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TELEPHONE METHODOLOGY FOR COMMUNITY SURVEYS

Health professionals require measures of intermediate outcomes and customer attitudes, needs, access and usage which are not available from routine data collections. The speed, flexibility and low cost of telephone surveys make them ideal for collecting such data. We used the Western Sydney Telephone Health Survey (WSTHS)[1] to test the feasibility of telephone methods for collection of such data. In this paper we will summarise the key issues relating to telephone methodology for community surveys and describe some of the findings of the WSTHS.

INTERMEDIATE OUTCOME MEASURES

Intermediate outcome measures are not available from routine data collections such as the mortality, hospital morbidity and cancer registry databases. The National Health Survey (NHS)[2] provides data on risk factors and health care service utilisation at five-year intervals, but the sample size is insufficient to detect small but important changes at a local level. Telephone surveys have been widely used for collecting data on intermediate outcomes, such as:

- behavioural risk factors, including cigarette smoking, alcohol use, driving behaviour, obesity, hypertension, physical activity and sexual behaviour[3-7]; and
- screening utilisation[3,8].

Large sample sizes are needed. For example, about 2,100 respondents are needed to detect a drop in prevalence of cigarette smoking from 30 per cent to 28 per cent (and be 95 per cent confident that the drop is real). This means other survey types are too expensive.

For the WSTHS a core questionnaire seeking demographic, major risk factor, morbidity and health service utilisation data was developed using the NHS[2] and 1989 National Heart Foundation Risk Factor Prevalence Survey[9] as templates. A modular format was used. This will enable the addition of other questions to yield data on emerging public health issues in the future. We tested a drug and alcohol module in the WSTHS and a cardiovascular risk factor module in our more recent survey in the Wentworth Health Area[10].

CUSTOMER SERVICE

Another application of telephone surveys is in measurement of customer attitudes, needs, access and usage[11,12]. All service delivery agencies within the NSW Government have been asked to provide the people of NSW with a guarantee of service, detailing the agency's policy on customer service[13]. Telephone surveys can be used to identify customers' needs and particular features of services they value. Usage of and access to general practitioners, community health services and other service types, as well as hospital-based services, can be monitored. Such feedback would be a

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Telephone methodology

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powerful tool in the development and monitoring of service standards, assisting management in making decisions about level of service, improvements in systems, and how to achieve a balance between conflicting priorities.

TELEPHONE COVERAGE

In 1986, 90.2 per cent of occupied private dwellings in NSW had telephones — an increase of 5 per cent from 1983[14]. This high rate of coverage limits the possibility of sampling bias. Comparisons of households with telephones and all households have shown a high degree of similarity in reports of illness and use of services[15,16]. Households with and without telephones may differ, however. Australian households least likely to have a telephone are those with an unemployed head, people living alone, one-parent families and groups of unrelated individuals[14]. In the United States drug use rates are substantially higher among households without telephones[17]. Thus telephone surveys will provide reliable general population estimates but may not provide useful data on certain population subgroups.

TELEPHONE SAMPLING

Two general methods may be used for sampling:

- random-digit dialling (RDD); or
- random sampling from telephone directories.

In RDD, telephone numbers are generated at random, producing an unbiased sample of all numbers possibly in use in the target population. A major disadvantage of RDD is that computer-generated lists of telephone numbers may contain up to 80 per cent ineligible numbers, including disconnected or business numbers. Since residential numbers tend to share common digits, the efficiency of RDD can be increased by using cluster designs such as the Waksberg technique[18]. While increasing sampling efficiency and reducing costs, such designs introduce a sampling effect which increases the standard errors of the estimates obtained.

Random selection from telephone directories is a cost-effective sampling method. For the WSTHS, randomly selected numbers from the electronic white pages were bought at a cost of around 35 cents each[1]. The major disadvantage of this method is that households with unlisted numbers are excluded from the sampling frame. In NSW this potential undercoverage bias is minimal. In 1991, 89.3 per cent of private occupied dwellings had private residential listings in the Telecom white pages[1].

RESPONDENT SELECTION

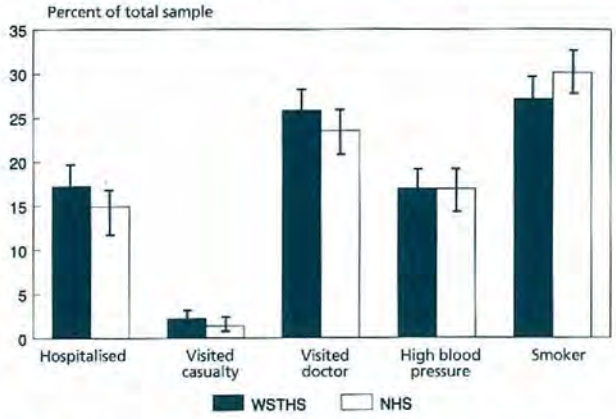
Interviewing the person who answers the telephone will result in a convenience sample from which little can be generalised. Use of a Kish Grid (a table containing randomly generated numbers for a given household size)[19] eliminates this selection bias. Follow-up calls are required if the selected respondent is not available. Use of the Kish Grid increases telephone costs and non-response. Its use in the WSTHS raised the non-response rate by about 1.5 times[1].

RESPONSE RATES

Most health surveys comparing telephone and face-to-face interviews have found response rates 10-20 per cent lower

FIGURE 1

COMPARISON OF POPULATION ESTIMATES FROM THE WESTERN SYDNEY TELEPHONE HEALTH SURVEY (WSTHS)[1] AND THE NATIONAL HEALTH SURVEY (NHS)[2]



for telephone interviews[15]. Comparisons of respondents in the two survey types have shown that telephone respondents tend to be younger, better educated and have higher incomes[15]. This was true also of WSTHS respondents when compared with socioeconomic profiles expected from the NHS[2] and ABS 1989 population estimates[20], though these differences were not statistically significant. Findings of the WSTHS were presented as estimates adjusted for the age and sex profiles of ABS 1989 population estimates.

A number of strategies may be used to improve response rates, including prior notification and inducements, attempts to convert non-responders, and mixed-mode surveys in which telephone refusers are interviewed face-to-face. In the WSTHS, half the 2,000 sample households were randomly assigned to receive a letter before telephone contact. Response rates were 76.2 per cent (95 per cent CI 73.2-79.2) for those who received a letter and 59.7 per cent (95 per cent CI 56.2-63.2) for those who did not. The marginal cost per percentage increase in response rate achieved by prior mail contact was around $46.00[1]. All sample households in our Wentworth Health Survey were sent letters and a response rate of 79.6 per cent was achieved[2], confirming the utility of this method for increasing response.

EXTERNAL VALIDITY

Several studies have compared reports of health status, morbidity and health care utilisation in face-to-face and telephone interviews. Most have found little or no difference between the two interview modes[15]. We compared estimates from the WSTHS with those for the same population from the interviewer-administered NHS for several marker variables, including current smoking, self-reported high blood pressure, hospitalisation, doctor consultations and education profiles. There were no significant differences in the population estimates for any of the variables examined (see Figure 1)[1].

COSTS

Complete costs for the WSTHS, including questionnaire development, quality assurance measures, data entry and analysis and report writing, totalled about $30.00 per completed interview[1]. This is far less than the cost of a

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RELATIONSHIP OF THE HEALTH DEPARTMENT TO THE ENVIRONMENT PROTECTION AUTHORITY

The NSW Health Department and the State Pollution Control Commission (SPCC) enjoyed a close relationship for years and the Department continues such an association with the newly formed Environment Protection Authority (EPA). The Chief Health Officer was a commissioner of the SPCC but no Health appointment was made to the board of the new authority. Nevertheless, the Department maintains its representation on an important statutory committee of the EPA, the Hazardous Chemicals Advisory Committee (HCAC) and its sub-committees.

One sub-committee regularly reviews chemicals assessed by the National Industrial Chemicals Notification and Assessment Scheme and has a Health Department member.

Other matters receiving the attention of the HCAC include the 'rehabilitation' of cattle dip sites (the coordinating responsibility for which rests with the Department of Agriculture), standards for the development of other contaminated lands, pesticide storage, waste management and chemical incidents.

The Radiation Advisory Council (previously the Radiological Advisory Council) has been transferred to the EPA from the Health Department, together with administrative responsibility for the Radiation Control Act and Regulations.

The bulk of the council's functions has involved regulating the use of irradiating industrial, diagnostic and therapeutic apparatus and radionuclides, but the legislation now includes non-ionising radiation regulations.

The Ocean Outfalls Environmental Monitoring Program continues as a function of the EPA with Health input.

In the sphere of air pollution the Metropolitan Air Quality Study is managed by the EPA, with parallel health studies being undertaken by the NSW Health Department in an attempt to ascertain the relationship between air pollution and human sickness in Sydney.

EPA and Health Department representatives meet on a number of committees chaired by authorities other than the EPA. The following Health Department committees include EPA employees:

- Poisons Advisory Committee which deals with pharmaceuticals, industrial chemicals that are accepted carcinogens, and agricultural and veterinary chemicals which are included in the schedules of the Poisons Act; and
- Pesticides Advisory Committee which was set up to advise the Deputy Chief Health Officer on pesticide issues.

The complexity of environmental pollution and its regulation is obvious to all engaged in 'environmental health' and numerous scientific disciplines and authorities must be called on for investigation and regulation in an attempt to control the environment.

The following are committees and groups which, although set up by other agencies, include the Health Department and the EPA:

- NSW Recycled Water Coordination Committee (Public Works Department);
- Consumer Products Safety Committee (Department of Consumer Affairs);
- State Algal Coordinating Committee (Department of Water Resources);
- Site Remediation Task Force for the Homebush Bay Development Project (Property Services Group);
- Woodsreef Asbestos Mine Site Rehabilitation Committee (Department of Mineral Resources);
- Malabar and North Head Sewage Treatment Works Incinerators' Study Group (Water Board);
- Interdepartmental Committee on Climate Change (Cabinet Office);
- Interdepartmental Committee on Residues in Fish (Department of Fisheries);
- Agriculture Minister's Advisory Committee on Agricultural and Veterinary Chemicals (Department of Agriculture); and
- Hazardous Materials Policy Coordinating Committee which has recently been formed to follow up the recommendations of the NSW Chemical Inquiry (Department of Planning).

Many of the agencies have local representatives in Health Areas and Regions. It is advantageous to Public Health Units to make and maintain contact with these representatives so local issues may be handled.

Chemical matters requiring central resolution or advice should be referred to the Toxicology Unit, NSW Health Department, telephone (02) 391 9230, facsimile (02) 391 9029.

David Fox,
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SURVEY OF CONTAMINATED WASTE DISPOSAL PRACTICES

Waste contaminated with biological material is a potential source of a wide range of infectious disease and, as such, should be disposed of and stored appropriately. The Environment Protection Authority has special conditions for the storage and transport of contaminated waste in NSW[1]. The NSW Health Department has published guidelines to assist public health system managers to meet these conditions[2].

In response to concerns that contaminated waste disposal practices in some non-hospital health facilities were inadequate, a survey of non-institutional health services was conducted in Central and Southern Sydney Health Service Areas to determine the adequacy of storage, handling and disposal practices for contaminated waste.

Services assessed in the study were funeral parlours, nursing homes, pathology laboratories, dental, medical and veterinary practices and specialty offices (dermatology, gynaecology, plastic surgery and acupuncture). For the purpose of the study, medical practices were classified as either medical centres (four or more practitioners) or general practices (maximum of three practitioners). Funeral parlours, nursing homes and pathology laboratories are subject to special requirements covering the disposal of contaminated waste while the other types of premises are not.

The study was conducted using a structured questionnaire to assess methods of contaminated waste storage and disposal as practised by a sample of non-hospital health services. Hepatitis B immunisation of personnel in these establishments was also determined. These results have been reported elsewhere[3].

One hundred premises were surveyed between July and November 1991. Thirty general practices and ten providers of each of the other services were selected. A larger sample of GPs was included in the survey to reflect the higher proportion of general practices in the study area. The funeral parlours were randomly selected from a list provided by the NSW Health Department and all other premises were randomly selected from the 1991 Telecom Yellow Pages.

All premises were visited and the managers interviewed using the questionnaire. An information sheet was provided to all participants outlining the purpose of the study, assuring confidentiality and providing a contact number for further inquiries.

Data were coded and entered into a statistical/database computer software package (EPI Info Version 5) by one individual to maintain uniformity and participant confidentiality. The data were then transferred to SPIDA statistical analysis software[4] for analysis.

TYPES OF CONTAMINATED WASTE GENERATED

At five of the 100 premises surveyed — three funeral parlours, a dental practice and a doctor's surgery — it was claimed that no contaminated waste was generated. Although some health care workers were uncertain which items should be designated as contaminated waste, the identification of needles as such was immediate. There was a noticeable lack of knowledge and, at times, concern about the correct or acceptable methods of storage and handling of contaminated waste.

From the categories of contaminated waste shown in Table 1, respondents were asked to indicate which types they generated. They were also encouraged to name potential sources of contaminated waste not listed in the questionnaire. The proportion of premises generating each type of contaminated waste is shown in Table 1. The contaminated waste definition developed by the Contaminated Waste Advisory Committee was found to be extensive[2].

TABLE 1

PROPORTION OF PREMISES GENERATING SPECIFIC TYPES OF WASTE

Type of waste generated	Percentage of premises
Sharps	96
Swabs	92
Disposable equipment	91
Blood	74
Bandages	65
Soft tissue	39
Other	32
Bone	19
Cultures	10

STORAGE OF CONTAMINATED WASTE

All bags, bins and sharps containers used for the storage of contaminated waste should be clearly labelled and yellow in colour, and sharps containers and bins should be composed of a rigid impenetrable material and have a secure fitting lid. Sharps containers are covered by Australian Standard 4031.

The types of containers used varied among all types of services except pathology laboratories, which all used approved yellow labelled plastic containers (see Table 2). Other containers used included plastic milk and orange juice containers, glass jars, drink tins and, in two instances, cardboard boxes. The use of approved containers was substantially higher among regulated services (RR 1.60; 95% CI 1.15, 2.24; p=0.013) (Table 2).

TABLE 2

TYPE OF CONTAINERS USED FOR STORAGE OF CONTAMINATED WASTE BY TYPE OF PREMISES

Premises	Yellow labelled container	Other containers	No container	Total
Regulated services				
Funeral parlours	4	2	4	10
Nursing homes	8	2	0	10
Pathology	10	0	0	10
Sub total	22 (73%)	4 (13%)	4 (13%)	30
Non-regulated services				
Dentists	0	10	0	10
General practices	17	11	2	30
Medical centres	7	3	0	10
Specialty offices	4	4	2	10
Veterinary practices	4	6	0	10
Sub total	32 (46%)	34 (48%)	4 (6%)	70

SEPARATION OF CONTAMINATED WASTE

The contaminated waste guidelines recommend total separation of contaminated waste from regular garbage[1,2]. Table 3 shows there was a strong adherence to this practice among premises subject to regulatory or licensing requirements covering waste disposal activities. (RR 2.59; 95% CI 1.44, 4.68; p<0.001.)

REMOVAL OF CONTAMINATED WASTE

The recommended method for the removal of contaminated waste from premises is by licensed contractors[5]. Table 4 shows that the recommended method is used much more frequently by regulated than by non-regulated premises (RR 2.98; 95% CI 1.62, 5.50; p<0.001). Many premises used pathology couriers to remove their contaminated waste, particularly sharps. Other methods of removal included transportation via private vehicle to local hospitals, disposal by incineration or disposal to the sewer (funeral parlours) or, in the case of veterinary practices, to RSPCA facilities.

All but one of the contaminated waste contractors were licensed by the Waste Management Authority. Four of the funeral parlours did not require removalists as they did not separate contaminated waste and disposed of this waste to the sewer or by incineration. This is not in accordance with either EPA or NSW Health Department requirements.

DISCUSSION

Body fluids are a potential health hazard, as even minute amounts can contain viruses in sufficient quantities to cause infection[6]. Extensive publicity on the potential of needles and other 'sharps' to harbour and transmit infections such as hepatitis B has emphasised the importance of appropriate storage and disposal of sharps and other biologically contaminated waste.

Awareness of the particular risk from sharps was reflected in the high proportion of premises that stored their sharps in containers before disposal. Similar data were collected from a study of physicians' offices in Minnesota USA in 1989[7]: of the 141 premises surveyed, 90.8 per cent were found to use plastic containers for sharps. It was also observed that smaller offices were more likely to handle and dispose of sharps in a manner inconsistent with recommendations: nearly 20 per cent of physicians surveyed disposed of their contaminated waste with regular garbage. Similarly, 21 per cent of premises surveyed in this study used their regular garbage for disposal.

It became evident that many premises were not aware of the service offered by licensed contaminated waste contractors, and others had misgivings about their price and flexibility. Some premises justified not using a contractor by claiming their method of disposal was adequate and posed no health threat. Others believed they generated a minimal amount of contaminated waste. However, given the large number of such premises, they contribute substantially to the larger total contaminated waste management problem.

CONCLUSION

The major finding from this study is that among premises generating biologically contaminated waste, regulated services are much more likely than non-regulated services to follow requirements for the appropriate storage, separation and disposal of contaminated waste. This may be because regulated services may be more aware of the guidelines, or because they may feel obliged to observe the guidelines because of concerns about possible sanctions.

Clearly there is a need to improve storage and disposal practices among non-regulated services. This could be achieved by:

- improved awareness of requirements;
- publicising licensed services for disposal; and
- appropriate information on handling and storage.

The Public Health Unit has implemented this strategy and will monitor its effectiveness. If these steps fail to improve disposal practices substantially, it may be necessary to change the regulations to broaden the coverage.

TABLE 3

THE EXTENT OF SEPARATION OF CONTAMINATED WASTE FROM REGULAR GARBAGE BY TYPE OF PREMISES

Premises	Totally	Partially*	Not separated	Total
Regulated services				
Funeral parlours	8	2	0	10
Nursing homes	9	1	0	10
Pathology	9	1	0	10
Sub total	26 (87%)	4 (13%)	0 (0%)	30
Non-regulated services				
Dentists	1	2	7	10
General practices	3	17	10	30
Medical centres	3	6	1	10
Specialty offices	2	5	3	10
Veterinary practices	1	9	0	10
Sub total	10 (14%)	39 (56%)	21 (30%)	70

*Sharps were stored and separated from other waste such as swabs, gauze and gloves, which were placed with regular garbage.

TABLE 4

METHODS OF CONTAMINATED WASTE REMOVAL BY TYPE OF PREMISES

Premises	Contractor	Pathology couriers	Regular garbage	Other method	Total
Regulated services					
Funeral parlours	6	0	0	4	10
Nursing homes	9	0	0	1	10
Pathology	7	3*	0	0	10
Sub total	22 (73%)	3 (10%)	0 (0%)	5(17%)	30
Non-regulated services					
Dentists	2	0	7	1	10
General practices+	6	11	10	2	29
Medical centres	3	5	1	1	10
Specialty offices	3	1	3	3	10
Veterinary practices	3	0	0	7	10
Sub total	17 (25%)	17 (25%)	21 (30%)	14 (20%)	69

*These three pathologists were collection centres for the main laboratories, which were located outside the study area.
+One premises had recently acquired a sharps container but had not yet disposed of it.

Trudi Coutts, Trainee Environmental Health Officer
Santo Cannata, Senior Environmental Health Officer
Michael J. Fett, Director
Public Health Unit for Central and Southern Sydney

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DOES LEAD PAINT FROM THE SYDNEY HARBOUR BRIDGE CAUSE SIGNIFICANT POLLUTION TO AREAS NEARBY?

INTRODUCTION

There are growing concerns about environmental lead and its potential hazard to human health as it may cause damage to nervous and renal systems. Several studies have investigated the extent of lead contamination by measuring concentrations in the soil. The Australian guideline for further investigation of a site is set at 300ppm[1]. A lead-soil survey in the Balmain area in 1988[2] found high soil lead levels, with 68 per cent of the 41 samples having concentrations above the 300ppm level. More recently the Newcastle Lead Study examined lead concentrations in soil near Boolaroo and Argenton in response to community concerns about lead contamination from a nearby lead smelter[3]; soil lead concentrations found by this study ranged from 8-26,794ppm.

Lead in the soil not only comes from point sources such as lead smelter emissions and structures coated with lead paint, but also from vehicle emissions. Soil lead concentrations due to vehicle emissions are often strongly related to distance from roadway and average daily vehicle densities[4], and have been found to decrease exponentially with distance from roadway. Concentrations usually fell by at least 50 per cent about 50 metres from the roadway[5] while most deposition occurred in the first 25 metres[4].

As a result of publicity about the potential hazard of lead-based paint from the Harbour Bridge contaminating nearby public areas during routine maintenance[6], the Northern Sydney Area Public Health Unit decided to carry out a soil lead survey. The study's objectives were to determine the soil lead concentrations under and adjacent to the bridge on the northern side where lead from vehicle emissions and possibly lead paint would be found. The study also sought to compare these concentrations with those taken close to the major roadway feeding traffic across the bridge. This area is out of range of lead paint contamination from the bridge so the soil sampled would be subject to lead only from vehicle emissions.

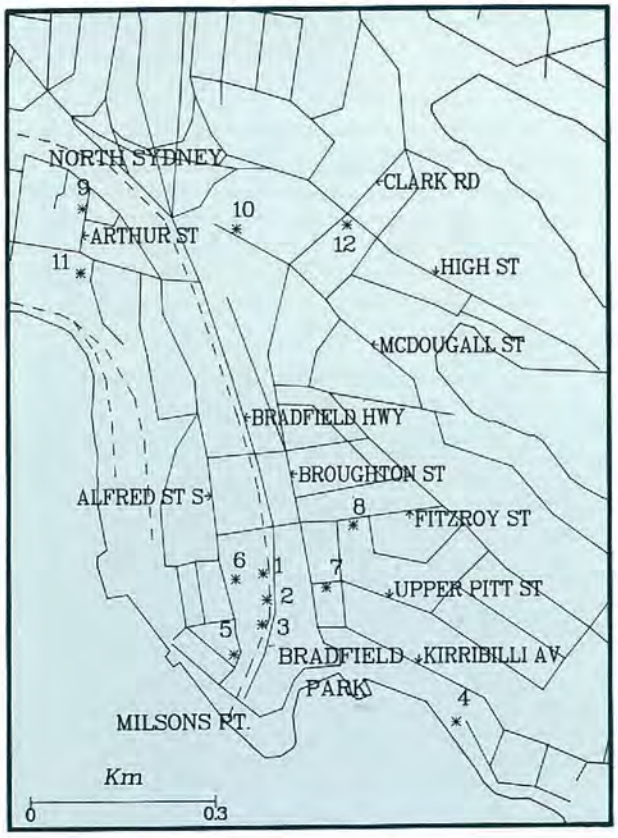
METHODS

We consulted with both the Hunter Area Public Health Unit and the Central and Southern Sydney Public Health Unit on sampling procedure. Soil was sampled using an auger to loosen it and a stainless steel cutting piece to enclose the sample at a depth of five centimetres. Soil from park, reserve and footpath areas was sampled, with each having a degree of grass coverage. Grass coverage was removed before sampling and samples were not taken from garden areas that had been cultivated because of the possibility of contamination with imported soil. Samples were sent to Hampson and Associates' laboratories in Newcastle for testing for lead concentration.

In keeping with the study's objectives eight sites were sampled under or adjacent to the Harbour Bridge near Bradfield Park, Milsons Point (sample group A). A further four sites were sampled further north,

FIGURE 2

SOIL-LEAD STUDY SAMPLING SITES IN NORTH SYDNEY, MILSONS POINT AND NEUTRAL BAY, 1991.
(Sample site numbering corresponds with that used in Table 5).



adjacent to a major freeway in the North Sydney and Neutral Bay areas (sample group B). Sampling was carried out between November 4 and 14, 1991 and the locations of sample groups A and B are shown in Figure 2.

In group A four samples were taken from different points in Bradfield Park as it is beneath the Harbour Bridge and is a public area. The other three samples in group A were taken at distances up to 350 metres from the park.

In group B the sites tested are north of the bridge within a 50-300 metre range from the Warringah Freeway at North Sydney. The sites varied in their distance from a major roadway so as to test the effect of distance from roadway on the lead concentration found. We were unable to get soil samples less than 50 metres from the Warringah Freeway because the areas examined were either concrete or bitumen, made up of recent fill for road construction, or were garden areas which may have contained imported soils.

A Mann-Whitney test was used to compare the results of sample groups A and B.

RESULTS

In group A the concentrations ranged from 19ppm to 1,451ppm, with four of the seven samples being

TABLE 5

SAMPLE SITES AND RESULTS OF SOIL-LEAD TESTING BY PHU 1991

SAMPLE GROUP	SAMPLE NUMBER	LOCATION	LEAD CONC. ppm	DIST. FROM ROADWAY
Sample group A	1	Bradfield Park, first pylon northern end	1,145	10 to 100 metres
	2	Bradfield Park, middle pylon	1,306	10 to 100 metres
	3	Bradfield Park, near cricket pitch	1,097	10 to 100 metres
	4	Dr Mary Booth Reserve	77	350 metres
	5	Reserve near Paul and Alfred Sts	1,451	100 metres
	6	Bradfield Park, adj Alfred St South	318	100 metres
	7	Footpath cnr Pitt and Broughton Sts	136	200 metres
	8	Footpath cnr Fitzroy St and Robertson Lane	19	250-300 metres
Sample group B	9	Footpath cnr Middlemiss and 6 Arthur St	870	50-100 metres
	10	Footpath McDougall St (freeway end)	404	100 metres
	11	Clark Park	216	200-250 metres
	12	Footpath cnr Clark Rd and High St	1,269	250-300 metres

over 1,000ppm (Table 5). Each of the four highest concentrations had been sampled about 100 metres or less from the Bradfield Highway. The two lowest concentrations were found in the samples taken at the greatest distance from the highway.

The concentrations found in group B ranged from 216ppm to 1,269ppm. The 1,269ppm concentration found in group B is high considering it is about 300 metres from the Warringah Freeway. Further investigation showed that High Street has a high traffic flow and is close to a number of busy roadways associated with the freeway. This would possibly expose the area to additional lead deposition from vehicular emissions.

We found no significant difference between soil lead concentrations found under, or in close proximity to, the Harbour Bridge and those found in group B further north. The median values for group A and group B were 707.5ppm and 637ppm respectively (p=0.93).

DISCUSSION

The Roads and Traffic Authority (RTA), which maintains the Harbour Bridge, informed us no removal of lead-based paints from the northern end of the bridge has taken place since 1990 because of construction of the Sydney Harbour tunnel. This means it is unlikely there has been any major lead contamination from this source. Nevertheless if lead paint were a major contaminant of the soil as a result of maintenance of the bridge over the past 60 years we would have expected to find significantly higher lead levels under or adjacent to the bridge. A preliminary study has shown that the presence of lead paint flakes in soil will probably produce soil lead concentrations of more than 4,000ppm[7]. The RTA has taken steps to minimise the potential spread of lead dust that may occur during bridge maintenance and is continuing research in this area.

The similar concentrations of lead in soil (after allowing for the effect of distance) found in areas near the Harbour Bridge and further north near the freeway suggest vehicle emissions are the most important source of lead. The northern sample area is out of range of any possible paint particle fallout from the bridge.

CONCLUSION

We conclude that the risk of lead poisoning in the Bradfield Park area is relatively low and is similar to areas in similar proximity to a major roadway. The RTA is acting responsibly to ensure possible lead contamination from bridge paint is kept to a minimum. We would recommend that research be continued into finding ways of ensuring bridge maintenance workers and the public are not exposed to the potential hazard from old lead paint on bridges.

John Skinner, Medical Geographer
Reg Baxter, Environmental Health Officer
Erin Farnbach, Biostatistician
Donald Holt, Director of Public Health,
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ACKNOWLEDGMENT

Dr Lyn March, Royal North Shore Hospital

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comparable face-to-face questionnaire administered by an interviewer.

CONCLUSIONS

Telephone surveys are a valid, flexible, cost-effective method for obtaining data on defined populations. They are ideal for obtaining measures of intermediate outcomes and customer attitudes, needs, access and usage, which are not available from routine data collections. Repeated surveys at regular intervals, using a core questionnaire with detachable modules, have the potential to provide invaluable information for planning and evaluation of health services.

We need also to assess the possible contribution of such data as we develop outcome goals and targets, progress indicators and appropriate practice guidelines within the framework of the NSW Health Outcomes Initiative[21].

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INFECTIOUS DISEASES

MEASLES

During 1993, 15 out of 16 Health Areas and Regions, representing 97 per cent of the NSW population, have received notifications for measles. This indicates widespread transmission of the measles virus throughout NSW.

The annual notification rate for the State is 9.3 per 100,000 population. Orana and Far West Region has received notifications at a rate of 70.6 per 100,000 population.

WHOOPING COUGH

During 1993, 15 out of 16 Health Areas and Regions have received notifications for whooping cough. As with measles, there has been widespread transmission of *Bordatella pertussis* this year.

The annual notification rate for the State is 6.7 per 100,000 population. Central West Region has received notifications at a rate of 28.6 per 100,000 population.

RUBELLA

During 1993, 14 out of 16 Health Areas and Regions, representing 92 per cent of the NSW population, have received notifications for rubella. No notifications for rubella were received for April.

The notification rate for the State for 1993 is 5.5 per 100,000 population. This compares with a rate of 1.4 per 100,000 population for the same period in 1992 — an increase of more than 300 per cent.

LEGIONNAIRES' DISEASE

Only one notification for Legionnaires' disease was registered on the Infectious Diseases Surveillance System for April. A further eight notifications were made to Public Health Units, but have not been formally received by Epidemiology and Health Services Evaluation Branch. This total of nine cases compares favourably with the 46 notifications received for April 1992 — 26 of which were linked epidemiologically to the Fairfield business district, while a further 20 cases were 'sporadic'.

Q FEVER

Extensive testing for Q fever has been carried out recently in association with the Q fever vaccination program in the meat industry.

A 54 per cent increase in notifications for Q fever has been received in 1993 over 1992. The notification rate for the State for 1993 is 4.2 per 100,000 population.

Orana and Far West Region has received notifications at a rate of 74.9 per 100,000 population.

INFLUENZA SURVEILLANCE

The Epidemiology and Health Services Evaluation Branch has received influenza surveillance data from seven PHUs for the NSW GP Sentinel Surveillance Network so far for 1993. Levels of influenza-like illness remained low, below an average of 0.8 per cent of consultations, with no increase during April. No PHU has reported a rate of greater than 2 per cent of consultations in 1993.

Data on school absentee rates have been received from two PHUs, and they have shown no tendency to increase in 1993. Eastern Sydney Area Laboratory Surveillance System did, however, report eight isolations of influenza A in April, doubling the total for the year.

CONTROLLING TUBERCULOSIS IN NSW

A February 1991 discussion paper by the NSW Health Department's Epidemiology and Health Services Evaluation Branch (EHSEB) primarily addressed the epidemiology of tuberculosis in NSW. The paper included a review of the international literature on methods of tuberculosis (TB) control, and compared the methods used in NSW with those used in other parts of Australia, the United States and Britain.

Key recommendations of that document were that the role and organisation of TB services in NSW be reviewed and that a strategy for NSW be developed which addresses TB surveillance, screening, BCG vaccination, chemoprophylaxis, case follow-up and program evaluation. The NSW TB Advisory Committee also recommended that a more in-depth appraisal of the epidemiology of TB in NSW be undertaken.

A review of TB services in NSW has been prepared by the EHSEB and NSW TB Coordinator, concurrently with the development of this document. Key recommendations from the review were that:

- all active cases have treatment initiated and ceased by, and be discharged from medical care by, a specialist physician at the nearest chest clinic;
- the NSW Infectious Diseases Surveillance System database be expanded and be made accessible to chest clinics via computer networks with Public Health Units, to facilitate surveillance of disease and infection, patient management and program evaluation;
- routine screening — of staff, contacts, old inactive cases and migrants on health undertakings — in localities where chest clinic sisters are not based be undertaken by local hospital or community health staff;
- Area/Regional TB coordinators be responsible for routine program evaluation and ensuring the implementation of Statewide policies and guidelines;
- the NSW TB Coordinator report to the NSW Health Department on TB program indicators for the State;
- updated State policies and guidelines for Mantoux testing, contact tracing, migrant and refugee follow-up, BCG vaccination and screening of health care workers be distributed to NSW health services in a 'policies and procedures manual'; and
- consensus guidelines be developed, through consultation with clinicians, related to first line drug regimens and indications for chemoprophylaxis, the role of supervised chemotherapy and duration of case follow-up.

Recommendations from the 1991 discussion paper and the 1992 review of TB services have been incorporated into a further document, Controlling Tuberculosis in NSW. This document addresses four major methods of TB control: disease containment, case prevention, surveillance and program evaluation.

Disease containment

Early identification and adequate treatment of cases of infectious TB are the most important measures to prevent spread of the disease. The major obstacle to disease containment is the interruption of, and/or failure to complete, therapy with an appropriate drug regimen. The two main causes of treatment failure are inappropriate combinations of drugs, dosages and duration and poor compliance (due to inadequate supervision or communication and social or medical host factors such as alcohol, drugs, poor nutrition or homelessness).

Case prevention

The main case prevention strategy is screening for, and treatment of, TB infection in high risk groups. No matter how efficient case finding, diagnosis and treatment are, the development of disease in those already infected can be prevented only by appropriate chemoprophylaxis. The associated risks — side-effects and possible emergence of drug-resistant strains — must be weighed against the potential benefits.

Surveillance

Timely identification and notification of confirmed and suspected cases facilitates early treatment and preventive intervention. Surveillance is essential for estimating incidence, distribution and trends of disease and infection and for planning services rationally. In low incidence countries, the number and trends in bacteriologically positive cases is the most useful parameter of the epidemiology of TB. The risk of infection is a useful indicator only with large sample sizes which provide reliable estimates. Infection surveillance requires careful strategic planning of screening in high risk populations.

Program evaluation

The monitoring of parameters related to disease containment, case prevention and surveillance activities provides important information for:

- evaluating program performance;
- assessing epidemiological trends: e.g. the incidence of Mantoux conversion in contacts reflects the rate of transmission of TB in the population;
- evaluating the effectiveness of interventions: e.g. although the efficacy of modern treatment regimens under controlled trial conditions is well established, there are few data available on the effectiveness and efficiency of treatment under routine conditions in low incidence countries;
- program planning: program evaluation, research and monitoring of epidemiological trends should guide program planning, e.g. screening programs should be evaluated regularly to assess their worth, as screening is generally recommended only where the rate of infection is greater than 1 per cent; and
- patient management: in the case of TB, few data beyond those necessary for patient management are required for routine program evaluation.

The document has three parts. The first provides an overview of the epidemiology of TB in NSW. The second defines the goals, targets and implementation indicators for the NSW TB Control Strategy. The third part contains policies and guidelines for TB services, which were endorsed by a consensus meeting of chest clinic staff, respiratory, public health and infectious disease physicians in October 1992.

The proposed implementation indicators — for each of the four control methods and for TB services themselves — are intended to provide strategic direction and a means of monitoring progress towards attaining the goals and targets. Each implementation indicator includes a timeline and the person(s) responsible for ensuring its achievement.

The document does not try to review the state of international knowledge of TB control. Such a review was the subject of the 1991 discussion paper and readers should refer to that document. Recommendations from that review have been incorporated into the strategies and policies.

The rationale behind the proposed implementation indicators and policies is that more effective and efficient use of existing prevention and control methods and technologies should lead to significant improvements in TB control. The development of new preventive, diagnostic and treatment technologies will expedite these improvements. Although not specifically addressed by this document, the NSW Health Department and associated bodies, such as the Institute for Clinical Pathology and Medical Research at Westmead Hospital, should encourage the development, evaluation and implementation of rapid diagnostic techniques, improved screening methods, short duration drug regimens and treatments for drug-resistant strains. This research should be undertaken in cooperation with the National Health and Medical Research Council and World Health Organisation-sponsored programs.

Copies of the document are available for $10 each by sending a cheque payable to the NSW Health Department to Epidemiology and Health Services Evaluation Branch, Locked Mail Bag 961, North Sydney NSW 2059.

Victoria Westley-Wise, Michael Levy, Cait Lonie, Jeremy McAnulty, Meg Winks and Greg Stewart

Mosquitoes and mosquito-borne disease in south-eastern Australia

A revised edition (1993) of this manual has just been published. The original 1990 version has been completely reviewed and updated, after consultation with mosquito workers throughout Australia. The identification keys have been improved following extensive use, and the detailed illustrations have been retouched and enhanced to simplify identification of field-collected adults and larvae.

It is a practical guide to the biology, relation to disease, surveillance, control and identification of mosquitoes in south-eastern Australia. It was prepared primarily for environmental health officers and health surveyors, and will also be a valuable reference for other professionals dealing with mosquitoes.

Notes on the geographic distribution, biology, pest and disease vector status are included for each species, in addition to information on control methodologies, chemical and biological agents and application equipment.

Limited numbers of the manual are available at $45 each by sending a cheque payable to the University of Sydney, to Dr Richard Russell, Department of Medical Entomology, Westmead Hospital, Westmead, NSW 2145.

Antibiotic sensitivity of gonococcal isolates

These data are based on the examination of the sensitivity of 157 of *N. gonorrhoeae* isolated or referred to the Gonococcal Reference Laboratory in Sydney between January and March 1993.

The significant change in this quarter was the decline in overall penicillin resistance — from 16 per cent to 10 per cent. Patterns of resistance to other antibiotics remained unaltered. About one-third of all isolates are fully sensitive to penicillin. All strains were sensitive to spectinomycin and ceftriaxone. Nearly 4 per cent of isolates had a raised level of resistance to ciprofloxacin (MIC 0.03-0.5 mg/L), but these would be expected to respond to the currently recommended 600mg single dose treatment regimen. There were no isolates with higher levels of resistance to ciprofloxacin. Three strains were TRNG and one of these was also a PPNG. Two of the three strains were from infections acquired locally.

The total number of strains isolated (157) is comparable to that found in the corresponding period in 1992 (146). There is a striking male preponderance among infected patients (M:F 13:1). Two subtypes of gonococci appear to be circulating in male patients. One, as previously noted, accounts for the cluster of isolates fully sensitive to penicillin. The other falls into the group less sensitive to penicillin. Rectal and pharyngeal isolates from males account for about one-quarter of all isolates, and gonococci from these two sites belong to one of these two subtypes.

John Tapsall, Edna Limnios and Tracey Lesley, Microbiology Laboratories, Prince of Wales Hospital

Cholera acquired by an Australian traveller

A 58-year-old Brisbane woman developed nausea and abdominal pain which progressed to vomiting and watery diarrhoea within 24 hours of eating at a restaurant in Bangkok on March 28. With continuing symptoms, the woman chose to board a plane to return home to seek medical care. Due to profuse diarrhoea, she wore disposable nappies, and on notifying the flight crew of her illness she was moved to business class away from other passengers. The woman was taken off the plane at Sydney Airport on April 1 and immediately transferred to the Prince Henry Hospital. Assessment in hospital revealed her to be moderately dehydrated and hypokalaemic, so she was admitted for rehydration with intravenous fluids with supplemental potassium. Stool specimens were sent for bacterial culture to the Microbiology Department of the Prince of Wales Hospital on April 1. The next day they were reported provisionally as being positive for *Vibrio cholerae serotype 01*, and the isolate was later confirmed as belonging to biogroup eltor, subtype Hikojima. Although the diarrhoea was beginning to settle, treatment with oral doxycycline was begun, to be given for a course of seven days. The patient was discharged well on April 5 and allowed to go home to Brisbane. A stool specimen collected on the day of discharge was negative for *Vibrio cholerae*.

As soon as the microbiological diagnosis was suspected, it was reported by laboratory staff to Eastern Sydney PHU. This information was passed on to the Infectious Diseases Section of the Health Department, which issued a warning to PHUs about the possibility of secondary cases among people who may have had close contact with the patient during the Bangkok-Sydney flight. The patient had been travelling in Thailand alone and was not aware of any other travellers being infected at the same time. She was certain she had been able to contain her faeces on the flight and that no cabin crew or other passengers would have been contaminated. No reports of secondary cases have been received in the ensuing month. This is the second case of cholera reported in Australia so far this year.

Mark Ferson and Chris J McIver

Enterovirus surveillance

The enteroviruses include the poliovirus, echovirus and coxsackievirus groups, a small number of recently identified unnamed strains and the hepatitis A virus. They gain entry into the body through inoculation into the pharynx and multiply in the small bowel, with subsequent systemic dissemination. Infection may occur in almost any body system and result in febrile illness, RTI, rashes (which may mimic measles), neonatal hepatitis, myocarditis and neurological syndromes, commonly meningitis. Distinctive syndromes include hand, foot and mouth disease (usually coxsackie A16), herpangina and pleurodynia. Many of these

illnesses are accompanied by diarrhoea. The virus can usually be isolated from the throat and stools irrespective of the 'focus' of infection, and from CSF in meningitis.

Figure 3 below shows the number of cases of proven enteroviral infection reported by the virology laboratories at the Prince Henry Hospital and Camperdown Children's Hospital to the Eastern Sydney Laboratory Surveillance Program. Reports are sent on a weekly or fortnightly basis and have been classified by four-week period according to specimen collection dates between December 1992 and April 1993. Provisional reports include vaccine-related poliovirus as well as pathogenic isolates. The cross-hatched columns show a dramatic January rise in pathogenic (non-polio) isolates. This pattern accords with the usual summer-autumn rise in enteroviruses which occurs each year in temperate regions.

Confirmed non-polio enterovirus reports for week 13 include nine patients from whose faeces Echovirus 7 had been isolated by the Prince Henry Hospital Virology Laboratory. These specimens were obtained from children and staff in the nursery class of an Eastern Sydney child-care centre where an outbreak of diarrhoeal illness occurred in late March and early April.

FIGURE 3

Cases of enteroviral infection reported Eastern Sydney laboratory Surveillance Program, 1992-1993

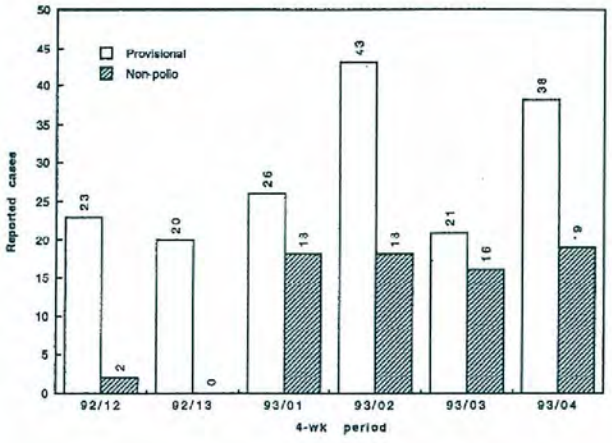

TABLE 6

SUMMARY OF NSW INFECTIOUS DISEASE NOTIFICATIONS APRIL 1993

Condition	Number of cases notified			
	Period		Cumulative	
	April 1992	April 1993	April 1992	April 1993
Adverse reaction	1	1	16	5
AIDS	26	1	116	74
Arboviral infection	79	19	243	460
Brucellosis	–	–	–	1
Cholera	–	–	–	–
Diphtheria	–	–	–	–
Foodborne illness (NOS)	16	3	117	32
Gastroenteritis (instit.)	8	–	118	38
Gonorrhoea	38	4	142	96
H influenzae epiglottitis	2	–	10	8
H influenzae B – meningitis	5	5	29	21
H influenzae B – septicaemia	3	2	9	10
H influenzae infection (NOS)	2	–	10	6
Hepatitis A	97	13	431	181
Hepatitis B	276	30	1067	791
Hepatitis C	263	61	1132	1125
Hepatitis D	1	–	2	–
Hepatitis, acute viral (NOS)	4	–	8	1
HIV infection	56	13	287	176
Hydatid disease	–	–	4	–
Legionnaires' disease	46	1	60	15
Leprosy	–	–	3	–
Leptospirosis	3	–	10	6
Listeriosis	3	–	6	5
Malaria	11	2	49	26
Measles	22	15	145	183
Meningococcal meningitis	8	6	13	12
Meningococcal septicaemia	–	3	3	7
Meningococcal infection (NOS)	–	2	4	5
Mumps	–	–	11	–
Mycobacterial tuberculosis	36	1	199	42
Mycobacterial – atypical	28	–	144	31
Mycobacterial infection (NOS)	3	2	20	17
Pertussis	8	2	56	131
Plague	–	–	–	–
Poliomyelitis	–	–	–	–
Q fever	12	5	54	83
Rubella	4	–	27	109
Salmonella infection (NOS)	81	18	408	319
Syphilis	86	8	302	176
Tetanus	–	–	1	2
Typhoid and paratyphoid	–	–	12	10
Typhus	–	–	–	–
Viral haemorrhagic fevers	–	–	–	–
Yellow fever	–	–	–	–

TABLE 7

VACCINE PREVENTABLE DISEASE NOTIFICATIONS BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Measles	30	5	3	37	23	12	2	4	7	10	14	1	33	1	1	–	–	183
Pertussis	4	3	4	14	11	15	30	1	7	8	5	1	10	16	2	–	–	131
Rubella	5	11	7	4	10	11	20	3	–	7	15	5	–	2	3	6	–	109
Tetanus	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	2

TABLE 8

RARELY NOTIFIED INFECTIOUS DISEASES BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Brucellosis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Leptospirosis	–	–	–	–	–	–	–	–	–	1	3	–	–	–	2	–	–	6
Listeriosis	2	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	5

TABLE 9

NOTIFICATIONS OF NON-NOTIFIABLE SEXUALLY TRANSMITTED DISEASES JANUARY-APRIL 1993
(Clinical diagnoses from sexual health centres unless otherwise stated in footnote)

AHS Infection		CSA + SSA[1]	ESA[1]	SWS[1]	WSA[1] + WEN	NSA[2]	CCA[1]	ILL[1]	HUN[3]	NCR[2]	NER[2]	OFR[4]	CWR[5]	SWR[6]	SER[7]
Chlamydia trachomatis	Male	–	–	–	–	–	–	–	4	1	1	3	–	1	
	Female	–	–	–	–	–	–	–	4	–	3	3	–	4	
	Total	–	–	–	–	–	–	–	**8**	**1**	**4**	**6**	–	**5**	**2**
Donovanosis	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Genital herpes	Male	–	–	–	–	6	–	–	5	2	2	–	–	1	
	Female	–	–	–	–	2	–	–	11	1	–	–	–	5	
	Total	–	–	–	–	**8**	–	–	**16**	**3**	**2**	–	–	**6**	**2**
Genital warts	Male	–	–	–	–	11	–	–	26	10	2	6	–	–	
	Female	–	–	–	–	8	–	–	7	3	7	8	–	–	
	Total	–	–	–	–	**19**	–	–	**33**	**13**	**9**	**14**	–	–	**7**
Non-specific urethritis	Male	–	–	–	–	4	–	–	17	3	–	3	–	–	
	Female	–	–	–	–	1	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	**5**	–	–	**17**	**3**	–	**3**	–	–	–
Lymphogranuloma venereum	Male	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Female	–	–	–	–	–	–	–	–	–	–	–	–	–	
	Total	–	–	–	–	–	–	–	–	–	–	–	–	–	–

1. No data yet received for 1993; 2. 01/01/93-31/03/93; 3. 01/01/93-28/02/93; 4. 01/01/93-30/04/93; 5. No SHC in Region; 6. No SHC in Region, laboratory data 01/01/93-30/04/93; 7. No SHC in Region, data from GP network 01/01/93-18/04/93.

TABLE 10

INFECTIOUS DISEASE NOTIFICATIONS BY HEALTH AREA AND REGION CUMULATIVE 1993

Condition	CSA	SSA	ESA	SWS	WSA	WEN	NSA	CCA	ILL	HUN	NCR	NER	OFR	CWR	SWR	SER	U/K	Total
Adverse event after immunisation	1	–	–	–	2	–	1	–	–	1	–	–	–	–	–	–	–	5
AIDS	14	–	37	2	–	–	4	–	1	–	6	2	1	3	4	–	–	74
Arboviral infection	–	1	–	1	–	–	2	1	–	10	20	12	89	9	312	3	–	460
Brucellosis	–	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	1
Foodborne illness (NOS)	–	–	–	2	12	7	–	1	3	–	–	–	7	–	–	–	–	32
Gastroenteritis (instit.)	2	–	–	2	10	2	–	–	–	–	–	–	2	20	–	–	–	38
Gonorrhoea	15	5	44	2	6	–	3	–	2	3	4	6	5	–	1	–	–	96
H. Influenzae epiglottitis	1	1	1	–	–	1	1	–	–	1	–	1	–	–	–	1	–	8
H. Influenzae infection (NOS)	–	–	1	–	1	1	–	2	–	–	–	–	1	–	–	–	–	6
H. Influenzae meningitis	1	2	–	3	2	1	–	1	4	1	2	3	1	–	–	–	–	21
H. Influenzae septicaemia	–	1	–	5	–	–	–	–	1	1	–	2	–	–	–	–	–	10
Hepatitis A — acute viral	12	5	12	16	67	13	11	4	3	6	16	7	4	3	1	1	–	181
Hepatitis B — acute viral	2	–	–	–	–	–	–	–	–	–	15	1	–	–	–	1	–	19
Hepatitis B — unspecified	123	77	4	259	125	10	96	10	8	19	13	8	8	5	4	3	–	772
Hepatitis C — acute viral	–	–	–	–	–	–	–	–	–	–	1	1	–	–	–	2	–	4
Hepatitis C — unspecified	169	75	165	125	110	15	97	57	28	115	90	20	7	10	22	16	–	1121
Hepatitis, acute viral (NOS)	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	–	–	1
HIV infection	35	3	58	3	2	2	12	4	–	–	5	–	–	–	1	1	50	176
Legionnaires' disease	2	1	–	5	6	–	–	–	–	–	–	–	–	–	–	1	–	15
Leptospirosis	–	–	–	–	–	–	–	–	–	1	3	–	–	–	2	–	–	6
Listeriosis	2	–	–	1	–	–	–	–	–	1	–	–	–	–	–	1	–	5
Malaria	–	–	2	1	3	–	4	–	1	5	–	6	1	–	2	1	–	26
Measles	30	5	3	37	23	12	2	4	7	10	14	1	33	1	1	–	–	183
Meningococcal meningitis	–	–	–	5	–	–	1	–	–	–	2	–	1	–	1	2	–	12
Meningococcal septicaemia	1	2	–	1	–	1	–	–	–	–	–	1	–	–	–	1	–	7
Meningococcal infection (NOS)	–	–	1	–	–	–	–	1	–	1	–	–	1	1	–	–	–	5
Mycobacterial atypical	9	1	–	–	5	–	2	–	–	8	4	1	1	–	–	–	–	31
Mycobacterial tuberculosis	7	5	4	–	6	2	7	2	–	5	1	3	–	–	–	–	–	42
Mycobacterial infection (NOS)	5	3	–	–	–	–	7	–	–	–	1	–	1	–	–	–	–	17
Pertussis	4	3	4	14	11	15	30	1	7	8	5	1	10	16	2	–	–	131
Q fever	–	–	1	–	3	–	1	–	–	9	18	13	35	–	1	2	–	83
Rubella	5	11	7	4	10	11	20	3	–	7	15	5	–	2	3	6	–	109
Salmonella bovis morbificans	–	3	–	–	–	–	1	–	–	9	–	–	–	–	–	–	–	13
Salmonella typhimurium	7	8	3	9	–	–	7	–	–	15	2	4	10	–	1	4	–	70
Salmonella (NOS)	8	21	23	13	5	2	29	18	1	43	23	23	15	2	5	6	–	237
Syphilis	18	4	20	61	6	–	7	3	1	1	17	8	28	2	–	–	–	176
Tetanus	–	–	–	–	–	–	–	–	–	–	1	–	1	–	–	–	–	2
Typhoid and paratyphoid	1	–	3	–	–	2	2	–	–	–	2	–	–	–	–	–	–	10

DEMONSTRATION PROJECTS FUNDED UNDER THE NSW HEALTH OUTCOMES PROGRAM, 1992-93

As foreshadowed in the December 1992 issue of the *Public Health Bulletin* the NSW Health Department in January 1993 advertised a call for expressions of interest in carrying out demonstration projects under the Health Outcomes Program. It was intended that the projects should show how an outcome-oriented approach in the planning, implementation and evaluation of public health and clinical services could produce measurable improvements in health outcomes. The demonstration projects were also intended to serve as models which could be adopted in other localities or integrated into the NSW health system. There was an enthusiastic response, and 79 expressions of interest were submitted. Seventeen projects were selected for funding. This supplement presents summaries of the 17 successful projects.

OPTIMISING INJURY OUTCOMES ON THE NORTH COAST

This project will demonstrate how specific organisation change in an area or district can result in better health services — using injury as a case study. Management teams will be established to examine two problems: orthopaedic trauma and self-inflicted injury. Based on current clinical thinking and published literature, appropriate care protocols will be developed for both prevention and treatment of these conditions. Team membership will comprise local groups, public health and relevant others. This information will be used in subsequent phases to develop injury goals and targets and performance indicators for the district health services in 1994. This process will enable districts to identify and achieve the most cost-effective use of available resources, reduce the incidence of serious injury on the North Coast and ensure provision of optimal care in its early detection, treatment and rehabilitation.

John Beard and Anne Kempton
North Coast Region Public Health Unit

OUTCOMES FOR CORONARY ARTERY BYPASS GRAFT SURGERY PATIENTS AT ST GEORGE HOSPITAL

A project team consisting of representatives from St George Hospital, the Area Health Service office and the Public Health Unit for Central and Southern Sydney aims to measure short- and medium-term (up to six months) health outcomes for patients undergoing coronary artery bypass graft surgery. Key indicators of in-hospital quality of care will be chosen, as will post-hospital indicators measuring mortality, morbidity, function and quality of life. A process for review of the outcome data will be established. The project will also compare, on the basis of practicality and cost, methods to collect health outcome data on patients in the community.

Mark Bek
Central and Southern Sydney PHU

OUTCOMES OF PATIENTS TREATED FOR CONGESTIVE HEART FAILURE IN WESTMEAD HOSPITAL

Congestive heart failure is a relatively common illness, particularly in the elderly. The condition may cause significant restrictions in daily activities and urgent hospital admission is often required. Relatively little is known about the long-term impact of current treatment or about the way the condition arises and progresses. This project aims to develop disease indicators for the condition and to explore ways of measuring outcomes for its treatment. The project will be based on all patients entering Westmead Hospital over a three-month period who have a principal diagnosis of congestive heart failure. Details of their presentation and hospital stay will be collected. At three and six months after discharge follow-up details will be collected, including overall health, health service use and quality of life. Clinicians have been involved in the design of the study and intend to use the results to help refine the management of this disease and the distribution and use of resources within the hospital.

Fiona Blyth
Westmead Hospital

ORGANISATION AND DELIVERY OF IMMUNISATION PROGRAMS

This project aims to establish and evaluate a system of delivery of on-the-spot immunisation to children and adolescents less than 15 years old in hospital, general practice and early childhood centres in the Central Sydney Health Area. The main outcome measure will be assessment of the number of immunisations given over the four-month study period in each of the three sites. The first stage of the project will involve notifying parents of children who attend any of the three sites of their child's immunisation status. If immunisation is incomplete parents will be given advice about ensuring their children are fully immunised. They will not be offered on-the-spot immunisation unless it is specifically requested. This group will be followed up to determine action taken after notification of the child's immunisation status. The second stage of the project will implement on-the-spot immunisations to all children who present with incomplete immunisation. The outcome indicators assessed will be overdue immunisation and uptake of the offer of on-the-spot immunisations.

Margaret Burgess
Royal Alexandra Hospital for Children

QUALITY OF CARE AND OUTCOME INDICATORS FOR RURAL TRAUMA

This project will focus on the development of health indicators to monitor rural trauma services. Indicator data will be collected on trauma

notifications, medical retrieval cases and injury-related deaths and will be used to evaluate a change in the organisation of trauma services for country sectors. The proposed adjustment to rural trauma services should result in better integration and more efficient utilisation of widely spread clinical services responsible for the management of serious trauma. Additional funding for this project is provided by the Motor Accidents Authority.

Tony Burrell, Orange Base Hospital
David Lyle, Epidemiology and Health Services Evaluation Branch, NSW Health Department

BARWON MANAGEMENT INFORMATION SYSTEM

With the planning of the proposed health service partnership Barwon Health, and the resulting joint commitment to achieving positive health outcomes, comes the rare opportunity to plan from scratch a system which can become the major tool guiding the process of management to achieve such positive outcomes. The project will include:

- identifying the health needs of the community;
- assisting in casemix funding arrangements;
- determining the range of services required to meet identified need; and
- reviewing clinical programs.

This will enable appropriate indicators to be identified and used for the improvement of health programs of a rural health service. The preliminary use of the information derived through this new management information system will determine the direction of resource allocation within the key program areas of the health service.

Lyn Clarke
Moree Plains Health Service

ESTABLISHING HEALTH INDICATORS FOR DIABETES — A CONSENSUS APPROACH

As the population ages the prevalence of diabetes is increasing. Diabetes is responsible for a large amount of suffering, morbidity and premature mortality because of the long-term vascular and other complications associated with it. The treatment of diabetes requires long-term care and generates significant costs. There is evidence that in many people the development of diabetes and related complications can be prevented or delayed by lifestyle changes and optimal management of the condition. It is therefore essential that the health care system monitors this condition through population-based measures, such as the number of people developing diabetes, and through health service-based outcome indicators. In September 1993 a workshop will be held to further the development of health outcome indicators for diabetes and the data collections necessary to support them. The workshop will comprise NSW health professionals working in the area of diabetes and consumer representatives. A report will be produced which will become the foundation of developments in diabetes information systems and health outcome indicators.

Stephen Colagiuri
Diabetes Australia

MOREE ABORIGINAL HEALTH STRATEGY

The Moree Aboriginal Liaison Committee, which comprises representatives of community-based and Health Department Aboriginal health services and the Aboriginal community in Moree, is embarking on a long-term strategy to address some of the health problems commonly experienced by the Aboriginal community. The goal of this project is to set up a system which will collect and disseminate information about the health status of the Aboriginal residents of Moree. The system is to be designed and operated by Moree-based Aboriginal health workers, and the adult Aboriginal population of Moree will be the primary target for feedback of results. This community-based project represents an alternative to the "top-down" approach, based on routinely collected administrative data, to improving health status information for Aboriginal populations. It is hoped the system will become a model for evaluation and monitoring systems for Aboriginal health initiatives elsewhere.

Val Dahlstrom
Moree Aboriginal Liaison Committee

DEVELOPMENT OF AN INDICATOR FOR ACUTE MYOCARDIAL INFARCTION

Developing and piloting a standard diagnostic indicator for acute myocardial infarction is the aim of this project. The standard diagnosis will be based on a combination of information on patients' symptoms, cardiac enzymes, ECG findings and previous history of myocardial infarction obtained from clinical records. Data will be collected for patients aged between 25 and 70 years who are admitted to one of the Newcastle hospitals participating in the WHO MONICA Project. The indicator will be validated against the more complex diagnostic criteria developed for the WHO MONICA Project, and will also be compared to ICD codes from the hospital morbidity data. A standard diagnostic indicator is essential for any long-term monitoring of acute myocardial infarction to guard against outside influences such as changes in administrative procedures, ICD coding, admission criteria or patient mix.

Annette Dobson
Centre for Clinical Epidemiology and Biostatistics

ASSESSMENT OF DIABETES IN SOUTH WESTERN SYDNEY: DOES AMBULATORY STABILISATION IMPROVE HEALTH OUTCOMES?

This project will compare the health outcomes and costs associated with ambulatory stabilisation of diabetics on insulin, with more traditional methods

of initiating and stabilising insulin treatment on an inpatient basis. The project will be carried out in the South Western Sydney Area Health Service (SWSAHS). Ambulatory management is already undertaken at the Lidcombe Hospital Diabetes Centre and to a limited degree in other SWSAHS hospitals. The project will:

- determine whether short- and medium-term health outcomes are compromised by the newer ambulatory method of patient management;
- provide assessment of direct and indirect costs associated with ambulatory management versus hospital admission; and
- assess the "critical mass" of staff and equipment necessary for the operation of a successful ambulatory service.

Outcomes to be assessed will include diabetes knowledge, general well-being, psychological adjustment, metabolic control, lost work days, hospitalisation and frequency of adverse diabetes events (e.g. hypoglycaemic episodes). The project will recruit all appropriate patients and follow them up to a six-month review.

Jeff Flack
Diabetes Centre, Lidcombe

NEW ENGLAND IMMUNISATION REGISTER

An actively maintained, voluntary immunisation register based upon a birth cohort is already operating successfully in Armidale and surrounding areas. This involves the full cooperation of all local immunisation providers, the Regional Child Health Service (affiliated with the New England Region Public Health Unit), the New England Tablelands Health Service and the School of Health at the University of New England. This health outcomes project proposes to enrol a birth cohort of infants from the remainder of the New England Region on to a voluntary immunisation register. Immunisation rate and punctuality of immunisation will be measured before and after implementation of reminder protocols derived from the Armidale Register experience. Four different intervention protocols which involve reminders to clients, providers or both will be allocated to specific geographic districts. Costs of each intervention will be measured and a cost-effectiveness analysis performed. Attitudes of clients, providers and health services will be assessed.

Andrew Gardiner
New England Region Child Health Service

EVALUATION OF THE IMMUNISATION SERVICE IN ORANA AND FAR WEST REGION

This project aims to evaluate the immunisation programs offered in a rural area of NSW and in particular seeks to examine a cluster sampling method to provide ongoing evaluation of immunisation programs. It also aims to identify constraints leading to failures in compliance on the part of parents and care givers which cause problems in immunisation programs in the State. Professionals involved in the components of the delivery of immunisation services have agreed to participate in the study. Its organisers have undertaken to pass on results to the individual participants as well as to publish the study results.

John Hall
Orana and Far West PHU

QUALITY OF CARE AND OUTCOME INDICATORS FOR CRITICAL CARE

A new service configuration for critical care will be developed in South Western Sydney Health Area. This will reorganise existing ambulance and hospital services to deal more effectively with critical illness, whether it occurs in the community, at an acute hospital or when the need arises to transport critically ill patients between hospitals. The new plan will work alongside the State Trauma Plan. To monitor and evaluate these changes the project team will also develop and test a set of quality of care and outcome indicators. Quality of care will be monitored by identifying the number of preventable deaths and avoidable complications occurring among critically ill patients. Other clinical indicators will be developed to monitor the performance of components of the Area critical care service such as retrieval times for critically ill patients transported between hospitals and compliance with interhospital transportation guidelines.

Ken Hillman, South Western Sydney Area
David Lyle, Epidemiology and Health Services Evaluation Branch, NSW Health Department

PROFILING SEVERITY OF ILLNESS AND OUTCOME OF INTENSIVE CARE

This project will add substantial value to an existing information system that contains a standardised core of clinical data collected by 50 intensive care units in Australia. Information is collected locally on demographics, diagnosis, illness severity (APACHE II and SAPS II) and patient outcomes and forwarded to a national clearing house managed by the NSW branch of the Australian and New Zealand Intensive Care Society. For this project a production data analysis and reporting system will be designed and built for the national ANZICS database to enable individual intensive care units to monitor their activity, evaluate outcomes and make adjustments to services when a change in performance occurs. A statistical report on critical illness in Australia will be prepared using the national ANZICS database.

David McWilliam
Royal Prince Alfred Hospital

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NSW HEALTH OUTCOMES PROGRAM
SELECTION OF PROJECT

A rigorous selection process was followed to select the 17 Health Outcomes Demonstration Projects. In general, proposals were likely to be successful if they:

- clearly exemplified the specification and use of health outcome indicators to inform decision making about health services and the subsequent monitoring of services;
- demonstrated the active collaboration between different groups within the health system and different health sectors;
- demonstrated that the project would be relatively easily replicated in different locations or integrated into the health system; and
- built on existing work.

In addition, projects were reviewed in terms of the strategic importance of the project to the Health Outcomes Program, priority to the NSW Health Department and also on practical issues such as the track record of the investigator/s, feasibility, budget and timeline for the project.

Proposals were independently reviewed by several members of the NSW Health Department and a series of review committees. The final recommended list of projects was reviewed by the Director-General and the Executive Directors of the Health Department.

Ten proposals to conduct asthma projects were received. During the review process it was noted there was considerable overlap among these Expressions of Interest.

It was decided not to recommend funding of any asthma projects at this stage, but instead to commission a review of outcome development for asthma. This review will provide a status report on the development of health outcome indicators for asthma, identifying where there are gaps in knowledge and recommending projects which would provide information to fill these gaps. This information will be used to target health outcome projects in the next round of funding.

The next round of Health Outcomes Program funding will be available around July 1993.

Demonstration projects

► *Continued from page C*

THE BARRABA PROJECT

The Barraba Project will demonstrate a practical way of putting together information about small communities, developing health outcome targets and planning local strategies. This approach should be helpful to communities throughout rural NSW. As an example, local information about early deaths from heart disease could be used to set targets for improvement. People in the community would then have greater commitment to efforts aimed at better nutrition and activity levels. The Barraba Shire has a population of 2,500 — of whom 1,500 live in Barraba. The project team involves representatives from hospital and health services, local government and adult and community education. The project is being coordinated by the New England Region Public Health Unit with assistance from the Department of Public Health, University of Sydney.

Bob Scott
New England Region PHU

IMPROVING CARDIOVASCULAR HEALTH OUTCOMES IN AN ABORIGINAL COMMUNITY

The Orana and Far West Region Health Promotion Unit developed a protocol for cardiovascular disease risk factor screening which was implemented in Wilcannia in 1989 and repeated 12 months later. This project will repeat the risk factor screening and publish the methods and a user's guide allowing the screening to be performed in other localities. The project will also interview individuals who had a very high cardiovascular disease risk in 1989 to identify their contact with the health system and barriers to better health. The project will provide lessons for improving accessibility, acceptability and effectiveness of health services in a local setting.

John Stephenson
Orana and Far West Region Health Promotion Unit

EVALUATION OF TUBERCULOSIS PROGRAM OUTCOME INDICATORS AND A TARGETED INTERVENTION TO MINIMISE DELAY IN DIAGNOSIS

Though the incidence of active tuberculosis in NSW has fallen over the past few decades it remains an important public health issue, especially in South Western Sydney where the rate of new TB disease reported in 1991 was exceeded only by one other Area. Part one of this project aims to develop and establish mechanisms for monitoring indicators of treatment service effectiveness. Part two will evaluate and cost a strategy to reduce delay in diagnosis of TB. Delay, and contributors to delay, in diagnosis will be determined for all new cases at the Liverpool Chest Clinic over a 12-month period. The intervention involves provision of information and access to a laboratory service providing a rapid diagnostic test. A group of general practitioners serving a high-risk population will pilot the new arrangements. Evaluation will involve comparison of the time of diagnosis for the intervention group with that using routine methods.

Greg Stewart
South Western Sydney PHU