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THIRD NSW PUBLIC HEALTH NETWORK CONFERENCE

The Third NSW Public Health Network Conference was held at the University of Sydney on December 11-12, 1996. The theme of the conference was One Hundred Years of Public Health. Its objectives were to examine the evolution of public health practice in NSW, and to consider the future of public health. The conference provided an opportunity for people involved in public health to share information about their work through plenaries, proferred papers and posters. Approximately 170 people attended.

In this issue of the *Bulletin* we reprint abstracts of papers that were presented at the conference. We hope to be able to publish transcripts of some of the plenary papers during 1997.

In their evaluation of the conference, participants commented favourably on its quality, including content and context. They supported further conferences of this type, while suggesting that a wider audience should be targeted. They recommended that the conference should be aimed at a broad range of professionals with an interest in population health, and that it should not be confined to the Public Health Network.

In an environment of cost pressures, readers may be interested to know how much was spent on the conference. Participants were charged a registration fee which was set at a level less than cost recovery ($80 for two days). Direct costs amounted to approximately $17,000, and the net cost (taking account of revenue from registrations) was approximately $9,500. This seems a modest outlay for a sizeable Statewide public health workforce development initiative with a significant program covering both public health sciences and policy.

Of course, the total cost of any conference is far greater than the direct cost, due to the extensive investment of the time and energy of many individuals. Thanks are due to invited participants, people who proferred papers, and the organisers.

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ABSTRACTS OF PROFERRED PAPERS

A Question of Quality

SINGING TO SIMILAR HYMN SHEETS

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Background/context: This paper examines the effect of health reforms on organisational change and capacity for improving health.

Methods/strategy: The extent to which agreement on national priority health areas has achieved a commitment to implementation is examined through NSW performance contract agreements.

Results/outcomes: A profile of the status of NSW health services' specific commitments to the implementation of health improvement initiatives in priority areas is presented.

Conclusions: The development process has reached a stage where explicit system-wide commitments to health improvement initiatives can be mapped through the corporate performance agreements.

A STRATEGY FOR THE DEVELOPMENT AND IMPLEMENTATION OF QUALITY OF CARE INDICATORS IN THE NSW HEALTH SYSTEM.

Jong K, Corben P
Clinical Indicator Steering Group

Aim and Background: This paper proposes a mechanism for the development and implementation of quality of care indicators in the NSW health system. Although most quality activity is currently conducted to inform local quality improvement programs, there is increasing evidence that quantitative measures of clinical care will be used to evaluate performance and inform funding decisions for health services. Consequently, a strategy supporting the selection and reporting of credible and reliable indicators in NSW is warranted.

Method: To inform a quality indicator program in NSW, Areas were surveyed on the practicalities of benchmarking for quality of care. The experiences of local and overseas indicator programs, both positive and negative were synthesised, and State and Commonwealth stakeholders were consulted.

Results: Quality of care indicators are currently at an early stage of development in Australia and there is no rigorous system for indicator development and reporting. There is also considerable debate about their validity, reliability and capacity to serve the dual functions of external accountability and internal quality improvement.

Conclusion: The establishment of a quality surveillance system in NSW will depend on a strategy that meets these requirements. This will entail a multidisciplinary approach, include consumer perspectives and engage existing drivers of indicator programs. Recommendations will specifically address data quality, capture mechanisms and the selection of clinically meaningful, reliable and valid indicators. Strategies to provide adequate system support for implementation, piloting of agreed indicators and development of responsible mechanisms for data release will be discussed.

THE QUALITY JIGSAW: CLINICAL GUIDELINES, OUTCOMES, BENCHMARKING, EVALUATION, CONTRACT PERFORMANCE, QUALITY IMPROVEMENT, AND CLINICAL OR PERFORMANCE INDICATORS IN PUBLIC HEALTH - HOW DO THE PIECES FIT TOGETHER?

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Background: Terms such as clinical guidelines, outcomes, benchmarking, evaluation, contract performance, quality improvement and indicators are increasingly implied in health care and public health practice. However, there is some confusion about their meaning, their relationship to one another, and their potential contribution to "best practice" in public health.

Aim: This paper seeks to explain the relationships among the concepts denoted by these terms, and to describe their relevance to public health.

Method: A profile of quality activities covered by the terms is provided, and the connections between the activities is examined.

Results: We show that, while different terms may be used, complementary strategies can lead to improvements in the quality and value of health care. Common elements are the centrality of the consumer in health care delivery, and health care practice based on quality evidence.

EVALUATIONS IN AUSTRALIA OF THE ACCURACY OF DIAGNOSTIC TESTS: A CRITICAL APPRAISAL.

Puech M, Irwig L.
Department of Public Health
University of Sydney

Objective: To determine the quantity and the quality of diagnostic test evaluations assessing diagnostic accuracy. The study covered evaluations done in Australia between January 1988 and September 1992.

Method: The study involved two stages. A literature search and the application of inclusion criteria identified the eligible articles. These articles were then critically appraised using a "checklist".

Results: Sixty-six studies were eligible for critical appraisal. Independent (blinded) assessment of the test and the gold standard (GS) was only stated in 20 per cent of the studies. The selection of subjects to have the GS was independent of test results in 56 per cent of the studies. Sixty per cent of the papers expressed both sensitivity and specificity correctly. Positive and/or negative predictive values (PPV, NPV) were calculated correctly in 25 out of the 55 studies using a dichotomous GS (45 per cent). However, influence of disease prevalence on PPV/NPV was acknowledged in only four papers. Among the subjects used for the test evaluation, there was an appropriate spectrum of disease and of 'commonly confused disorders' in 72 per cent and 54 per cent of the papers respectively. When the test evaluated was part of a combination of tests, its incremental value was assessed in only 38 per cent of the studies.

Conclusion: This analysis revealed important deficiencies in the design and the methods of studies assessing diagnostic test accuracy. Greater attention to study design features is recommended to achieve unbiased evaluations.

ABSTRACTS OF PROFERRED PAPERS

Water and Air Quality

FROM TANK STREAM TO POTABLE REUSE? A HISTORICAL REVIEW OF SYDNEY'S DRINKING WATER SUPPLY

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The Tank Stream, which provided a clean water source, determined the site of Sydney in 1788. However, within 38 years, the Stream more closely resembled a sewer. Protection of drinking water sources became paramount, and separate stormwater and sewer systems started to be constructed. However the first of the five city sewers discharged directly into Sydney Harbour, continuing the menace to health and prompting the establishment of a Sydney City Sewage and Health Board in 1875. In August 1876, this body recommended that a permanent board should be appointed *"to take care of the sanitation and health of the city"*. As a result, in 1880, the Metropolitan Board of Water Supply and Sewerage was constituted. By this time, the Water Board's medical advisor proclaimed that "*The value of foulwater and stormwater sewers may be well estimated by the decrease ....in the death rate in their various localities...*".

By 1935 the administrative control of water and sewerage in Sydney had changed six times, as the need for planning of services became more evident. More recently, corporatisation of the Board through enactment of the Water Board (Corporatisation) Act 1994 has led to the nomination of the NSW Health Department as one of Sydney Water Corporation's (SWC) regulatory agencies, with a mandate to ensure that SWC provides water which is safe to drink.

This paper provides an historical account of the regulation and health aspects governing the provision of Sydney's water supply and sewerage systems since settlement.

POTENTIAL HEALTH EFFECTS OF FAECAL POLLUTION IN OCEAN SWIMMING POOLS AND STORMWATER OUTLETS IN EASTERN SYDNEY

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South Eastern Sydney Area Health Service

Background: To determine the levels of faecal pollution over a three year period at selected ocean swimming pools and stormwater outlets in Eastern Sydney and to assess the potential health effects on pool users.

Method/design: Longitudinal pollution data relating to the levels of faecal pollution found in ocean swimming facilities between 1991 to 1993 were examined. The following ocean swimming facilities were analysed: Bondi Icebergs Pool, Bondi Children's Pool and Bronte Pool. Data were also available for Tamarama and Bronte stormwater outlets.

Results: The ocean swimming pools consistently had levels of faecal coliforms likely to result in swimming-related illness based on previous work by Corbett et al (1993). The highest pollution levels were observed at the Children's Pool at Bondi. Stormwater outlets at three locations were found to have trends of reduced pollution over the three-year period.

Conclusions: Faecal contamination of the ocean pools examined in Eastern Sydney is likely to have an adverse effect on pool users. Further work is required in this area to determine the precise health consequences of faecal contamination using a wider selection of pools and covering a broad range of swimmers. Methods for informing the public of the risk of swimming in contaminated water also need to be reviewed.

Author's comment: *Since this study was conducted, continued monitoring by the local council has shown reduced levels of microbial pollution in the ocean pools. The following action has been taken to diminish any health risks: (1) major cross-connections between sewerage and stormwater systems have been identified and eliminated; (2) an ongoing campaign has been mounted to discourage members of the public from polluting stormwater drains; and (3) signs have been erected discouraging people from using the pools after heavy rains. — Mark Ferson, Director, South Eastern Sydney Public Health Unit.*

AIR POLLUTION AND DAILY HOSPITAL ADMISSIONS IN SYDNEY

Morgan G[1], Corbett S[1], Wlodarczyk J[2].
1. *Environmental Health Branch NSW Health Department*
2. *Newcastle Environmental Toxicology Research Unit*

Several studies have reported increased hospital admissions with increased air pollution. This time series study examines the relationship between ambient air pollution and hospital admissions in the Sydney metropolitan area for the five-year period from January 1990 to December 1994. Daily counts of hospital admissions from 27 public hospitals in Sydney were aggregated for selected conditions - asthma, heart disease and chronic obstructive pulmonary disease (COPD) - from the NSW Health Department's Inpatients Statistics Collection data. Strong seasonal variations are evident for all these conditions so it is important to control for the influence of seasonal variations, as well as other potential confounders, in any assessment of the effect of daily air pollution and daily hospital admissions.

We obtained air pollution data from the NSW Environment Protection Authority's Sydney air quality monitoring network and weather data from the Bureau of Meteorology site at Sydney Airport. We estimated the exposure of the Sydney population to air pollution by averaging the available daily exposure data across the network to get a citywide mean. Poisson regression analysis accounting for the possibility of overdispersion and serial correlation was used to model daily counts controlling for time trends, seasonal fluctuations, and weather. The analysis provided individual estimates of effect for particulates, ozone and nitrogen dioxide on hospital admissions for each of the selected conditions. Multi-pollutant models examined possible interactions between pollutants. The results of this analysis will be presented and discussed.

ABSTRACTS OF PROFERRED PAPERS

AIR POLLUTION AND DAILY MORTALITY IN SYDNEY

Morgan G[1], Corbett S[1], Wlodarczyk J[2], Lewis P[3].
1. *Environmental Health Branch NSW Health Department*
2. *Newcastle Environmental Toxicology Research Unit*
3. *Central Coast Public Health Unit*

Epidemiologic studies in more than a dozen cities around the world have consistently shown associations between particulate pollution and increased daily mortality. This time series study examines the relationship between daily variation in mortality and air pollution in the Sydney metropolitan area for the five-year period from January 1989 to December 1993. Daily counts for all non-traumatic deaths, respiratory deaths and cardiovascular deaths were obtained from the Australian Bureau of Statistics. There is a strong seasonal trend of more deaths in the colder months so it is important to control for the influence of seasonal variations, as well as other potential confounders, in any assessment of the effect of daily air pollution and daily deaths.

We obtained air pollution data from the NSW Environment Protection Authority's Sydney air quality monitoring network and weather data from the Bureau of Meteorology site at Sydney Airport. We estimated the exposure of the Sydney population to air pollution by averaging the available daily exposure data across the network to get a citywide mean. Poisson regression analysis accounting for the possibility of overdispersion and serial correlation was used to model daily counts controlling for time trends, seasonal fluctuations and weather. The analysis provided individual estimates of effect for particulates, ozone and nitrogen dioxide on all non-traumatic deaths, respiratory deaths and cardiovascular deaths. Multi-pollutant models examined possible interactions between pollutants. The results of this analysis will be presented and discussed.

Author's comment: *The studies reported by Morgan et al form part of a wider research program comprising the Health and Air Quality Research Program (HARP) and the Metropolitan Air Quality Study conducted by the NSW Environment Protection Authority (EPA). The results of HARP give us a better understanding of the effects of air polllution on health in NSW. This research, together with the extensive overseas body of knowledge, will provide the basis for outdoor air quality management in NSW into the 21st century. The NSW EPA is coordinating the development of the NSW Government's Air Quality Management Plan. The Plan, due for resease in 1997, will include measures for the control of photochemical smog and brown haze .*
—Stephen Corbett, Manager, Environmental Health Branch, NSW Health Department.

Cancer Screening

A PUBLIC HEALTH POLICY CHALLENGE: MAMMOGRAPHIC SCREENING PROGRAMS FOR WOMEN AGED 40-49 YEARS

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Background: This paper examines the policy implications of studies assessing the effect of mammographic screening programs for women aged 40-49 years. The national program for the Early Detection of Breast Cancer aims to provide two-yearly screening mammograms to 70 per cent of women aged 50-69 years, and up to 40 per cent of women aged 40-49 years and 15 per cent of women aged 70-79 years. The screening policy is partially based on evidence for a greater protective death benefit from screening women aged 50-69 years compared with women aged 40-49 years. Recent meta-analyses of randomised control trials are, however, showing an increasing protective death benefit from screening women aged 40-49 years from 8 per cent to 17 per cent.

Strategy: We used a published modelling approach with data from the Victorian mammographic screening program (BreastScreen Victoria) to discuss the policy implications of these results.

Results: Using the most recent data, the benefits of screening (number of lives extended per 10,000 women screened) were 5.6 lives (95 per cent CI: 0-10) for women aged 40-49 years compared with 17.2 lives (95 per cent CI: 11-22) for women aged 50-69 years. The false positive rates per 10,000 screens were 647 and 494 respectively and the procedure rates per breast cancer detected were 34.3 and 15.7 respectively.

Conclusions: While there is new evidence for increased benefits of screening women aged 40-49 years, these benefits are still not as great as in the older age groups. The benefits are also derived from annual rather than biennenial screening, which would increase the harm associated with screening and may divert resources from screening women more than 50 years, where the greatest benefits and least harms can be achieved.

PREVALENCE AND PREDICTORS OF CERVICAL SCREENING AMONG ARABIC WOMEN IN GENERAL PRACTICE

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Central Sydney Area Health Service

Objective: To determine recency and predictors of cervical screening among Arabic-speaking women in Sydney, Australia.

Method: A consecutive sample of Arabic-speaking women, attending 20 Arabic-speaking general practitioners (GPs), was asked to complete a self-administered health risk questionnaire available in Arabic or English. The questionnaire included six questions about cervical screening knowledge and behaviour.

Results: Of 713 eligible women, 526 (74 per cent) returned completed questionnaires. Of these, 69 (13 per cent) did not know what a cervical smear was. Of 414 women considered 'at risk', 50 (12 per cent) did not know what a cervical smear was. Sixteen per cent of overseas-born compared to 2 per cent of Australian-born women 'at risk' had not heard of a cervical smear. Of 318 women 'at risk' for cervical cancer who knew what a cervical smear was, 72 per cent had had a smear in the last 2 years while 12 per cent had not had a smear for at least 2 years and 9 per cent never had had one. Overseas-born women were more likely to be overdue for a cervical smear. Religion and age were significant and independent predictors of screening after adjusting for other variables in a simultaneous logistic regression model. Acculturation, smoking status, health status and chronic disease were not significant predictors.

Conclusion: This is the first study to provide quantitative evidence that religion and age predict recency of cervical screening among Arabic-speaking women. As the overall screening rate was suboptimal (including a high proportion of women who 'never' had been screened), these women should be a priority for interventions to increase participation in cervical screening. The study also provides unique baseline data to evaluate the success of future recruitment strategies.

A BLOCK-RANDOMISED CONTROLLED TRIAL OF DOCTORS' REMINDERS TO WOMEN IN EMERGENCY DEPARTMENTS TO ENCOURAGE PAP SMEARS

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2. *NSW Cervical Screening Program Westmead Hospital*

Objectives: To evaluate the feasibility, effectiveness and acceptability to women of opportunistic reminders in Emergency Departments (EDs) for Pap smears.

Design: Block-randomised controlled trial

Setting: Emergency Departments in urban hospitals.

Method: Unscreened women at risk for cervical cancer in the intervention group were advised at the ED consultation to attend their GP for a smear. The control group received no reminder. Doctors completed a checklist to document provision of the reminder. Blinded follow-up telephone interviews determined women's compliance with doctors' advice within four weeks of the ED consultation.

Main outcome measure: Pap smear within 4 weeks of ED attendance.

Results: Of 227 non-urgent women recruited for the study over 180 days, 53 (23 per cent) were overdue for a Pap smear (22 in the intervention group, and 31 in the control group). At four-week follow-up, no one in the intervention group had had a smear although 3 (10 per cent) in the control group had (p= 0.25). While 20 out of 39 (51 per cent) women said that a reminder for a Pap smear given by the emergency doctor was acceptable, the barriers to screening by these women such as 'no time', 'forgot', could not be addressed by the reminder.

Conclusion: While opportunistic reminders for Pap smears theoretically could be part of the role of the Emergency Department in the management of non-urgent cases, such an approach is unlikely to contribute to better screening because: non-urgent cases are decreasing, baseline screening rates are no worse than community rates, and an additional prompt is no more effective than usual care.

AUDIT OF THE FOLLOW-UP SYSTEM FOR PAP TESTS IN AREA AND DISTRICT HEALTH SERVICES

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2. *Nursing Branch NSW Health Department*
3. *Institute of Clinical Pathology & Medical Research Westmead Hospital*

Background: The Department initiated a statewide audit of the referral procedures for abnormal Pap smear results within the public health system in response to concerns about systemic problems with the follow-up of abnormal Pap smear results. The process involved consultation between NSW Health, the Institute for Clinical Pathology and Medical Research, Area (AHS) and the then District Health Services.

Aim: To review the adequacy of and problems in the system for following up the results of Pap smears taken by Womens Health Nurses (WHNs) in Area and District Health Services between November 1994 and April 1995.

Method: The review comprised a retrospective audit of smears taken by WHNs registered with the Institute of Clinical Pathology & Medical Research (ICPMR) between 1 November 1994 and 30 April 1995. The adequacy and appropriateness of the follow-up was assessed in relation to the recommendation made by the ICPMR pathologist and a set of criteria based on national guidelines, the NSW Women's Health Nurse Practitioners Policy and Procedure Manual and a local protocol developed by the Wentworth AHS.

Results: Four main problems were identified as being associated with a breakdown in the current established follow-up system. These related to the WHN losing contact with the client (10.3 per cent of smears); the WHN not receiving feedback from a doctor after referral as to whether any follow-up action had been taken (8.7 per cent of smears); the WHN either not or inadequately following up smear results (3.4 per cent of smears); or the follow-up resmear or colposcopy being delayed for more than two months after the due date (2.0 per cent of smears). There was some evidence that the follow-up system was better for the more serious abnormalities. The 9 per cent greater proportion of smears falling into the four problem areas in rural compared with metropolitan Health Services may indicate specific factors adversely influencing the efficacy of follow up services in rural NSW.

Conclusion: The recommendations relate to the need for AHSs, in consultation with all key stakeholders, to reconsider the ongoing development of Womens Health Services in line with national guidelines and identified problem areas.

Infectious Diseases

HYDATID DISEASE SURVEILLANCE IN NEW SOUTH WALES.

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Background: The south-east Tablelands of NSW has been described as a continuing region of increased incidence of human hydatidosis, caused by *Echinococcus granulosis.* Retrospective reviews of hospital records have shown official hydatid notifications to include only around 10 per cent of actual cases, prompting calls for altered notification systems and increased funding for education programs, as well as claims that the NSW health system has failed to take the problem seriously.

Review: We reviewed notifications and admissions from July 1992 to June 1994. During this period there were three notifications on the Infectious Diseases Surveillance System (IDSS) and 22 hospital admissions. The admissions involved 15 patients, five of whom had more than one admission. Ten of the admissions were the first hydatid related hospital admission. Seven were repeat admissions relating to a recent diagnosis, and in five, the hydatid disease was incidental. Of the first hydatid-related admissions, six were male (mean age 63.5 years, range 44-76), and four were

female (mean age 54.8 years, range 34 - 90). Only three such admissions were of people 50 years of age or less. The 'incidence' rate in South East NSW was 2.8 / 100,000 using hospital data, and 0.83 / 100,000 using IDSS, compared to an Australian 1994 rate of 0.31 / 100,000 derived from NNDSS.

Conclusions: Hydatid disease is under-reported. However, using inpatient data would require individual record review to be accurate and even then notifications are not temporally related to disease exposure. Furthermore, while rates in South Eastern NSW exceed NSW and Australian averages, there is little evidence to link this to current behaviour and practices on farms and the overall magnitude of the problem remains small. Evaluation of major education programs is difficult given the lag time prior to illness presentation. The solution will rest with cooperative interdepartmental agreements to integrate messages into existing activity.

MALARIA SURVEILLANCE IN NEW SOUTH WALES, 1986 TO 1996

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Although malaria has never been endemic in New South Wales, appropriate vectors are present and transmission has occurred on several occasions. Around 250 infections are diagnosed in NSW annually, where malaria has been notifiable since 1969. The register of cases began in 1969 as part of the national register at the School of Public Health and Tropical Medicine, University of Sydney. When that register was transferred to Queensland in 1988, the surveillance function for NSW was transferred to the Parasitology Department at Westmead Hospital.

This system is based on referral of blood films from diagnosed malaria cases to the reference laboratory for confirmation and subsequent collation of details of travel history, prophylaxis use and treatment for each infected individual. The data are maintained in an EPIINFO file. Selected information is passed to local Public Health Units and full details transmitted to the National Register of Malaria Cases, University of Queensland, annually. The examination of the referred blood films ensures correct species identification, thus aiding clinical management.

Since 1989 there has been a slow increase in the number of imported cases, a significant increase in the proportion of cases from African countries and a continuing high rate of mis-identification of *Plasmodium falciparum*. This is particularly important because at least 60 per cent of infections imported from Africa are of that species with its potentially fatal outcome.

INVASIVE MENINGOCOCCAL DISEASE OUTBREAK IN WESTERN SYDNEY POSSIBLY LINKED TO A NIGHTCLUB

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Western Sector Public Health Unit

Background: In a two-month period between August and October 1996, the Western Sector Public Health Unit was notified of 17 cases of Invasive Meningococcal Disease (IMD). This is one of the largest outbreaks of IMD in NSW. In this paper we describe the outbreak and its management.

Methods: We conducted active follow-up of all cases and their close contacts including household, work and social contacts. We instituted surveillance for cases in western Sydney and through the NSW public health network. Microbiological typing of isolates was performed by the South Western Area Pathology Service. We liaised with the AIDS/Infectious Diseases Branch of the NSW Health Department to coordinate the management of the outbreak.

Results: We were notified of seventeen cases of IMD in the two-month period between 3 August 1996 and 3 October 1996. Ten cases were males, and most (13) were less than 21 years of age. Ten of the cases lived in the Penrith area. Three cases and close contacts of five other cases had visited a particular nightclub in the Penrith area. We isolated *Neisseria meningitidis* serogroup C serotype 2a serosubtype P1.5 from the cerebrospinal fluid and/or blood from 10 of the 12 microbiologically proven cases.

Conclusions: The management of this outbreak was undertaken collaboratively with a range of health and non-health sectors. Our results suggest an association between attendance (either of cases or close contacts) at the nightclub and IMD. The identical phenotype of *Neisseria meningitidis* isolates from ten of the cases indicates there may have been a common source for the outbreak.

Comment: *In response to this outbreak, Public Health Units throughout NSW initiated active surveillance for cases of IMD, and sought information about contact with the nightclub. Western Sector Public Health Unit staff interviewed cases and contacts about exposures; initiated rifampicin prophylaxis for household and close contacts who may have been at increased risk of carrying the organism; wrote to all general practitioners in western Sydney alerting them to the outbreak and emphasising the importance of early use of antibiotics for suspected cases; and distributed fact sheets on IMD to some schools in western Sydney. The NSW Health Department issued a press release warning that a cluster of IMD cases had been identified in western Sydney, and urged people to seek treatment early if they developed symptoms. Public Health Unit staff prepared new articles about the disease and its management for distribution in the local general practitioner newsletter,* Australian Doctor Weekly, *the* NSW Public Health Bulletin, *and the Commonwealth publication* Communicable Diseases Intelligence. *No further cases of the outbreak strain of meningitis have been reported in western Sydney. Surveillance for IMD continues throughout the State, and rates of disease have returned to background levels. —Jeremy McAnulty, Medical Epidemiologist, AIDS/Infectious Diseases Branch, NSW Health Department*

BARMAH FOREST VIRUS DISEASE: A LONGITUDINAL STUDY OF THE 1995 NSW SOUTH COAST EPIDEMIC

Sam G and Crerar S.
South Eastern NSW Public Health Unit

Background: During February/March 1995, the South Coast of NSW experienced the largest reported epidemic of Barmah Forest Virus disease (BFV) in Australia. Whilst there has been increasing documentation of the natural history and ecology of this mosquito borne alphavirus, this outbreak provided the opportunity to study in detail the clinical manifestations of the disease over time, the impact of symptoms on activities of daily living and the outcomes of treatment options used.

Method: A self-administered patient questionnaire was distributed to 135 laboratory notified BFV cases in September 1995 with a 72 per cent response rate. A further follow-up questionnaire was distributed to respondees in June 1996 with a subsequent response rate of 68.6 per cent.

Results: The most frequently reported symptoms associated with the initial phase of BFV illness were rash (88 per cent), joint pain (83 per cent), lethargy (76 per cent) and joint stiffness (59 per cent). Thirty-one of 73 patients stated they had not recovered by six months. The secondary survey showed that 45 per cent of patients followed up had still not completely recovered upon subsequent review at one year.

Conclusion: Barmah Forest Virus disease is associated with significant acute and chronic morbidity. Information from this study may better enable general practitioners to diagnose and manage BFV disease and will assist health authorities to develop appropriate educational material.

Cancer – Policy

IMPACT IN GENERAL PRACTICE OF THE POLICIES OF THE ORGANISED APPROACH TO THE PREVENTION OF CANCER OF THE CERVIX (OAPCC)

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Aim: To quantify rates of compliance with and recall of the OAPCC among a representative sample of general practitioners (GPs) and identify relevant predictive variables.

Method: We conducted a cross-sectional survey in mid 1996 using a national stratified random sample of GPs who provided general practice services claimed through Medicare and conducted at least 1500 consultations per year. A 19-page self-administered questionnaire and reply paid envelope was mailed out to each GP. Data from the OAPCC section will be reported.

Results: Of the 1271 GPs who satisfied the eligibility criteria, 855 (67 per cent) returned a completed questionnaire. 53.2 per cent [95 per cent CI: 49.8 per cent – 56.6 per cent] of the GPs indicated that they would be 'highly' likely to take an opportunity to introduce a discussion about cervical smears to a 58 year old woman who was in good health, and had come for a non-gynaecological consultation. However, 91.1% [95 per cent CI: 89 per cent – 92.9 per cent] reported that they would be highly likely to include a cervical smear in a specific checkup. 37.9 per cent [95 per cent CI: 34.6 per cent – 41.3 per cent] of the GPs reported that they had found the booklet about the 1991 screening policy 'very' useful, while 38.7 per cent [95 per cent CI: 35.4 per cent – 42.1 per cent] found the NHMRC guidelines for the management of women with screen detected abnormalities 'very' useful. 80.2 per cent of the GPs reported that they recommended cervical smears be taken every two years [95 per cent CI: 77.4 per cent – 82.8 per cent]. 18.1 per cent still recommended annual screening [95 per cent CI: 15.6 per cent – 20.9 per cent]. Results of planned logistic regression analyses identifying independent predictors of compliance with and recall of the OAPCC will also be reported.

Conclusions: A substantial minority of GPs still do not comply with the biennial screening policy, and guideline dissemination needs more attention.

IMPLEMENTING THE NHMRC BREAST CANCER GUIDELINES: WESTERN SYDNEY SPECIALISTS' VIEW OF IMMEDIATE IMPACT, PREFERRED STRATEGIES AND LIKELY OUTCOMES

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2. *NSW Breast Cancer Institute, Westmead Hospital*

Background: Publication of the NHMRC guidelines for The Management of Early Breast Cancer is necessary but insufficient to ensure that the guidelines are recalled (dissemination) and adopted in clinical practice (implementation).

Aim: To determine Western Sydney specialists' recall and use of the guideline, their reactions to them and readiness for innovative dissemination and implementation strategies.

Method: Self-administered survey six months after publication.

Results: Response rate was 77 per cent, of which 80 per cent recalled seeing the guideline before receiving it with the survey; 74 per cent were familiar with consumer companion although 36 per cent did not recommend it. Three-quarters of respondents had positive views for five of eight potential strengths of the guidelines while only half had negative reactions about most potential criticisms. Four treatment sections were highly rated while communication skills next outranked seven investigation and other pretreatment sections. All aspects of the development process were rated important in adopting the guideline and at least one in five also rated five of six dissemination strategies as important. Regarding three implementation strategies, one third considered it 'very' important for local revision of the guideline and, although 15 per cent considered this 'not at all important', twice as many considered feedback and patient checklists as 'not at all' important. Fifty-nine per cent had not referred to the guideline in the previous month; only 20 per cent indicated that it had influenced their practice and only 46 per cent agreed that the guidelines would improve outcomes for women with early breast cancer.

Conclusion: Six months after publication, the NHMRC guidelines have been relatively well-received by specialists in Western Sydney but responses also indicate that local activities will be critical for implementation.

TRANSLATING BREAST CANCER OBJECTIVES INTO INDICATORS.

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   NSW Health Department
2. *NSW Cancer Council*

Context: A review of objectives of cancer care and corresponding indicators has been conducted as a part of developing the statewide system for monitoring cancer outcomes and quality of care in NSW. This presentation illustrates a method for analysing current objectives and indicators and for identifying gaps. The method will be exemplified using breast cancer objectives and indicators.

Methods: The method for analysing indicators consists of compiling specific cancer objectives, formulating indicators of primary outcome or proxy outcome based on risk or process, then further specifying these indicators, or developing new ones, to measure service equity, efficiency, safety and achieving consumer satisfaction. Subsequently the indicators are fed into a matrix recommended for reporting on indicators by the National Health Information Management Group (NHIMG).

Results: A set of 28 indicators proposed for a system-wide collection on breast cancer has been evaluated using the

method and the method has been tested through this evaluation. The method is simple and effective and it can be recommended for use in similar reviews.

Conclusions: The method of developing indicators presented in this paper complements the matrix, i.e. the national classification system for indicators recommended by the NHIMG, which aims to support consistency in reporting and corresponds with the National Health Information Model terminology.

GENERAL PRACTITIONERS' USE OF PSA AS A SCREENING TEST FOR EARLY PROSTATE CANCER IN CENTRAL SYDNEY

Gupta L[1], Ward J[1], Taylor N[2].
1. *Needs Assessment & Health Outcomes Unit Central Sydney Area Health Service*
2. *Macquarie Pathology Services Pty Ltd*

Background: To date, only indirect evidence has been available about trends in prostate-specific antigen (PSA) screening. The NSW Health Cancer Expert Group recommended against screening.

Aim: To estimate the proportion of PSA tests which are ordered for screening in general practice; to identify strategies to reduce screening; to establish a baseline before Australian Health Technology Assessment Committee (AHTAC) PSA policy was announced in August.

Method: A three-page self-completed questionnaire was sent with results of a consecutive sample of PSA test ordered by GPs in Central Sydney in May.

Results: One hundred and eighteen questionnaires were returned (66 per cent response rate). Seventy (59 per cent) of the tests were not ordered for accepted clinical reasons. Analyses will rank reasons for test-ordering including 'routine test for patient's age', patient request, benign prostate disease and 'check-up'. Respondents preferred written guidelines and patient education material.

Conclusion: This study confirms considerable screening activity and represents a unique baseline to evaluate impact of AHTAC policy.

Aboriginal Issues

KEY NATIONAL ISSUES IN ABORIGINAL HEALTH – UNFINISHED BUSINESS

Ring, I.
Queensland Health Department

The most recent reliable Australian data reveal that, not only is there no evidence of recent improvement in mortality rates at *any* age, but all ages rates are actually increasing, driven by increasing rates at older ages. This is unacceptable, particularly given the international comparisons outlined below.

Most people are aware that Aboriginal people have poor health. They are not aware however that the level of health of Australia's indigenous population is much worse than the indigenous populations of New Zealand, Canada and the United States, which are perhaps the countries that are most comparable to Australia. The gap in the expectation of life between the Aboriginal and total populations in Australia is still 17-20 years, while in New Zealand it is five years and in the United States it has been reduced to three years.

The characteristic features of Aboriginal health are the high level of mortality in middle age and the failure to make any improvement in adult mortality when major reductions in adult mortality have occurred in the indigenous populations of the United States, New Zealand and for that matter almost every part of the world.

At each age group, and for all age groups combined, a limited number of conditions account for most of the excess deaths in the Aboriginal and Torres Strait Islander population. Circulatory conditions account for more than a quarter of all excess deaths; injury and poisoning 17 per cent and respiratory conditions 15 per cent. Endocrine conditions, largely diabetes, cause a further 9 per cent of excess deaths. The differential between the Aboriginal and Torres Strait Islander population and the total population will not be significantly reduced until there is major improvement in these conditions.

The other major point is the spending myth. When people hear of the sums of money spent on Aboriginal health, the numbers sound so big that people assume that because there has been so little progress, the money must have been wasted. No-one asks how the spending on Aboriginal health compares with that for the total population. Information on this is hard to obtain. When we examined the situation in North Queensland for the late 1980s, per capita spending on hospitals for Aboriginals was 70 per cent of the level for non-Aboriginals in remote areas despite the fact that the level of health of the Aboriginal population was three times as bad. There were also fewer doctors and nurses per capita for Aboriginals than there were for non-Aboriginals. The differences have been so gross in some remote areas that the inequity can be seen just by looking. Aboriginal health should not be seen as mainly an issue for remote areas. The available information suggests that health standards in urban areas are of the same order or only marginally better than, in remote areas.

There has been an increase in spending since the 1980s but there is a need to further develop programs and health services which are appropriate for the level of need and which provide an effective approach to the main problems. National goals and targets are required for reducing the differences between the health of the Aboriginal and Torres Strait Islander population and the total population. A sustained commitment and national and State action plans are required to systematically address the goals and targets and put the plans into practice over the next five years.

ACCESS TO HEALTH SERVICES BY ABORIGINAL PEOPLE

Wang T, Sutherland T.
Western NSW Public Health Unit

Background: This project is aimed at improving the access of Aboriginal clients to health services, which is one of the goals set in the Strategic Plan for the Health of Aboriginal People in Western NSW.

Methods: Five hundred and twenty Aboriginal people and 10 health service managers at hospitals and community health centres were interviewed on the following issues to do with access to health services: knowledge of health system and health services, access to and utilisation of the services, willingness to use services, satisfaction with the services, needs for Aboriginal health, staffing, Aboriginal culture awareness training for non-Aboriginal staff, relationship between health service providers and Aboriginal communities, Aboriginal health management, and suggestions to improve services.

Results and Conclusions: The results show that the Aboriginal community is not well informed about the health system. Many Aboriginal people do not understand the health system and do not know what health services are available to them. Other main barriers blocking Aboriginal people's access to health services include the shortage of Aboriginal staff and services, lack of Aboriginal culture training for non-Aboriginal staff, and poor communication between health service providers and Aboriginal communities.

Recommendations: To improve this situation implementation of the following initiatives is recommended:

- Conduct health services education campaigns targeting Aboriginal people.
- Increase or restructure some services to meet Aboriginal health needs,
- Employ more Aboriginal staff in some areas of health services,
- Conduct Aboriginal culture awareness training for non-Aboriginal staff.
- Evaluate and repeat the survey in six months.

ENVIRONMENTAL FACTORS INFLUENCING FOOD HABITS

Rodgers K.
Western NSW Public Health Unit

Background/context: Dietary habits result from a complex interplay of cultural, environmental, social and political determinants. These factors, plus numerous others, are believed to shape our habits, opinions and actions. As part of a project addressing Aboriginal nutrition, various environmental factors were investigated in the participating communities, including the area of external advertising devoted to various food and beverages, food price and availability, and food marketing by local takeaway food outlets.

Method/strategy: *External Advertising*: The number of food and beverage advertisements and their estimated area were determined within each community.

Food Price and Availability: The price, availability and quality of fruit and vegetables in all food stores within the participating communities was surveyed. Findings were then compared with a national food chain located in Dubbo.

Takeaway Food Outlets: Foods marketed by takeaway food outlets within the participating communities were surveyed.

Results/outcomes: *External Advertising*: In general, the more unhealthy food options such as alcohol, Coca-Cola, ice-creams and takeaway food products dominated advertising covering >90 per cent of the physical advertising area.

Food price and availability: A range of results were found with regard to price, availability and food quality.

Takeaway food outlets: Healthy choices in takeaway foods appeared to be less available.

Getting It Right

GETTING THE MESSAGE AND THE MEDIUM RIGHT

Jeuken M[1], Strang M[2].
1. Western NSW Public Health Unit
2. ABC Radio

Public health programs often depend on the ability of public health practitioners to encourage the widespread adoption of healthy behaviours in the community. This requires strengthening of practitioners' effectiveness in public communication.

This paper, presented by a media officer working in health and an ABC journalist, highlights the potential contribution of mass communication, media skills and networking in public health. It shows how public health practitioners can use a range of commercial marketing techniques and become more outspoken advocates of health improvement, thereby having a real impact on people's health.

PUBLIC HEALTH PRIORITIES AMONG THE ARABIC SPEAKING POPULATION IN CENTRAL SYDNEY

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Needs Assessment & Health Outcomes Unit
Central Sydney Area Health Service

Background: Little is known about major health risk factors among the Arabic speaking population of NSW. In the very ethnically diverse Central Sydney Area Health Service (CSAHS), the Arabic speaking population is the second largest non-English speaking group and demonstrates relatively poorer health outcomes than other NESB populations in the CSASH.

Method: This paper presents a health profile of patients presenting to Arabic speaking general practitioners and explores the relationship between level of acculturation and health indicators. Data were collected from 851 Arabic-speaking patients (62 per cent response rate) recruited consecutively from 20 surgeries of Arabic speaking GPs in the Canterbury LGA (87 per cent participation). Arabic or English questionnaires were completed in the waiting room.

Results: Almost three-quarters (73 per cent) of males and 36 per cent of females were considered overweight or obese (BMI>25) and 37 per cent of males and 28 per cent of females were smokers. Females were significantly less likely to have been tested for diabetes ($p<.05$) or raised blood pressure ($p<.05$) compared with females in NSW. A theoretically grounded scale measuring acculturation was developed using structural equation modeling and demonstrated high internal consistency (Cronbach's alpha = .88), and concurrent validity when compared with other crude measures of ethnicity. Least acculturated Arabic speaking people tended to report poorer health.

Conclusions: Consecutively sampled ethnic patients of a same language GP may be a useful method of needs assessment with migrant populations. Our results suggest that smoking and weight reduction programs and increased screening for raised blood pressure and diabetes are priorities in this community. These are ideal for intervention by GPs speaking the same language.

MALE INFANT CIRCUMCISION IN NSW

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NSW Health Department
2. Health Services Policy Branch
NSW Health Department

Background: Circumcision of male infants is mostly carried out for social or religious reasons, with medical indications accounting for a minority of procedures. To our knowledge no comprehensive description of the clinical practice of circumcision has previously been undertaken in NSW.

Method: The project comprised two parts.

1. Chief Executive Officers of all Area Health Services (AHSs) in NSW and the Royal Alexandra Hospital for Children (RAHC) were asked to provide the following information: whether a circumcision service was offered locally; whether written policies on circumcision practice existed; types of anaesthesia used; and whether (and what) written information was available for parents.
2. Data on the numbers of circumcisions performed in NSW public and private hospitals were obtained from the NSW Inpatient Statistics Collection (ISC), and on the numbers of Medicare claims for circumcision from the Health Insurance Commission (HIC).

Results: Responses from all AHSs and the RAHC indicated that the great majority of NSW public hospitals offered a circumcision service. There were wide variations in clinical practices (including the use of anaesthesia), and a wide range of written material was given to parents. ISC and HIC data recorded an estimated average total of 5,000 circumcisions per annum in NSW over the period 1988-96. This number did not include procedures done outside hospitals where a Medicare claim was not made.

Conclusions: At least 10 per cent of male infants born in NSW are circumcised. There is wide variation in clinical practice, and no Statewide or national practice guidelines currently exist in Australia. There is a need to develop such guidelines.

A HEALTH SURVEY OF NSW INMATES

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AIDS and Infectious Diseases Branch
NSW Health Department.

Background: The NSW Inmates' Health Survey is a joint NSW Health Department / NSW Corrections Health Service initiative to determine the health status of prisoners.

Method: The project involved administering a physical and mental health interview, recording physical measurements, serological screening, a hearing test, and a dental assessment on a sample of NSW prisoners.

The physical health questionnaire included illness/ disability, health service utilisation, exercise, diet, dental health, medications, asthma, health service assessment, injury, women's health issues and men's health. The mental health screen involved psychiatric history, suicide/self-harm, Beck's Hopelessness Scale, Beck's Depression Scale, drug and alcohol consumption, gambling, smoking, tattooing, sexual health, and child abuse.

The serological screening involved testing for hepatitis B and C antibodies, hepatitis G and hepatitis C using PCR, HIV, syphilis, Herpes type-2, cholesterol, and blood sugar. Females were additionally tested for haemoglobin, pregnancy, and rubella. A Pap smear and chlamydia swab were also taken from the women. All consenting prisoners were given a Mantoux test for TB.

Results: More than 750 male and female inmates across the State were screened including a sample of 200 Aboriginal men. Preliminary data detected low levels of HIV (0.3 per cent). Hepatitis C antibody was found in 32 per cent of males and 58 per cent of females. The prevalence of hepatitis B core-antibody was 31 per cent in males and 46 per cent in females. Hepatitis B surface-antigen was found in 10.6 per cent of males and 2.4 per cent of females. The prevalence of syphilis in male Aboriginals was 6.6 per cent compared with 2.4 per cent in non-Aboriginals.

Conclusion: The NSW prison population contains significant numbers of individuals with hepatitis infection, particularly hepatitis C. Strategies need to be introduced to reduce the risk of transmission within this environment.

Author's comment: *The survey was carried out to determine the health status of inmates, and is the most comprehensive study of inmates of correctional centres known to have ever been carried out anywhere in the world. The findings are being used to develop strategies in the planning of health services in the NSW correctional system. It is anticipated that a report of the study's main findings will be produced early in 1997. —Tony Butler, AIDS/Infectious Diseases Branch, NSW Health Department*

Environmental Health – Collaboration

A HUNDRED YEARS OF THE NSW PUBLIC HEALTH ACT – IS IT REALLY SUCH A HARD ACT TO FOLLOW?

Lloyd G.
Environmental Health Branch
NSW Health Department

The paper provides a brief overview of the changes to public health legislation in NSW since 1896. It also explores some of the reasons why these changes occurred when they did. Against this background the paper examines the role that Sydney City Council has played in helping to maintain the health of the premier colony. The role of local government in the maintenance and development of public health, policy and practice has often been overlooked. Sydney City Council has been responsible for the introduction of a number of programs which are now considered to be an important part of public health infrastructure and practice. Further, municipal engineers and sanitary inspectors have made a significant contribution towards the reduction of the incidence of infectious diseases.

CAN RETAILER EDUCATION REDUCE MINORS' SMOKING RATES ?

Staff M, March L, Holt D.
Northern Sydney Public Health Unit

Background/context: Smoking by adolescents has been identified as a major public health issue facing the Australian community.By raising the legal age of cigarettepurchase from 16 to 18 years in section 59 of the Public Health Act 1991, health authorities have attempted to restrict adolescents' access to tobacco.

Methods/strategy: A prospective study evaluating the impact of retailer education by means of 'beat police' delivered education kits was conducted in the Northern Sydney Health Area. Secondary students aged between 12 and 17 years from both intervention and control regions were surveyed about cigarette smoking habits by means of a self-completed questionnaire.

Results: 12,502 questionnaires were completed. At baseline 19.3 per cent of male students and 21.2 per cent of female students indicated that they were current smokers. Age and sex stratified Fisher exact analysis for trend revealed significant reductions in smoking prevalence for 12 and 13-year-old males among the intervention group and for 14-year-old males among the control group. The analysis of follow-up data with logistic regression techniques failed to produce a satisfactory model for predicting smoking prevalence. There was a significant decrease in ease of purchase ratings for general stores and petrol stations by 16-year-old girls from the intervention region.

Conclusion: Our study does not support retailer education as an effective strategy in reducing adolescent smoking rates. Other methods may have to be used to ensure effective enforcement of section 59 of the Public Health Act 1991.

Comment: *The effectiveness of legislation in the prevention of smoking among minors depends upon (1) retailers' compliance with the legislation, and (2) the resultant restriction of minors' access to tobacco actually leading to decreased smoking. Other studies have produced evidence that education of retailers, coupled with the threat of prosecution of those who do not comply, is effective in promoting retailers' compliance with legislation. There is also evidence that restricting young people's access to tobacco can reduce smoking prevalence. While the study of Staff et al examined whether initiatives which were designed to promote retailers' compliance with legislation led to decreased smoking, it did not establish whether (or to what extent) these initiatives actually promoted retailers' compliance.*
—Editor

INVESTIGATING HEALTH OF PEOPLE LIVING NEAR A HAZARDOUS WASTE DEPOT

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Western Sector Public Health Unit

Background: For many years, concerned residents living in the vicinity of a hazardous waste depot urged authorities to investigate perceived high levels of ill health in their community. We present an outline of our study, and the results of our investigation of routinely collected cancer and mortality data for the community.

Methods: We set up a community-based working group to help with study design and implementation. We defined, a priori, the study area and three cancers for investigation. We obtained cancer incidence data from the NSW Central Cancer Registry (1972-1991) and mortality data from the Australian Bureau of Statistics and the NSW Registry of Births, Deaths and Marriages (1975-1992).We compared incidence rates for the study area to that for NSW using the indirect method of age and sex standardisation, and calculated standardised incidence ratios and 95 per cent confidence intervals.

Results: There was no difference in the incidence of total cancers between the study area and NSW. However, brain cancer incidence for males (but not for females) was significantly higher in the study area compared to NSW. Mortality patterns for the study area were no different to that for NSW.

Conclusions: The increased incidence of brain cancers in males in the study area was an unexpected finding. Our study design was not able to address issues of causality. In this instance, community action and outrage led to the instigation of this study. In circumstances such as these, risk communication issues need to be as rigorously addressed as the epidemiological questions.

Author's comment: *The Western Sector Public Health Unit informed all hospitals and general practitioners in the area of the findings from the study, and in particular the range of reported symptoms thought to be related to local environmental conditions. Further, the Public Health Unit has submitted a proposal to the NSW Environment Protection Authority to develop and implement a surveillance program utilising routinely collected data in the area around the waste depot. This will be used to monitor the health status of the community living nearby the waste depot.*
—Bin Jalaludin, Medical Officer of Health, Western Sector Public Health Unit.

DEVELOPING A COMMUNICATION STRATEGY FOLLOWING A LEAD CHROMATE CHEMICAL FIRE NEAR A PRIMARY SCHOOL

Holt D, Staff M.
Northern Sydney Public Health Unit

Background: In February 1996 a truck carrying multiple hazardous chemicals (including lead and chromate) caught fire outside a Sydney primary school where 600 children were playing in the playground. The area was sealed off by the emergency services and 69 people (mainly school-children) were taken by ambulance to three Emergency Departments. Blood lead screening was offered to all exposed people.

Strategy: A communication strategy was devised to address the concerns of parents, teachers, local residents and politicians. A multi-media presentation describes how an innovative matrix can be applied to a standard communication strategy involving:

- tailoring the message to your audience;
- deciding which points of the message are likely to be remembered;
- using plain English to deliver the message.

Outcomes: The matrix was applied to each of the points above and will be illustrated (during the presentation) by individual events that occurred during and after the incident. The matrix consisted of the development and use of:

- two way information exchange;
- openness;
- trust;
- timing, and
- the development of allies.

Conclusions: The reasons why blood lead screening was offered to all exposed will be discussed. Since the fire those children, teachers and residents who were exposed have remained well.

The lessons learnt from this chemical incident were:

1. The information about the risks to those exposed must be explained fully.
2. That chemical samples taken must relate to the persons exposed and not just to environmental contamination.
3. The need for co-ordination between the emergency and public health services.

Needs and Outcomes of Services

DIABETES ON THE DARLING: NEEDS ASSESSMENT FOR SERVICE DEVELOPMENT IN THE UPPER WESTERN (ORANA) SECTOR OF FAR WEST NSW

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2. Division of Population Health, Far West Health Service

Background/context: The Orana is a large sparsely populated area in north-west NSW, characterised by farm service towns on the Darling river system with significant Aboriginal populations. We estimate there are approximately 1,000 people with diabetes: 600 Aboriginal and 400 non-Aboriginal.

Methods/strategy: To develop a diabetes service appropriate to the Orana by marrying evidence-based standards of diabetes care with constraints posed by community need, geography, and service structures - local and visiting. We travelled to consult with diabetes service providers in each town.

Results/outcomes: The estimated numbers of people with diabetes in each major town were: Bourke: 300; Lightning Ridge: 280; Brewarrina: 190; Walgett: 175; Collarenebri: 40; and Goodooga: 35. The western and eastern sections of the area had similar numbers of diabetics, were divided by a road impassable in wet weather, and separated by 3.5 hours driving time. Local services in larger towns were engaged in basic education, management, and organisation of clinics for visiting specialist services. Specialist services (medical, dietetics, podiatry, and diabetes education) were supplied from a variety of distant centres, in some cases irregularly or with little continuity of personnel.

Conclusions: Many of the basic tasks of education and complication screening were performed by specialists. This is problematic when there is a pattern of poor continuity and coordination of specialist services from afar. A service enhancement that builds up local service capability and articulates more effectively with visiting services is proposed. This service will have to take account of the distribution of disease between the naturally divided western and eastern sections.

DOES CARDIAC REHABILITATION MAKE A DIFFERENCE?

Thornhill M, Stevens J.
Dubbo Base Hospital

An Outpatient Cardiac Rehabilitation Program was commenced at Dubbo Base Hospital in June 1995. This was the first comprehensive program provided by a multi-disciplinary team within the Macquarie Area Health Service for patients suffering any cardiac event.

After the program had run for six months a study was undertaken to show just what effect, if any, the program was having on its participants compared to people who had suffered a similar illness but had not attended the program.

The study had two specific aims:

(1) to assess whether a Cardiac Rehabilitation Program (CRP) made a difference to the wellbeing of those who participated; and (2) to identify the problems associated with recovering from a cardiac event from the personal perspective of those who survived the experience.

Data were collected on a group of 10 people who had attended a CRP following a cardiac event and a group of 10 who had not. These people were selected at random from the medical records of patients who had suffered a cardiac event during 1995. Both quantitative and qualitative data were collected from the two groups, obtained from medical records, a series of focused interviews and a series of semi-focused, conversational-style interviews.

There was an outstanding difference in knowledge of cardiac risk factors between the two groups and in lifestyle modifications based on their knowledge. Those who attended knew more. The perceptions of returning to a normal or near normal lifestyle, returning to work, regaining confidence and setting goals differed between the two groups. Non-participants appeared to accept the limitations of their body and what they believed to be achievable since their incident. They did not feel confident in exerting themselves. By contrast, participants stated the program provided them with knowledge and experience to know what they could and could not do. Participants also knew the details of their illness and surrounding events. One of the more interesting findings was that the participants noted that they must take responsibility for themselves; which was not noted by the non-attenders.

This study has highlighted, to us, the benefits of our program for those that attend. Therefore, our quest for continued funding and accessing all those eligible for cardiac rehabilitation within our health service will maintain its purpose and priority.

MONITORING THE OUTCOMES OF GERIATRIC REHABILITATION PROGRAMS

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1. Calvary Hospital
2. Hornsby & Ku-ring Gai Hospital
3. University of Sydney

Aims & Methods: The aims of this Geriatric Rehabilitation Outcomes project were to establish data on length of stay and functional improvement across a number of centres and to evaluate item usefulness in explanation of variation in outcome for inclusion in possible future minimum data sets. Four participating units recruited patients into the study over three months and followed them for twelve months.

Outcomes: The analysis included 181 patients, 30 per cent of whom were involved in a stroke rehabilitation program and 30 per cent of whom had orthopaedic impairments. From regression analysis the factors most predictive of length of stay in the rehabilitation unit were functional status on admission, handicap status prior to admission and facility to which they had been admitted. Cognitive status and need for an interpreter were not significant.

At 6-12 months 103 patients were reviewed. Twenty seven had died; many of these patients had had high levels of functional dependency on discharge. For the survivors, significant predictors of functional dependency and handicap at follow-up were living situation and handicap

prior to admission, functional dependency on admission, age and cognitive status on admission.

Recommendations: Clinicians found the Resource Utilisation Groups activities of daily living score (RUG-ADL), the Functional Independence Measure (FIM) and the London Handicap Scale (LHS) to be acceptable instruments for administration for the measurement of disability.

Gathering of follow-up information for minimum data sets for monitoring of outcomes requires identifiable funding.

'PUT A SOKS IN IT!'

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Dental Health Branch
NSW Health Department

Background: Before 1996 child dental services in NSW provided individualised care for only 26 per cent of children. It was believed that a further 30 per cent attended private dental practitioners, and that a large proportion of the children were not using dental health services.

Strategy: Based on a program which had been running in Western Sydney, Dental Health Branch developed the SOKS program - Save Our Kids Smiles - to focus on the oral health of the community. This was introduced into all State and Catholic parochial schools in NSW in 1996. The SOKS program provides an education session to 402,000 children in kindergarten and grades 2, 4, 6, and 8 each year. These children are then offered a dental risk assessment and those in need are provided with care. The priorities for care are treatment of pain, and the prevention and treatment of dental caries in permanent teeth.

The SOKS program aims to ensure that children maintain their teeth caries free into adulthood, emphasising prevention and self care.

Results: Data for the first 4 months of SOKS show that the response rate is almost 72 per cent. Nearly 4 per cent of children assessed were in pain, and a further 30 per cent in need of some dental treatment. More than 31 per centhad never attended a dental service previously.

The 29,266 children with dental disease had, on average, 2.3 teeth with untreated dental decay, and 2859 children (3 per cent) have more than 4 teeth with untreated decay. These disease rates are equivalent to those of developing countries.

Conclusion: While fluoridation of the water supply is part of the answer to the issue of dental disease – almost 55 per cent of 12 year old children have no experience of decay – the results from the SOKS program show that this alone is not enough to combat the problem. Tooth decay is a lifestyle disease which will require lifestyle changes if it is to improve further.

Injury

MOTIVATING ACTION TO PREVENT POOL DROWNING

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Purpose: One of the NSW State Injury Goals is to reduce the rate of drowning in children aged 0-4 years with a target of a 50 per cent reduction by the year 2000. Two thirds of drownings occur in swimming pools and therefore the target could be achieved by preventing these deaths alone. This paper presents an approach taken to motivate intersectoral action to prevent pool drowning in NSW.

Method: Routine data were used to calculate a serious immersion number and ratio for each Local Government Area (LGA) by combining near drowning and drowning cases. Due to the small numbers data from 5 years were used in the calculations. The standardised serious immersion ratios (SSIRs) were used to identify areas which would benefit from targeted local action.

Results: The deaths due to drowning have reduced dramatically since 1979. However, the incidence of near drowning has remained relatively stable. There were marked differences in the serious immersion ratios by LGA where at least one serous immersion had occurred.

Conclusions: Providing local data was an effective method to motivate action to prevent pool drowning. Complemented by an intersectoral approach endorsed by the NSW Cabinet, agreement was reached to establish a near drowning register and a statewide intersectoral strategy to address the problem.

WHEN PUBLIC HEALTH GOES BANG

McKay E, Jeuken M.
Western NSW Public Health Unit

While gun control has been debated for many years little real change has been achieved in reducing deaths from firearms. The events at Port Arthur changed the mood of the nation and provided politicians with the opportunity to act decisively to reduce access to, and availability of, firearms in Australia.

The Western NSW Public Health Unit took up the challenge to contribute to the debate by highlighting firearms deaths as a public health issue with arguments based on statistics and international research rather than rhetoric. The PHU contributed to the debate, supporting strong political actions and contributing a level of reason to an otherwise emotional debate.

Public health has an important advocacy role to play, which can influence health outcomes. The gun debate is one example of the process.

Comment: *Rates of homicide and suicide are closely related to the prevalence of household gun ownership. The prevalence of household firearm ownership is an indicator of the impact of the new firearm laws on public health and safety. NSW has been at the forefront of the enactment of gun laws reflecting the national agreement. Promoting compliance with the letter and spirit of the law are important to achieve the full potential of the legislation. — Editor*

PLAYGROUND INJURIES: ISSUES, STRATEGIES AND SUSTAINABILITY

Withaneachi D,
Kidsafe NSW

The playground is the second most common setting for childhood injuries. In NSW alone, an estimated 18,000 children are taken to hospital with playground related injuries, of whom 3,000 are hurt badly enough to require hospitalisation. Not only is the medical cost of these injuries very high, but there is incalculable cost in pain and suffering for these children and their families.

Most playground injuries result from a fall (56 per cent). The most serious injuries are caused by children falling onto hard surfaces. Excessive height of equipment also contributes to the severity of injuries. While the most common injuries reported are bruises (37 per cent), the most severe are fractures (29 per cent) and concussion (5 per cent).

Playground injuries are preventable. In an effort to reduce the incidence and severity of playground injuries in NSW, a three-year Playground Safety project was funded by NSW Health through Kidsafe in October 1994.

A major strategy of the project is the formation of new partnerships, building of strong networks and collaborative action with organisations involved in playground safety and development. Working together we have developed strategies aimed at reducing the risk and therefore reducing the number of unnecessary injuries to children.

This presentation examines some of the strategies and discusses sustainability of the initiatives of the project through the establishment of the NSW Playground Advisory Unit.

Vaccines

THE NEED FOR UNIFORM DEFINITIONS OF VACCINATION COVERAGE

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Western Sector Public Health Unit

Background: Estimates of vaccination coverage are essential for assessing adherence to vaccination schedules and for identifying under-vaccinated populations. However, Australia has no standard definitions for measuring vaccination coverage. It is difficult to compare surveys of coverage and determine whether the national goals for vaccination coverage are being realised.

Methods: In 1995, we surveyed long day care centres (LDCCs) in greater Western Sydney. Data were collected on children aged 24-35 months, including if and when routine vaccines (excluding Hib) were received up to two years of age. Vaccination coverage rates were determined using a variety of coverage definitions. We also examined whether vaccination 'on time' was predictive of complete immunisation at the second birthday.

Results: Ninety-five of 114 (84 per cent) LDCCs responded, providing data on 1,092 children. 'Complete' coverage varied from 80 per cent for children who received all eight vaccines by their second birthday, to 25 per cent where all eight vaccines were received within 30 days of the ages recommended by the NHMRC. Age-appropriate estimates of coverage were dominated by delay and omission of the 18 month DTP. Children who received their first dose of DTP before three months of age were more likely than others to be fully immunised at their second birthday (odds ratio 10; 95 per cent CI 6-16).

Conclusions: National definitions for measuring vaccination coverage need to be established. Age-appropriate definitions should be strict for the primary vaccination course to identify those at risk for incomplete vaccination. Less strict criteria could apply for booster doses which can inappropriately dominate coverage estimates.

LOW IMMUNISATION RATES FOUND IN TWO-YEAR-OLD CHILDREN ATTENDING CHILD CARE

Lloyd G, Lovegrove D, Westley-Wise V.
Illawarra Public Health Unit

Background: There are limited data on the immunisation status of two-year-old Australian children. In NSW the School Entry Legislation introduced by the Public Health (Amendment) Act 1992, which requires principals of schools and directors of child care centres to keep documentation of the immunisation status of enrolling children, provides an opportunity to access information on the immunisation status of two-year-old children.

Method: All licensed child care facilities in the Illawarra and Shoalhaven area were surveyed for information on the immunisation status of enrolled two-year-old children (born between September 1992 and September 1993).

Results: Of the 159 licensed child care facilities, 150 responded to the survey, with only 80 centres having children under three years of age enrolled. Records were received for 1,109 eligible children, representing approximately 25 per cent of the estimated 4,679 number of births for Illawarra/Shoalhaven area. Of the 1,109 children attending child care 63.8 per cent were fully (excluding Hib) immunised by the age of two years. However, only 24.1 per cent of two-year-old children were age appropriately immunised, that is received all 8 immunisations at the time or within 30 days of when they were due.

Conclusions: The results of this survey were very disappointing. An important finding was that immunisation coverage was more likely to decrease with age. As a result of this information a special program has been developed in the Illawarra to highlight the importance of age appropriate immunisation with parents, child care centres, community health nurses, local doctors, immunisation providers, and health care workers.

RUBELLA IMMUNITY IN ASIAN-BORN WOMEN – ARE WE NEGLECTING OPPORTUNITIES FOR VACCINATION?

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2. *National Centre for Health Promotion University of Sydney*

The antenatal rubella status of Asian-born and Australian-born women was compared using a sample of 9,366 women who gave birth at King George V Hospital (KGV) in Sydney from 1992-1994. A medical record review was conducted to check whether those women identified as susceptible to rubella (n = 533) received post-partum vaccination. A higher percentage of Asian-born women were susceptible to rubella (14.9 per cent compared to 2.7 per cent among Australian-born women, $P < 0.001$). For all the women, public patients were twice as likely to be non-immune as private patients (OR 2.73, 95 per cent CI 2.20 to 3.38). Multivariate analysis controlling for age, parity and hospital status (public or private patient) showed that Asian-born women were twice as likely as Australian-born to be non-immune (OR 2.31, 95 per cent CI 2.03 to 2.63). Although Sri Lankan-born women had the highest standardised incidence ratio for non-immunity, Chinese-born women represented the largest group of susceptible Asian-born women (586 women with 17.9 per cent non-immune). Eighty-five per cent of women who were susceptible to rubella received post-partum vaccination. Protocols for administration of post-partum rubella vaccination at KGV have been changed as a result of the record review. An intervention program which combines both ethno-specific and geographic-based strategies should be developed for the Chinese-speaking community in Central Sydney. Family planning clinics and

clinics where terminations of pregnancy are carried out should develop policies for rubella vaccination of high risk women.

POSTCARD REMINDERS FOR INFLUENZA VACCINE: ARE THEY MORE EFFECTIVE THAN AN OPPORTUNISTIC APPROACH IN GENERAL PRACTICE?

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Background: Influenza vaccination is effective in reducing death and morbidity in the elderly. The NHMRC recommends that all persons 65 years and older should be immunised against influenza annually in autumn. However, studies overseas and locally indicate that immunisation rates in the elderly remain low.

Aim: To compare the differential effectiveness of a single postcard reminder in a general practice setting against the current opportunistic approach.

Setting: Three-partner urban general practice.

Method: All non-residential patients aged 65 and over were identified from an age / sex / disease register. After exclusions, 325 patients were stratified by sex and randomised either to receive a postcard reminder in large print mailed in April (N=154; 58 men, 96 women) or to usual care (N=171; 67 men, 104 women). GPs were blind to the randomisation. A blind record audit was done in July to determine the immunisation uptake.

Results: The postcard was significantly effective for men but not for women: 64 per cent of the men who were sent the postcard were immunised compared to 46 per cent in the control group ($p<0.05$). The corresponding percentages for the women were 49 per cent and 44 per cent respectively ($p=0.50$). Rates remained suboptimal for men and women, however.

Conclusion: A single postcard reminder appears to be an effective way to boost influenza immunisation rates among ageing men. Replication of the study is recommended.

Mental Health

MENTAL HEALTH PROMOTION: CONCEPTUAL FRAMEWORK FOR DEVELOPING INITIATIVES

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1. Centre for Mental Health
2. South Western Sydney Health Promotion Unit

Background: In recent years an increasing amount of literature has become available supporting the effectiveness of initiatives aimed at promoting mental health and preventing mental health problems and disorders. Coinciding with this, mental health and health promotion services in NSW began to jointly establish mental health promotion positions and initiatives. With the growing interest in the field of mental health promotion, the NSW Mental Health Promotion State Network was formed to meet and share mental health promotion concepts, frameworks and initiatives which had or were being developed across the State.

Despite the growing interest in mental health promotion, no overall framework had been developed which defined and drew together the work of 'mental health' and 'health promotion'. Such a framework could facilitate the strategic progression of mental health promotion across the country.

Results/ conclusions: This presentation provides a definition for mental health promotion, outlines the key principles underpinning mental health promotion, presents the Mental Health Promotion Conceptual Framework and its use as a planning tool to select and identify issues to develop as strategies and programs for people working in the field of mental health promotion.

NHMRC GUIDELINES FOR DEPRESSION IN YOUNG PEOPLE

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NSW Health Department

Background: Young people's depression has emerged as a major public health problem. Up to 24 per cent of young people will suffer at least one episode of major depression by the time they are 18 years old. Depression in young people can lead to serious long and short-term problems, including further episodes of depression. It is poorly detected and managed.

Strategy: In 1995 the NHMRC formed an expert working party under the National Health Advisory Committee to formulate guidelines for depression in young people.

Outcome: The guidelines are due for release in early 1997. They provide recommendations on the identification, assessment, diagnosis, management and prevention of depression in young people aged between 13 and 20 years. In addition to the guideline reference document, a series of guides for mental health professionals, general practitioners and consumers have also been prepared.

The guidelines are particularly significant because

- they are the first NHMRC guidelines relating to the mental health of young people;
- they are evidence-based and the recommendations are underpinned by an extensive literature review;
- prevention is incorporated throughout and featured in a chapter focussing on primary prevention;
- they highlight important differences between adult and adolescent symptomatology and management.

In NSW, the Centre for Mental Health will oversee a series of pilots aimed at identifying the most effective methods for implementing the guidelines and the guides.

CAN POPULATION SCREENING FOR POST-NATAL DEPRESSION IMPROVE PARENT AND INFANT OUTCOMES

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2. Health Services Policy Branch, NSW Health Department

Background: This presentation will outline the important progress made in the development and clinical use of screening instruments for post-natal depression. The potential for screening provides the opportunity for a major public health initiative in the 1990s. Theoretically, early recognition and intervention should contribute to better outcomes for families and infants. While the promise of such an outcome is tantalising, the limitations of screening need to be considered.

Methods: This paper will describe effective screening instruments and the difficulties inherent in implementing effective screening, including (i) clarifying case definition, (ii) agreeing on established treatment approaches, (iii) ensuring an adequate skill base is available and (iv) adequate resources being provided to manage those identified.

Outcomes: The NSW Health Department undertook the Post-Natal Services Review (1994) to consider these issues. This paper will explore developments relevant to population screening for Post-Natal Depression and will provide an outline of a comprehensive framework in which screening for post-natal depression can be realistically considered.

Conclusions: This paper will emphasise primary health care detection, the role of mental health services consultation, and the implications for health service delivery and monitoring of effectiveness.

EARLY PSYCHOSIS PREVENTION AND INTERVENTION IN NSW

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Centre for Mental Health, NSW Health Department

In February 1996 the Early Psychosis Prevention and Intervention Centre (EPPIC) Victoria, was successful in obtaining national funding as a National Mental Health Project to manage the development and promotion of a National Best Practice Model in Early Intervention in psychosis. To facilitate this development, in July 1996 the Centre for Mental Health appointed a NSW State Coordinator.

The project aims to promote and develop best practice in the management of early psychosis. It will assist mental health professionals intervene earlier with young people who are experiencing first onset psychosis. Evidence from the literature highlights the benefits of early intervention in psychosis, which results in reducing delay in treatment, and improving health outcomes for young people. It reduces secondary morbidity in the post-psychotic phase of the illness and costs to the health care system.

In NSW several exciting initiatives are underway. Some Area Mental Health Services are in the process of developing best practice principles in early detection, prevention and early intervention, for first onset psychosis. Key areas for discussion include the difference in perceptions of what constitutes 'early intervention' and the most appropriate model of service delivery.

Early intervention represents a paradigm shift in the delivery of mental health services to young people suffering from first onset psychosis.

BONE MARROW DONATION FROM UNRELATED VOLUNTEERS – THE AUSTRALIAN BONE MARROW DONOR REGISTRY (ABMDR)

Gordon S. Farrell C.
Australian Bone Marrow Donor Registry

Background: The Australian Bone Marrow Donor Registry (ABMDR) was established in December 1990 after increased interest worldwide in unrelated bone marrow transplants. In 1987 the results of the first major series of unrelated transplants became available which showed the potential for successful transplantation of CML using unrelated volunteers who were tissue-matched with the recipient.

Strategy: The aim of the ABMDR is to provide suitably tissue-matched, unrelated voluntary donors for patients in need of bone marrow transplantation. The ABMDR is an Australian registry with national equitable access for both donors and recipients. It consists of a donor panel within existing facilities in Red Cross Blood Transfusion Services and State Tissue Typing Laboratories in each participating state, with computer links to the national coordinating office.

Outcomes: The ABMDR has been actively tissue typing volunteers since January 1991 and by the end of September 1996, 96,102 donors were registered of whom 37.7 per cent were fully tissue typed. It is anticipated that the target 100,000 donors will be reached by the end of 1996. This national database is regularly searched for approximately 260 Australian patients at any one time and since the inception of the Registry several hundred donors have been identified as a match.

Conclusion: Despite the enthusiasm and benevolence of the Australian public, there will always be occasion to search international registries for those people with a rarer tissue type. With sophisticated information technology it is possible to search international registries rapidly and assess the availability of donors both in Australia and overseas. The establishment of the ABMDR is an excellent example of successful national cooperation.

SALES OF CIGARETTES TO MINORS — 'BOYS VERSUS GIRLS'

Kerwand R.
Illawarra Public Health Unit

Background: 'Sales to Minors' compliance surveys have been carried out in the Illawarra since July 1994. A brief

PUBLIC HEALTH EDITORIAL STAFF

The editor of the *NSW Public Health Bulletin* is Dr Michael Frommer, Director, Centre for Research and Development, NSW Health Department. Dr Lynne Madden is production manager.

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 a summary of the key points to be made in the first paragraph. References should be set out using the Vancouver style, the full text of which can be found in *British Medical Journal* 1988; 296:401-5.

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presentation summarising experiences in the Illawarra with regard to 'boys versus girls' purchase rates will be given.

Method: The surveys have involved young volunteers (both boys and girls) entering tobacco retail outlets in an attempt to purchase cigarettes.

Results: The results of these surveys tend to suggest a far greater willingness for shopkeepers to sell cigarettes to underage girls than to underage boys. The most recent survey done in the Illawarra has shown this imbalance to be in the ratio of about 4:1.

Comment: *This is an interesting result, in view of the higher prevalence of smoking among female school students than among males. The observation that young females may find it easier to buy tobacco products than young males may help to explain the higher prevalence of smoking among females. There is evidence that restricting young people's access to tobacco can reduce smoking prevalence. Initiatives such as those undertaken by the Illawarra Public Health Unit to prevent sales to minors have great potential to reduce tobacco use by young people. This study underlines the importance of targeting young women in these initiatives. —Editor*

A TIMELY CHANGE: MAKING INFORMATION TECHNOLOGY WORK FOR US

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Western Sector Public Health Unit

Background: Following the release of the policies and procedures to enforce section 59 of the Public Health Act 1991, every NSW Public Health Unit will now be required to report annually on compliance monitoring activity. The Western Sector PHU has undertaken compliance monitoring for the last 12 months. During this time it was recognised that environmental health officers (EHOs) required a management tool to assist in undertaking the procedures outlined in the guidelines.

Methods: To meet this need, the Western Sector PHU developed a Compliance Monitoring Database with input from environmental health officers, information technology specialists, epidemiologists and NSW Health Department representatives from the Drug and Alcohol Directorate and the Legal Branch. The aim has been to ensure the database is useful, simple to use, produces the required reports, records all necessary data and stores the data to optimise statistical analysis.

Results: The resulting database will assist EHOs to manage this work, help to standardise work practices across NSW and provide important data to assess compliance with the legislation.

Conclusions: The Compliance Monitoring Database will assist EHOs in collecting and using compliance monitoring data to improve their efficiency and effectiveness in using the policies and procedures. We expect that this will eventually result in improved compliance with section 59 of the Public Health Act and reduce smoking rates in younger people.

FROM STAFF CLINIC TO EMPLOYEE PREVENTATIVE HEALTH PROGRAM

Morrissey J, Wawn J, Taylor P.
Prince of Wales Hospital

Background: Infection Control (IC) and Employee Health (EH) are overlapping major issues for employers and every staff member. Recent WorkCover legislation and NSW Health Department Circulars (95/13, 95/8, 96/40) enforce what had previously been good practice. Infection Control strategies now recognize that patient-to-patient, patient-to-staff, and staff-to-patient transmission of infection can occur.

While IC and EH activities share common ground they developed and operated separately, particularly in larger institutions. Reluctance of IC practitioners to accept additional work from EH in the past was based on paucity of resources to fulfil both roles and different lines of responsibility.

Strategy and outcomes: We describe an Area Health based Employee Preventative Health Program (EPHP) which delivers the immunisation policy with records and statistical analysis of compliance, and management of occupational blood and body fluid exposures. Records of initial immunity status and immunisation during employment are entered into the Area's Human Resources Department database (AHRDD) which also generates reminders for boosters. Finally, we describe a plan to link staff preventative health and infection control activities at a complex of teaching hospitals on one site with shared clinical and support services.

Conclusion: The EPHP will use the AHRDD to record staff immunisations. Integrating Infection Control and Staff Preventative Health will achieve a critical mass of expertise to underwrite the program. The Area Health Service can fulfil its legal obligations and also control costs. These initiatives may serve as models for other health bodies.

ESTABLISHING A Q FEVER VACCINATION PROGRAM IN A RESISTANT ABATTOIR

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South Eastern NSW Public Health Unit

Background: Q fever vaccine has been widely available in NSW since 1993. During the period 1993 to 1995, the reported incidence of Q fever in NSW fell from 6.6/100,000 to 2.2/100,000. Although Q fever vaccination is considered a requirement under the NSW Occupational Health and Safety Act 1983 for employees within high risk occupations, many meat processing facilities have resisted implementing vaccination programs for staff.

This paper reviews the occurrence of two outbreaks of Q fever in an abattoir in a ten month period involving 15 and 37 cases respectively.

Despite intensive negotiations between the facility and public health authorities following the first outbreak, a vaccination program was not undertaken due primarily to the perception by management that the high rate of turnover amongst those staff at high risk, i.e. part-time and casual employees, did not justify the expenditure.

Strategies: Following the second outbreak, the Public Health Unit and NSW Workcover Authority in conjunction with the facility, local General Practitioners and the vaccine manufacturer developed a strategy which enabled a screening and vaccination program to be implemented. This included a scheme whereby the cost of screening and vaccination of new employees is borne initially by the employee and reimbursed after a minimum period of employment.

Outcome: The program and strategies developed intersectorally at a local level can be adopted by other authorities to successfully implement vaccination programs in resistant organisations.

POSTERS

INFORMATION TECHNOLOGY IN PUBLIC HEALTH: THE ROLE OF ITSIG

Skinner J, Jones L.
Information Technology Special Interest Group (ITSIG)

Background: The Information Technoloogy Special Interest Group (ITSIG) wass formed in September 1994.

The ideas was that Public Health Unit (PHU) staff involved with information technology should establish a Statewide network to develop equipment standards and expertise. The formation of ITSIG was encouraged by the Chief Health Officer who "looked forward to... seeing improved coordination of data processing and analysis efforts and the development of invormation technology standards within the Public Health Network" Since the first ITSIG meeting in October 1994, ten meetings have been held with an average representation of eight PHUs.

Major Roles of ITSIG: Information technology is an area of very rapid change and ITSIG has provided an important forum for the discussion of IT needs. ITSIG has also played an important role in finding the right balance of hardware and software for the needs of individual PHUs, while trying to achieve a higher level of standardisation. ITSIG also serves to provide saving and increased expertise via training courses and seminars (for example, MapInfo Courses, a MapInfo Seminar, and SAS training seminar have been coordinated by ITSIG).

ITSIG also provides a vital forum for technical support and problem solving both by an e-mail public group and regular face to face meetings. This is important when a number of PHUs are using software and hardware not supported by their respective IT people.

This electronic presentation will utilise a stand alone Pentium PC to provide information about ITSIG as well as current electronic sources and softwares of use to Public Health practitioners.

THE UNFOLDING OF THE PHENYLKETONURIA (PKU) STORY

Stace L.
Genetic Counsellor, Child & Family Health
Goonellabah

Background: Phenylketonuria (PKU) is a genetic disorder due to an error in the body's metabolism, affecting about 1 in 10,000 newborn babies. PKU occurs when an essential enzyme is deficient. The enzyme deficiency results in a build-up of phenylalanine in the blood and can cause severe brain damage if untreated. Before there was a test for this condition at birth, followed by early commencement of treatment, children with this deficiency would become mentally retarded. Newborn screening for PKU began in NSW in 1965.

A family in northern NSW lived on an isolated dairy farm in the 1950s-70s. Their first child was diagnosed with PKU when she was found to be mentally retarded. With their subsequent affected children they had a very difficult time in trying to maintain the treatment. They also had to contend with ignorance of the local doctors, long delays in advice from the city specialists, and the exorbitant cost of the special supplements. They are a truly stoic family.

Their experience tracks the unfolding of the PKU story in the NSW context. The discovery of the cause of PKU, the development of the newborn screening test, and the refinement of the diet mean PKU is no longer a major cause of mental retardation. This is a great medical breakthrough.

A FOOD AND NUTRITION MONITORING STRATEGY FOR NSW, WORK IN PROGRESS

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University of Sydney

Background: The development of an information system to support population nutrition programs in NSW is timely. Decision-makers in health service development, health promotion, food safety and nutrition at the state and local levels require a greater range of readily interpretable information to inform their planning and to account for their activities. Information about the food and nutrition situation in NSW is patchy, unpredictable and out of reach. Many opportunities exist to improve the quality and use of nutrition information and these need to be tapped. The project's main objectives are to identify the kinds of information that will help to develop more responsive and effective nutrition policies and programs at the state and local levels in NSW, and to determine efficient ways to obtain and disseminate food and nutrition information.

Methods: Extensive consultations are underway to identify perceptions about important nutrition issues for program and policy development and how people currently use nutrition information. For the issues of greatest importance, the best and most efficient methods of obtaining information will be sought. These methods will build on national nutrition monitoring plans, research in population dietary assessment methods and consultations with potential suppliers of information.

Expected Outcomes: By mid-1997, the project will recommend a plan for establishing a systematic approach to obtaining and disseminating nutrition information. The plan will include recommendations for short modules about dietary habits and weight status that can be used in surveys, methods to monitor the food environment in selected settings (including school canteens) and priorities for monitoring nutrition in vulnerable population groups.

CORRIMAL AIR POLLUTION IN HEALTH – AN ANECDOTAL SURVEY

Willison R., Illawarra Public Health Unit

Background: Residents of the suburb of Corrimal on the Illawarra coastline expressed concern about the health effects of air pollution from the Corrimal Cokeworks.

Methods: All complaints to the EPA were referred to the Illawarra Public Health Unit for a one year period and complainants were interviewed. Each was asked a standard set of questions relating to pollution, outrage and health effects.

Results:

1. The proportion of affected households decreased as the distance from the cokeworks increased.
2. Reported health effects concided with
   a) operation times of the coke ovens;
   b) prevailing wind conditions towards the residential areas from the coke ovens.
3. The majority of health effects were consistent with upper respiratory tract irritation.

This information has been fed back to the community, regulators and the industry. It also forms the foundation of a further investigation which is in progress.

INSPIRATION FROM THE US: THE US HEALTH CARE FORUM'S 1996 HEALTHIER COMMUNITIES SUMMIT

George Rubin
Chief Health Officer

The US Healthcare Forum's Healthier Communities Summit in San Francisco in April 1996 brought together a diverse group of people to discuss how to organise and achieve health improvements in communities. Town mayors, fire chiefs, police, retired citizens, school teachers, lawyers, researchers and others joined hospital and public health professionals to share experiences at this extraordinarily meeting.

The Healthcare Forum promotes itself as 'a resource in education and applied research at the forefront of new leadership thinking, organizational learning and mastering change', and it claims to act as 'a catalyst in the creation of healthier communities'. Its members are individuals and leaders of organisations from countries around the world (especially the US) who believe that health care can be 'transformed'. The Forum is known for its annual Healther Communities Summit, the *Healthcare Forum Journal*, its executive education series, computerised learning environment, and its honours awards.

It was apparent from the summit that leading community health thinkers in the US are preoccupied with two over-arching themes:

- the disruptive effects of rapid social and technological change, and the management of change; and
- health effects of the eroding of social cohesion, and approaches that might be taken to repair the damage.

The summit comprised hands-on workshop sessions and plenary sessions on topics ranging from business ethics and social trends to violence in Harlem. This article outlines the main ideas from some of the major plenary sessions and a pre-Summit computer simulation workshop.

'All you need for a new universe is a new mind' – Jennifer James

'All you need for a new universe is a new mind,' claimed cultural anthropologist Jennifer James, from the University of Seattle. According to James, the changes around us are taking place faster than in any previous generation and we are being forced to change our way of thinking and feeling about ourselves and our jobs, the way we live and the future itself. Until recently the profound changes which we are facing today would have taken at least three generations to assimilate; we are trying to make the changes in a decade. Old values and institutions are breaking up, and we are unsure as to what will replace them.

James identified three themes emerging from the current chaos.

- The first is ***revolutionary technology***. We have emabarked on a new culture of systems and connections, with technologic change redefining the workers who change structures which in turn change society. We are seeing the advent of smart offices, smart houses, and smart telephones. More people work from home and connect with colleagues all over the world.
- The second is ***intense economic shifts***. It is estimated that, within 20 years, 80 percent of the jobs in the US will be cerebral and only 20 percent manual (the opposite of the 1990 ratio). People with high level communication skills and access to electronic knowledge will be in great demand. We have moved from a hunter-gatherer society (10 million years) to an agricultural society (8000 years) to an urban industrial society (200 years). Now we are in a global service world, speeding towards an economy which exploits the interaction of life sciences (most importantly, gene manipulation) with electronics. Vast numbers of people will not be able to make this transition, and the result will be the largest accumulation of disenfranchised people in history, with irrelevant skills. James proposes that there is a connection between the speed in the change of work and economic status on the one hand, and mental health and violence on the other.
- The third theme comprises *cultural changes*, due to vast demographic shifts as people move around the world creating multi-cultural communities and transforming neighbourhoods. These shifts will require basic changes in perceptions and values, and bring the risk that the triggering of old territorial instincts and prejudices and attempts to hold on to traditional privileges will lead to violence.

Leaderships Skills for a New Age – Jennifer James

In another presentation James argued that we need eight skills to be able to cope with these technologic, economic and cultural changes, and evolve rapidly to live as a human family in a global village.

- ***Perspective, or seeing with new eyes*** - the ability to process large amounts of information, see the positives and negatives of a situation and see how the parts relate to each other and the whole. In this we will be aided by computer technologies and electronic memories.
- ***Pattern recognition, or recognising the future*** – the ability to identify bits of information or clues that present us with new and visible patterns or trends.
- ***Cultural knowledge – harnessing the power of myths and symbols***. We filter all new information through our existing beliefs, which cloud our perceptions, add an overlay of emotions, and impair objectivity. When different cultures meet, myths and beliefs mingle. James suggested that, in times of rapid transition, individuals who can recognise shifts in societal beliefs and stereotypes stay ahead of the pack. She gave examples from monitoring children's literature, best-seller books, science fiction, the arts, advertising, trends in television programs, popular culture (e.g. hair styles and body piercing) and trends in other countries. She exorted us to notice unusual partnerships (who is working with whom, and why), and to try to escape from personal limitations and biases.
- ***Flexibility – speeding up the response time***. Learning how to respond to and master the process of change is a critical leadership skill for the next century. The ability to see the need for a new product, service, or organisational change (without at first necessarily knowing how that need can be met) is a crucial component.

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- ***Vision – understanding the past to know the future.*** Nostalgia locks us into beliefs about the way things were. These beliefs may have little or no basis in reality, and they may make us to less adaptable to change. The structure and culture of many organisations maintain and sometimes reinforce a nostalgic and unrealistic view of life and work, discouraging even the most constructive changes. Enlightened leadership can overcome this, but it requires knowledge of the existing culture and an awareness of the organisation's key concerns. The goal is to re-create a shared positive vision and trust.
- ***Energy – doing more with less***. This involves using technology, learning new skills, continuing education (especially for communication and negotiating skills), taking action and thinking beyond current projects, developing open information systems, keeping our lives in balance, and maintaining a sense of humour.
- ***Mastering new forms of intelligence***. The future will require a higher and more socialised process of reasoning and more sophisticated reactions. We will need to expand our skills for lateral thinking, creating scenarios, and forecasting.
- ***Global values – profitting from diversity***. We will need to become global citizens, able to move easily among countries, languages and customs. Organisations will need people with these capacities.

The disappearance of civic America - Robert Putnam

Professor Putnam, from Harvard University, contended that government and economies work well where there is connectivity between civic leaders and where high levels of community engagement, reciprocity and trust exist, i.e. where there is *social capital*. Social capital is measurably related to physiologic events, mental health, morbidity and mortality.

Compared with 30 years ago, we trust each other less, we are less connected with our communities, and we have lost social capital. Over this time period in the US, community trust in government to do the right thing has declined from 75 to 19 percent, membership of unions, the Red Cross, Boy Scouts and bowling leagues has declined by 50 percent, participation in meetings about town affairs has declined by 40 percent, voters have declined by 25 percent, and religious participation has declined by 20 percent. The decline in social capital which began around 1930 has been most marked in women who fit the classic model of homemakers. Those born in the 1970s have the lowest social capital.

Our challenge is to reverse the trend of declining social capital through our efforts to form productive partnerships in public and private enterprises.

Habitat re-design: the final frontier for healthier communities – Leland Kaiser

Futurist Leland Kaiser argued that it is impossible to be healthy if you live in an unhealthy environment, and that the healthier communities movement is incomplete without healthful human habitats which promote happiness, healing, self-esteem and respect. He challenged us to pursue imaginative approaches to town and urban planning and architecture.

Kaiser noted that the worst hospital design is usually seen in the medical and surgical wards and the best in birthing centres and hospices. He then described extensive requirements for healthy environments in the community, listing physical, intellectual, psychosocial and spiritual elements.

Ethics, ecology and the health of a community – Emily Friedman

Emily Friedman (health policy and ethics analyst and writer) proposed that an assessment of a community's health should include indicators of education, safety, the natural and built environment, employment, environmental and community services, culture, and heritage, in addition to indicators of health status and health service outcomes. Friedman emphasised the importance of listening rather than studying and reporting. She exhorted evaluators to spend more time talking with and listening to people who work in communities, exploring ways to build partnerships. She boldly suggested that, while there must be indicators for anything we are trying to change, people who want measurements must also be involved in finding solutions for problems revealed by the measurements. In closing she made a strong plea that ethical policies should be practised by community health organisations.

Managing communities for profit or health? – Arie de Geus

A former Shell executive and now an advisor to the World Bank, governments and private institutions, Arie de Geus described the results of a study examining the characteristics of long surviving companies. While the average life expectancy for large companies is 40-50 years, some have survived for up to 700 years. The long survivors have demonstrated excellence in change management. They have four special characteristics:

- financial conservatism - a knowledge of the value of having money in hand, and the capacity that this provides to exploit opportunities as they arise;
- leaders who are sensitive to the world around them, and recognise trends and significant scenarios;
- a clear corporate identity, and management and staff who have a sense of cohesion and identify with the corporation; and
- full use of delegated authority, few centralised rules, and a tolerance of activities at the margins of the corporation.

Companies like Dupont (which has existed for 200 years) and Storer (700 years) have been able to change their investment portfolio over time – Dupont from gunpowder to chemicals, and Storer from forestry to hydro-electricity to paper. Such companies display tolerance of, and receptivity to, new ideas.

De Geus argued that health care organisations are preoccupied with pursuing efficiency objectives, and in doing so they tend to have a low tolerance of new ideas and a limited capacity to adapt to rapid change. He pointed out that successful organisations learn to change their structures and adapt to a changing world. They allow

creativity, social propagation, mobility and communication. They have value systems that encourage openness, tolerance, and enhanced learning ability. He finished with the counsel that people, not assets, are the essence of an organisation.

Building winning partnerships between managed health care organisations – Jordan Lewis

Jordan Lewis is an author and expert on strategic alliances. He observed that, as competition intensifies and organisations recognise their skill limitations, competitors are forming alliances with each other. These alliances are characterised by shared objectives, needs, risks, benefits, and conflict resolution mechanisms.

Lewis argued that health care organisations should favour alliances over mergers because alliances are more likely to lead to improved quality and lower costs, while mergers require collaboration and integration efforts beyond the competence of most health managers.

He defined key elements of successful alliances as trust, having a local focus, adherence to clear objectives, commitment to continuous quality improvement and collegiality, and demonstrable efforts to stretch the relationship. He warned against taking relationships forgranted Performance in all roles should be measured and compared with that of competitors. Leaders must champion new methods to raise performance and set the example for performance and trust.

He had further tips for successful alliances: start small; concentrate on the consumer, because consumer satisfaction is the ultimate indicator of health care quality; and promote spontaneous creativity between partners.

Deadly consequences – how violence is destroying our teenage population – Deborah Prothrow-Stith

Massachusetts public health leader and advocate of violence prevention Deborah Prothrow-Stith argued that there is an epidemic of male homicide and youth death in the US, and that much of this violence is preventable. She asserted that the violence has much to do with anger between people in the same family or who know each other. Major contributory factors include the availability of guns, drug and alcohol use, poverty and income inequality, a meanness in the US society, and an ethic of having to win at any cost in an environment where the superhero is a violent individual.

Prothrow-Stith pointed out that children seek and obtain adult attention and resources one way or another – either early (through nurturing which tends to prevent problems), or later (when adults have to deal with the problems). She argued that having a healthy child in a healthy family is not enough; the child needs to live in a healthy community supported by healthy public policies.

She proposed that it will take sustained effort over the next three decades to control the epidemic – much the same as for tobacco control efforts. The strategies must include:

- primary prevention, to change attitudes and norms from meanness to 'niceness';
- secondary prevention – counselling and therapy for people at risk, especially for children seeking attention (e.g. those suspended from school, and those who get into trouble with police); and
- tertiary prevention or treatment – incarceration – which is analogous to chemotherapy for cancer.

Public policy is oriented to punishment, and most resources are spent on incarceration rather than on primary and secondary prevention efforts, such as after-school and jobs programs for youth. Prothrow-Stith closed with a plea for allocating resources to early prevention programs. She urged us to work towards towards a fundamental change in attitudes and a redefinition of the hero.

Risky business: mastering the new business of health (pre-Summit workshop)

This one-and-a-half-day pre-Summit workshop gave participants hands-on experience of modelling the long-term effects of resource investment in the US managed care environment, using computer simulation techniques. The model was designed to support health care leaders in pursuit of optimal health for a defined population while maintaining business performance. Workshop objectives were to promote an understanding of the impact of prevention and treatment practices on population health (balancing short-term financial requirements with long-term investments), and to enhance shared understanding and strategic thinking among team members.

Key assumptions were as follows: ageing and risky behaviours increase need; competition and capitation-based payment systems decrease revenue potential; and the need for infrastructure improvement increases costs.

The strategic implications are that productivity must rise, the need per person must be reduced, and prices must diminish. The strategic levers were the amounts invested in infrastructure and clinical programs of various types, sources of finance, the utilisation of human resources, and charging mechanisms. Performance objectives were to reduce need per person, increase profit, and improve customer satisfaction to keep the organisation viable (or better, flourishing) over a twenty-year period.

While we were given only sketchy information on the derivation of performance indicators for the model, the workshop was useful in that it challenged thinking about the balance of investment in prevention and clinical programs, and about the implications of pricing and human resource strategies. It was fun, and I commend the approach as a useful team building exercise for clinicians, managers, and public health professionals. More information is available from Steven de Mello (telephone 1-510-653-7590, fax 1-510-653-9063).

CONCLUSION

Many smaller presentations described various collaborations to achieve population health objectives. Experience from these projects reaffirmed time-tested lessons:

- it takes time to build momentum for collaboration;
- there is great value in balancing 'top-down' and 'bottom-up' approaches;
- big ideas should be encouraged, but achievable steps must be determined;
- we must always look for new ideas to connect concepts and people; and
- measurable outcomes and accountability mechanisms are essential.

TRENDS

Reports of infectious diseases for the 12 months to October 1996 indicate that the incidence of most diseases are as expected for this time of year (Figure1). Even reports of **hepatitis A**, which were at double the expected rate, declined around the state, although pockets of disease persist, notably in the west of the state (Table 1).

Pertussis (whooping cough) cases continue to rise; practitioners should consider this diagnosis among patients of any age presenting with a persistent cough, especially small children in whom the disease can be fatal. Up-to-date immunisation, case exclusion from child care, school and work, and erythromycin preventive therapy among case-contacts can prevent serious illness and fatalities.

MEASLE CONTROL

Fortunately, few measles cases have been reported lately. The last big epidemic, in the second half of 1993, claimed almost 900 cases in western Sydney alone. Because the incidence of measles rises to epidemic proportions on a cyclical basis, it is timely that the NHMRC has released guidelines for controlling measles outbreaks in Australia.[1]

The first priority for measles control is immunising all children aged one year. In the guidelines, the NHMRC also recommends that:

- medical practitioners report to Public Health Units cases of suspected measles, viz persons with an illness characterised by: (1) a morbilliform rash, (2) cough, and (3) fever present at the time of rash onset;
- all sporadic cases be serologically confirmed;
- salivary diagnostic tests be made available;
- Public Health Units screen incoming reports daily for notifications of measles, and carry out and complete investigation of suspected cases within one working day;
- general practitioners and Divisions of General Practice be kept informed of outbreak actions and policies;
- suspected cases avoid health care waiting rooms — they should go to another room which will be vacant for >2 hours after the consultation, or be examined at home (persons in the same room while or <2 hours after an infectious patient should be regarded as contacts);
- susceptible contacts and eligible siblings be offered measles-mumps-rubella (MMR) vaccine, preferably within 72 hours;
- children aged <12 months be offered immunoglobulin within 7 days of contact;
- the vaccination age be lowered where there is a high attack rate among children aged <12 months;
- all children attending hospital be opportunistically vaccinated;
- vaccination status of health care workers be compulsorily documented;
- hospital infection control officers and Public Health Units be informed of persons diagnosed with measles in hospital, and initiate control measures;
- child care facilities keep up-to-date records of the children's immunisation status;
- the following be excluded from child-care and educational facilities during an outbreak:
  - unvaccinated children for 14 days after appearance of rash in the last case at the facility (unless vaccinated within 72 hours of first contact with the case, or givenof immunoglobulin within 7 days of contact, or if there was no contact, they receive MMR vaccine)
  - immunocompromised persons, regardless of vaccination status, until 14 days after appearance of the rash in the last case;
- comprehensive reports on outbreaks be published;
- research include community perception of the disease and vaccination, methods for communication, and community-based serological surveys;
- the recommendations be distributed widely to professionals dealing with children, and reviewed annually.

Copies of *Measles: Guidelines for the control of outbreaks in Australia* are available through the Australian Government Publishing Service, GPO Box 84 Canberra 2601 (tel 132 447 or fax 06 295 4888 for $9.95).

VRE CONTROL

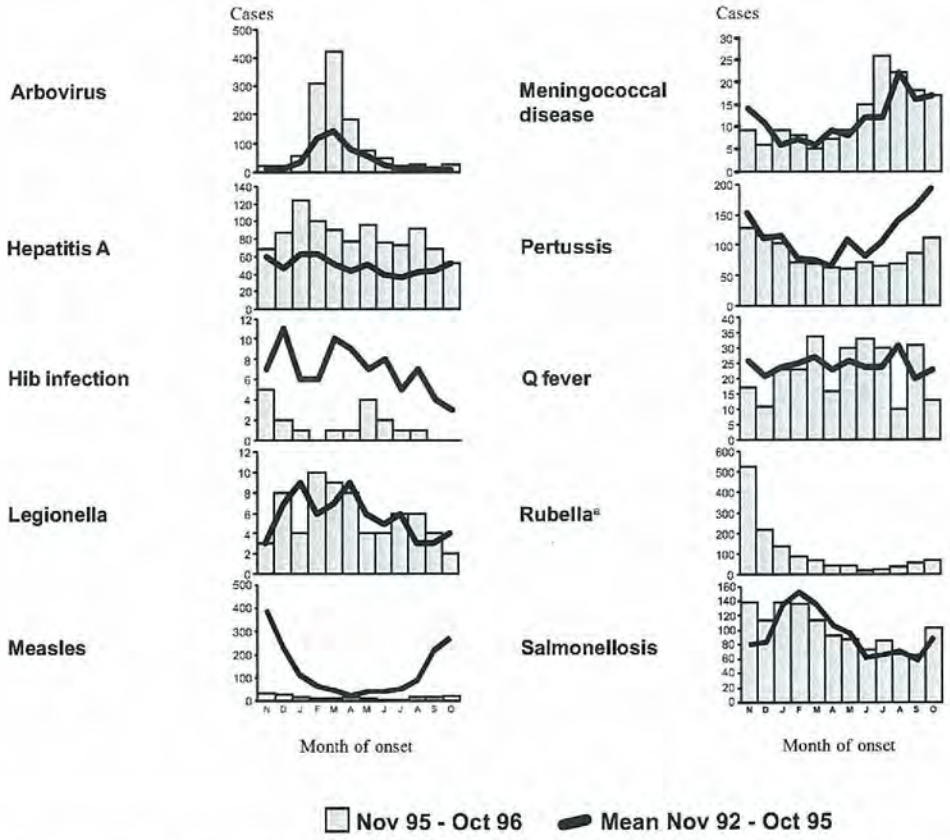
The NHMRC hasalso released recommendations regarding the emergence of vancomycin resistant enterococci (VRE) in Australia.[2] The NHMRC Working Party on Antibiotics considered local and international evidence, including data from 15 cases of VRE in Australian hospitals. It recommends:

- that health care establishments maintain a program of ongoing improvement of infection control practices;
- that specific measures to combat the spread of VRE be developed;
- that prescribers severely restrict the use of oral vancomycin;
- ongoing professional and public education campaigns about the risk of VRE and excessive antibiotic prescribing in humans;
- maintenance of the National Antibiotic Resistance Surveillance Program;
- urgent research on VRE prevalence in hospital patients, and risk factors for VRE emergence transmission;
- that there are currently insufficient grounds for banning the use of avoparcin [a vancomycin-like animal antibiotic] in Australia.

1. NHMRC. Measles Guidelines for the control of outbreaks in Australia. Commonwealth of Australia. Canberra: 1996.
2. NHMRC. Emergence of vancomycin resistant enterococci inAustralia. Commonwealth of Australia. Canberra: 1996.

FIGURE 1

REPORTS OF SELECTED INFECTIOUS DISEASES, NSW, 12 MONTHS TO OCTOBER 1996, BY MONTH OF ONSET (WITH HISTORICAL COMPARISON)



a. Due to data collation problems, historical rubella data are unavailable, and figures printed in previous Bulletins may have been inaccurate.

TABLE 1

INFECTIOUS DISEASE NOTIFICATIONS FOR NSW IN NOVEMBER 1996, RECEIVED BY AREA HEALTH SERVICE

Condition	Area Health Service																	Period	
	CSA	NSA	WSA	WEN	SWS	CCA	HUN	ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	Total for Nov	Total to date
Blood-borne and sexually transmitted																			
AIDS	4	3	1	-	-	9	1	-	5	3	-	-	-	-	-	-	-	26	417
HIV infection*	3	-	-	-	-	1	1	-	8	-	-	-	-	-	-	-	-	28**	381
Hepatitis B - acute viral*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	41
Hepatitis B - other*	69	26	79	8	86	7	8	5	45	4	5	3	1	4	1	-	2	354	4,646
Hepatitis C - acute viral*	-	-	3	1	-	-	-	-	-	-	-	-	-	-	-	1	-	5	18
Hepatitis C - other*	63	40	131	50	77	32	36	19	116	44	18	15	2	39	3	17	9	713	8,614
Hepatitis D - unspecified*	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	9
Hepatitis, acute viral (NOS)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Gonorrhoea*	8	3	1	-	1	-	1	-	24	-	2	2	1	1	-	2	-	46	504
Syphilis	9	-	3	2	9	-	1	-	14	-	3	3	1	-	2	-	1	48	716
Vector-borne																			
Arboviral infection*	2	1	1	-	-	1	6	1	-	6	3	3	4	-	2	3	1	34	1,227
Malaria*	1	3	-	-	-	-	1	-	3	-	-	-	-	-	-	-	1	9	204
Zoonoses																			
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Hydatid disease	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14
Leptospirosis*	-	-	-	-	-	-	2	-	-	-	1	1	-	-	-	-	-	4	27
Q fever*	-	-	-	-	-	-	1	-	-	-	4	2	6	1	2	1	-	17	259
Respiratory/other																			
Legionnaires' disease	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	4	62
Meningococcal (invasive) infection	1	1	1	3	-	2	2	1	-	1	-	1	-	-	-	2	-	15	148
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mycobacterial tuberculosis	2	4	9	1	7	1	1	-	4	2	-	-	-	-	-	-	1	32	410
Mycobacteria other than TB	8	5	3	-	6	4	2	-	7	2	-	-	-	-	-	-	-	37	382
Vaccine-preventable																			
Adverse event after immunisation	-	-	2	-	-	-	-	-	-	1	1	-	-	-	-	-	-	4	44
H.influenzae (invasive) infection	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	13
Measles	-	-	4	1	-	2	-	2	3	4	2	1	-	-	-	-	-	19	193
Mumps*	-	-	1	-	-	-	-	-	1	1	-	-	1	-	-	-	-	4	26
Pertussis	5	32	18	12	16	10	21	-	11	4	2	11	3	2	2	4	1	154	937
Rubella*	8	8	4	1	3	5	6	1	10	3	-	3	-	-	-	-	-	52	686
Faecal-oral																			
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
Foodborne illness (NOS)	-	1	-	-	-	16	-	-	-	-	-	-	3	-	1	-	-	24	126
Gastroenteritis (instit)	-	-	-	-	11	-	9	-	-	-	-	-	-	-	-	-	-	20	512
Hepatitis A	4	2	5	-	4	1	-	1	10	2	-	5	6	9	4	1	-	54	938
Listeriosis*	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	2	15
Salmonellosis (NOS)*	10	7	19	9	9	4	9	5	19	14	5	3	1	1	1	3	4	123	1,106
Typhoid & paratyphoid*	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	36

* lab-confirmed cases only

** includes 15 of unknown postcode

Abbreviations used in this Bulletin:
CSA Central Sydney Health Area, SES South 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, NRA Northern Rivers Health Area, MNC Mid North Coast Health Area, NEA New England Health Area, MAC Macquarie Health Area, MWA Mid West Health Area, FWA Far West Health Area, GMA Greater Murray Health Area, SA Southern Health Area, 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.