	-	290
Other alphaviruses	-	-	-	-	-	-	-	-	-	-	2	1	-	-	2	-	-	5
Foodborne illness (NOS)	7	2	32	10	54	21	-	30	4	7	5	4	36	1	1	2	-	216
Gastroenteritis (instit.)	26	1	9	28	8	1	-	-	1	94	2	96	16	-	-	97	-	380
Gonorrhoea infection	69	25	150	25	25	1	23	5	3	14	21	12	16	13	8	7	-	417
H. Influenzae epiglottitis	-	3	1	3	6	3	4	-	2	6	6	6	-	-	1	3	-	44
H. Influenzae infection (NOS)	3	2	2	1	2	-	1	5	3	2	-	3	1	2	2	4	-	33
H. Influenzae meningitis	3	4	4	6	6	7	17	4	8	7	6	5	2	4	5	6	-	94
H. Influenzae septicaemia	-	1	2	5	2	-	3	-	-	5	1	-	-	2	1	-	-	22
Hepatitis A — acute viral	88	35	110	35	49	10	88	8	31	29	123	127	88	13	12	11	1	858
Hepatitis B — acute viral	5	4	30	6	5	5	4	3	6	1	10	5	20	2	3	2	-	111
Hepatitis B — unspecified	388	398	21	753	394	33	300	31	22	113	56	45	29	25	14	29	2	2653
Hepatitis C — acute viral	1	1	4	1	10	1	3	1	3	-	8	6	4	3	-	2	-	48
Hepatitis C — unspecified	522	186	387	247	310	68	250	356	81	415	514	58	11	58	21	38	1	3523
Hepatitis D — unspecified	-	-	1	-	-	1	-	1	2	-	-	-	-	-	-	-	-	6
Hepatitis, acute viral (NOS)	-	-	1	2	4	-	-	1	-	-	1	3	2	1	-	-	-	15
HIV infection	60	21	200	15	30	7	37	6	3	23	16	-	3	2	3	6	172	604
Legionnaires' disease	5	2	2	36	16	2	4	7	2	2	2	-	-	-	-	1	-	81
Malaria	10	7	8	4	14	-	22	2	8	4	8	7	1	1	5	3	-	104
Meningococcal infection (NOS)	-	-	2	-	-	-	1	-	1	1	-	3	2	2	-	-	-	12
Meningococcal meningitis	4	7	-	6	7	3	1	6	5	8	9	5	1	10	-	3	-	75
Meningococcal septicaemia	1	1	2	3	-	2	-	1	1	1	-	1	-	-	-	-	-	13
Mycobacterial atypical	48	25	42	20	26	4	31	1	13	20	4	3	2	-	3	2	-	244
Mycobacterial infection (NOS)	12	3	4	1	5	3	6	-	5	4	-	1	-	-	1	-	1	46
Mycobacterial tuberculosis	44	36	27	69	43	6	50	13	11	6	12	6	-	4	7	6	-	340
Q fever	-	-	-	-	7	3	-	1	1	8	71	29	32	10	4	2	-	168
Salmonella (NOS)	23	33	36	48	39	29	76	15	9	24	51	25	22	20	15	17	-	482
Salmonella bovis moribificans	1	3	1	-	2	1	2	-	-	2	1	1	-	-	-	1	-	15
Salmonella typhimurium	9	23	2	25	31	19	22	10	9	20	2	3	6	-	6	-	-	187
Syphilis infection	121	42	125	58	38	8	43	1	8	15	105	45	112	17	12	2	1	753
Typhoid and paratyphoid	4	1	6	1	3	-	5	-	1	-	-	-	-	-	2	-	-	23

**TABLE 8**

**OTHER INFECTIOUS DISEASE NOTIFICATIONS  
BY MONTH OF ONSET  
CUMULATIVE JANUARY-NOVEMBER 1992**

CONDITION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	TOTAL
AIDS infection	23	12	16	17	22	16	12	16	10	8	10	162
Arboviral infection	14	40	89	78	39	11	11	7	4	6	3	302
Ross river	14	38	85	77	39	10	11	7	4	5	-	290
Other alphaviruses	-	-	2	-	-	1	-	-	-	-	2	5
Brucellosis	-	-	-	-	-	7	-	-	-	-	-	1
Foodborne illness (NOS)	55	28	27	20	15	7	13	18	20	11	2	216
Gastroenteritis (instit.)	88	7	17	9	36	22	41	129	4	23	4	380
Gonorrhoea infection	31	22	49	38	49	30	54	41	50	38	15	417
H. Influenzae epiglottitis	4	1	3	2	4	10	24	4	4	5	3	44
H. Influenzae infection (NOS)	5	2	1	2	2	4	5	6	1	3	2	33
H. Influenzae meningitis	1	5	9	10	5	11	13	7	12	9	11	94
H. Influenzae septicaemia	1	1	3	3	3	2	5	-	3	1	-	22
Hepatitis A — acute viral	114	98	121	98	89	82	66	64	49	66	11	858
Hepatitis B — acute viral	10	12	17	22	18	9	5	5	10	3	-	111
Hepatitis B — unspecified	279	179	274	253	246	307	287	287	249	240	52	2653
Hepatitis C — acute viral	14	7	3	5	6	2	4	1	4	2	-	48
Hepatitis C — unspecified	236	256	316	253	450	394	424	414	330	375	75	3523
Hepatitis D — unspecified	1	-	-	1	3	-	-	-	-	1	-	6
Hepatitis, acute viral (NOS)	-	3	1	4	2	1	1	-	1	2	-	15
HIV infection	95	74	71	60	72	52	56	45	37	42	31	635
Hydatid disease	2	-	2	-	-	-	-	-	-	-	-	4
Legionnaires' disease	1	9	3	42	8	5	8	2	1	2	-	81
Leprosy	1	1	-	-	1	1	1	-	-	-	-	5
Leptospirosis	3	2	-	1	4	1	2	1	1	-	-	15
Listeriosis	1	1	1	3	1	1	1	-	2	2	-	13
Malaria	12	5	16	9	14	17	13	8	7	3	-	104
Meningococcal infection (NOS)	2	2	-	-	-	6	2	3	1	1	1	12
Meningococcal meningitis	-	3	2	8	2	-	15	13	9	13	4	75
Meningococcal septicaemia	1	-	-	-	-	2	2	3	3	1	1	13
Mycobacterial atypical	33	32	48	25	30	29	22	13	11	-	-	245
Mycobacterial infection (NOS)	7	5	6	2	4	6	7	2	5	7	2	46
Mycobacterial tuberculosis	76	33	35	38	28	39	17	27	20	17	9	341
Q fever	13	12	11	13	9	22	21	28	20	15	4	168
Salmonella (NOS)	100	60	59	54	44	34	37	43	25	30	11	497
Salmonella typhimurium	20	21	51	23	23	7	9	10	10	13	-	187
Syphilis	54	85	70	83	88	94	90	77	50	51	11	753
Typhoid and paratyphoid	6	4	2	-	3	2	3	2	1	-	-	23

Abbreviations used in this Bulletin:

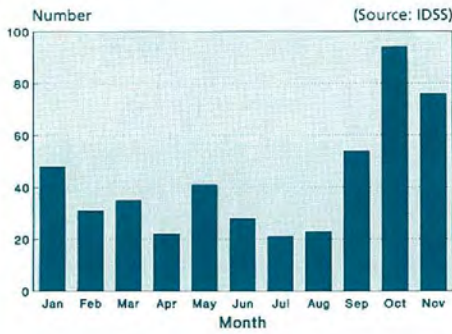
CSA Central Sydney Health Area, SSA Southern Sydney Health Area, ESA Eastern Sydney Health Area, SWS South Western Sydney Health Area, WSA Western Sydney Health Area, WEN Wentworth Health Area, NSA Northern Sydney Health Area, CCA Central Coast Health Area, ILL Illawarra Health Area, HUN Hunter Health Area, NCR North Coast Health Region, NER New England Health Region, OFR Orana & Far West Health Region, CWR Central West Health Region, SWR South West Health Region, SER South East Health Region, OTH Interstate/Overseas, U/K Unknown, NOS Not Otherwise Stated

Please note that the data contained in this Bulletin are provisional and subject to change because of late reports or changes in case classification. Data are tabulated where possible by area of residence and by the disease onset date and not simply the date of notification or receipt of such notification.



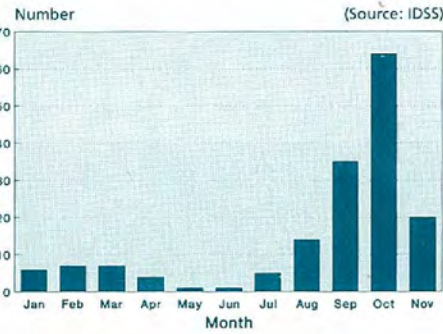
**FIGURE 2**

MEASLES NOTIFICATIONS, NSW, 1992



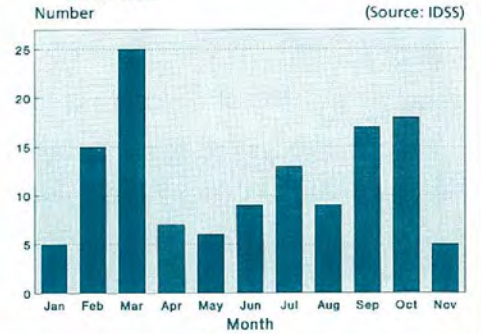
**FIGURE 3**

RUBELLA NOTIFICATIONS, NSW, 1992



**FIGURE 4**

WHOOPING COUGH NOTIFICATIONS, NSW, 1992



**TABLE 9**

NOTIFICATIONS FOR VACCINE PREVENTABLE DISEASES BY MONTH OF ONSET CUMULATIVE JANUARY-NOVEMBER 1992

DISEASE NAME	MONTH											TOTAL
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
Measles	48	31	35	22	41	28	21	23	54	94	76	473
Mumps	3	5	2	-	3	2	1	1	2	-	-	19
Pertussis	5	15	25	7	6	9	13	9	17	18	5	129
Rubella	6	7	7	4	1	1	5	14	35	64	20	164
Tetanus	1	-	-	-	-	-	-	-	1	-	-	2

**TABLE 10**

RARELY NOTIFIED DISEASES BY HEALTH AREA AND REGION CUMULATIVE JANUARY-NOVEMBER 1992

DISEASE NAME	PUBLIC HEALTH UNIT															TOTAL	
	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR		SER
Brucellosis	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Hydatid disease	-	-	-	-	-	-	-	-	-	-	1	2	-	1	-	-	4
Leprosy	-	-	-	1	1	1	-	-	-	-	-	1	-	-	1	-	5
Leptospirosis	-	1	-	-	-	1	-	-	-	-	6	2	-	5	-	-	15
Listeriosis	-	2	-	1	-	2	4	1	-	1	1	-	-	1	-	-	13

**TABLE 11**

NOTIFICATIONS OF NON-NOTIFIABLE SEXUALLY TRANSMITTED INFECTIONS FROM SEXUAL HEALTH CLINICS JANUARY-NOVEMBER 1992

<sup>1</sup> 1/1/92-31/8/92  
<sup>2</sup> 1/1/92-31/8/92  
<sup>3</sup> 1/1/92-31/8/92  
<sup>4</sup> 1/3/92-31/11/92  
<sup>5</sup> 1/5/92-30/10/92  
<sup>6</sup> 1/1/92-30/8/92  
<sup>7</sup> 1/3/92-30/9/92  
<sup>8</sup> 1/7/92-31/10/92  
<sup>9</sup> 14/5/92-30/9/92  
<sup>10</sup> 1/7/92-31/10/92  
<sup>11</sup> No SHC in the Region  
<sup>12</sup> No SHC in the Region  
<sup>13</sup> No SHC in the Region

AHS Infection	CSA	SSA <sup>1</sup>	ESA <sup>2</sup>	SWS	WSA <sup>3</sup> + WEN	NSA <sup>4</sup>	CCA <sup>5</sup>	ILL <sup>6</sup>	HUN <sup>7</sup>	NCR <sup>8</sup>	NER <sup>9</sup>	OFR <sup>10</sup>	CWR <sup>11</sup>	SWR <sup>12</sup>	SER <sup>13</sup>
<i>Chlamydia trachomatis</i>	-	8	157	-	40	5	3	15	40	1	6	7	-	-	-
Donovanosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Genital herpes	-	12	406	-	44	18	5	29	50	-	6	11	-	-	-
Genital warts	-	105	907	-	220	56	7	191	159	17	20	8	-	-	-
Non-specific urethritis	-	9	577	-	244	26	1	70	68	4	7	3	-	-	-
<i>Lymphoma granuloma</i>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-