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HEALTH SURVEYS: BUILDING AN INFORMATION BASE FOR POPULATION HEALTH IN NSW

GUEST EDITORIAL

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Information about the circumstances of birth, and the causes of death, is recorded for the whole population. Between these two points in the lifecycle, information about health is captured when individuals come into contact with specific health services. In the main, however, these service-based collections were developed to meet administrative needs and collect limited data about health. In the community at large, population surveys offer the only mechanism for obtaining information about health status, health risks, and health-related behaviours.

Health surveys have provided a major part of the information base for population health efforts in Australia since 1977 when the Australian Bureau of Statistics conducted its first National Health Survey. The National Health Surveys have consistently provided high quality information—collected by personal interview—at the national and state level. However, cost has precluded a sample size large enough to yield estimates for local areas.

In the early 1990s, a growing need for data to support local-level population health work, coincident with the emergence of telephone surveys as a robust and cost-effective method, motivated the introduction of several telephone health surveys in areas of New South Wales (NSW)¹⁻⁷. In 1994, the NSW Department of Health conducted the NSW Health Promotion Survey,⁸ the largest telephone health survey conducted in Australia to that time, with a sample designed to provide comparable estimates for each of the state's area health services. An ongoing NSW Health Survey Program commenced in 1996.⁹

This edition of the *NSW Public Health Bulletin* focuses on health surveys, and in particular on the achievements of the NSW Health Survey Program. Banks and Eyeson-Annan document—for the first time—who has used data from the Program, and how. Surprisingly, many of the uses they identified were previously unknown to the team working on the Program.

continued on page 214

CONTENTS

- 213 Guest editorial—Health surveys: Building an information base for population health in NSW
 - 214 Uses of NSW Health Survey Program data—A survey of users
 - 221 Using NSW Health Survey data to monitor asthma prevalence and management in NSW
 - 223 Prevalence and management of diabetes in NSW: Is care adhering to the clinical guidelines?
 - 226 Using NSW Health Survey data for local planning and evaluation in NSW
 - 227 Using NSW Health Survey data for economic analysis
 - 229 Getting population health research to influence health service practice: Use of area health service questions in the NSW Health Survey
 - 231 Collecting information from people of non-English speaking background: Translation of survey instruments in the NSW Health Survey Program
 - 234 Maximising quality in health surveys: Lessons from the field
 - 235 Continuous data collection under the NSW Health Survey Program—What will it mean?
 - 237 Health surveys conducted by the Australian Bureau of Statistics
-
- 240 FactSheet : Rubella

 - 241 Communicable Diseases: August 2001
 - 241 Trends
 - 241 Meningococcal diseases
 - 241 Measles

Marks, Williamson and Quaine, Rissel, and Haas describe specific uses of data from the Program for monitoring the prevalence and management of asthma and diabetes, local planning and program evaluation, and economic analysis. Quaine et al. examine the use made of data from area health service-specific questions included in the Program, and relationships between the process of survey question development, the extent of analysis, and use of the results.

Three papers focus on survey processes. Baker describes the methods—unique to the Program—used to translate the survey questionnaires into non-English languages. Gorringe and Latham provide a “hands on” perspective on managing telephone survey fieldwork, and maximising its quality. Eyeson-Annan describes mooted changes to the Program, which will evolve to a continuous all-ages data collection from January 2002.

Finally, Atyeo and Rawson provide a national context. They describe the series of health surveys conducted by the Australian Bureau of Statistics, and changes to the composition and frequency of their survey program arising from a recent review.

The articles in this edition of *NSW Public Health Bulletin* emphasise the quality of the work done by the NSW Health Survey Program, and its key role in informing population health activity in NSW. The Program will face several challenges as it evolves, including increasing use of mobile phones (in 2000, 58.5 per cent of Australian households had at least one mobile phone)¹⁰ and answering machines, portability of phone numbers, and possibly reduced public cooperation related to increasing telemarketing activity. Building an even better

information base for population health in NSW will require the development of new health survey methodologies, and strategies to nurture public support.

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USES OF NSW HEALTH SURVEY PROGRAM DATA—A SURVEY OF USERS

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The Epidemiology and Surveillance Branch of the NSW Department of Health established the NSW Health Survey Program (HSP) in 1996 to consider the need for state and local area-level information about the health of the NSW population.¹ The Program, as a key element in population health surveillance, has the following objectives. To:

- provide ongoing information on self-reported health status, health risk factors, health service use, and satisfaction with health services, to inform and support planning, implementation and evaluation of health services and programs in NSW;
- collect information that is not available from other sources;

- respond quickly to emerging data needs;
- ensure that the information collected is high quality, timely, and cost-effective.

The HSP comprises a series of population health surveys that provide area health service-level data on health status, risk factors, use of health services, and satisfaction with health services.¹ The first survey began in September 1997 and focused on the adult population. The survey was repeated in 1998 with minor changes, including the addition of questions on oral health and cervical screening. In 1999, the HSP undertook a survey of the health of older people, and a survey of the health of children is currently in progress.

In early 2001, we conducted a survey of stakeholders and users of the HSP to investigate whether it was meeting its objectives. In particular we examined:

- how users were accessing the health survey data;
- what actions had been taken as a result of the data;
- who had used the data to make decisions and take actions;
- how the program could better meet the needs of the users.

This article reports the methods and findings of this survey of stakeholders and users.

METHODS

Sample

The purpose of the survey was to collect information about as many users and uses of the NSW HSP as possible. Accordingly, a non-probability ‘snowball’ sampling method was used, with three main target groups:

- key staff within the NSW Department of Health who were known to have used data from the HSP;
- potential and actual users of the HSP, compiled from lists of members of relevant committees and other groups, including: NSW Health Survey Program Steering Committee; NSW Health Survey Technical Working Group; NSW Health Survey Methodology Working Group; NSW Child Health Survey Technical Expert Group; NSW Older Peoples Survey Technical Advisory Group; Chief Executive Officers of NSW Area Health Services; National Computer Assisted Telephone Interviewing Technical Reference Group (CATI-TRG); NSW Epidemiology Special Interest Group (Epi-SIG); and NSW Health Promotion Research and Evaluation Coordinators;
- other possible users of the HSP suggested by users from the previous two groups.

Survey Instrument

Key informants from the NSW Department of Health were surveyed using unstructured face-to-face interviews.

Other potential users of the HSP were surveyed using a brief questionnaire consisting of seven questions. The questions addressed method of access to the survey data (unit record and/or summary information), types of uses of survey data, and topic areas of the data used. The survey also included questions seeking information on other known users of the survey data, and suggested improvements to the HSP.

Data Collection

The questionnaire was sent to potential users of the HSP by email. Hard copies were distributed at a meeting of the NSW Epidemiology Special Interest Group.

Completed surveys were returned by email, fax, or post. Completed surveys were entered into a database for analysis.

RESULTS

Respondents

Of the 230 questionnaires distributed (217 initially and 13 as a result of information from other recipients), 35 were returned by respondents who had used HSP data.

The respondents included health service managers, epidemiologists, project officers, consultants, research officers and health promotion officers. The data had been used within the NSW Department of Health, and by area health services, research institutions and universities, other government departments, specialist health services and private consultants.

FIGURE 1

TYPES OF USES OF NSW HEALTH SURVEY PROGRAM INFORMATION [N=116]

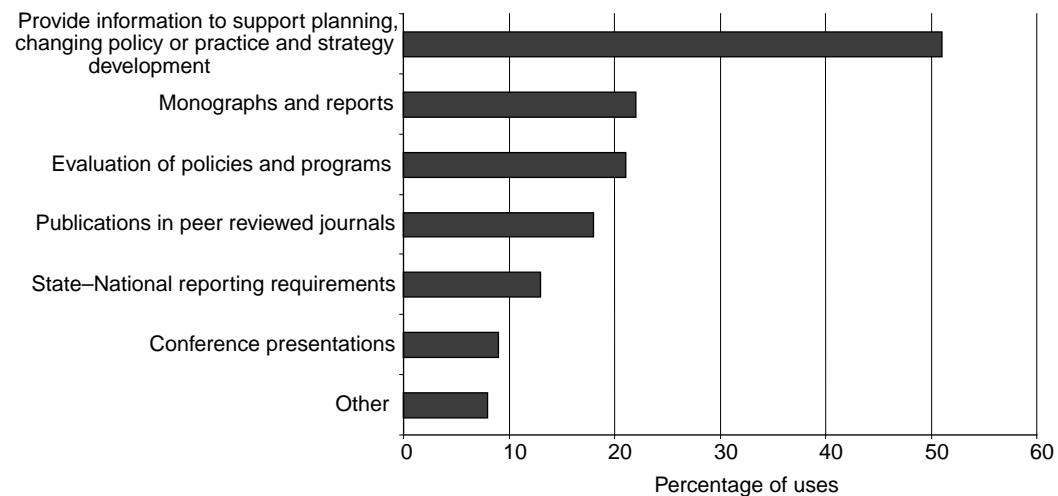


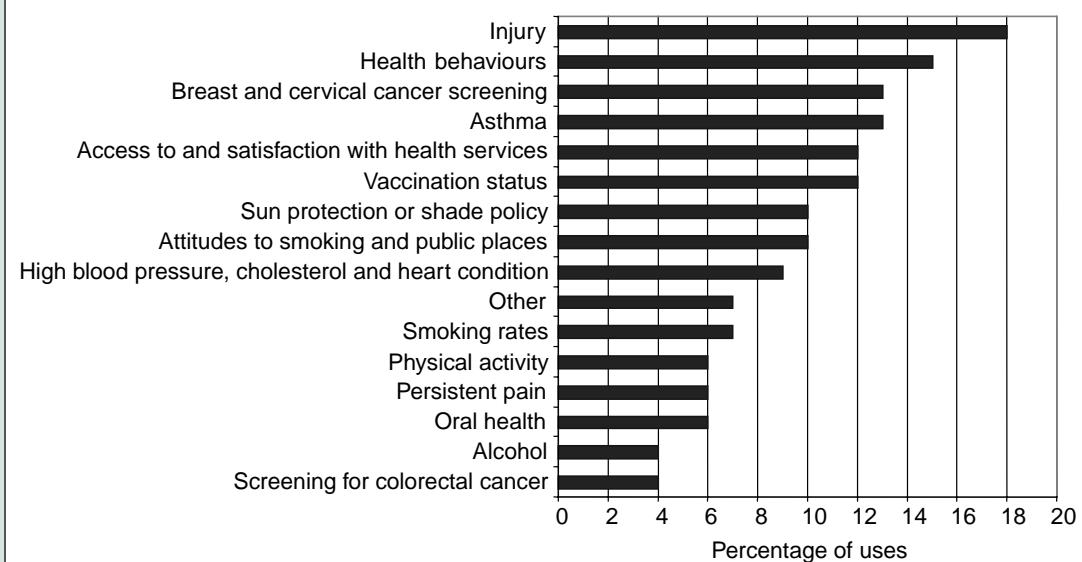
TABLE 1**ACCESS TO NSW HEALTH SURVEY PROGRAM DATA [N=116]**

Type of data	Accessed Information	Number	(Percentage)
Unit record data	HOIST	14	(40%)
	Request for unit record data	2	(6%)
	Other	0	(0%)
Summary Information	Printed Chief Health Officers Report	18	(51%)
	Printed Older Peoples Report	9	(26%)
	Internet Reports	14	(40%)
	Intranet Reports	14	(40%)
	Request for Summary tables	0	(0%)
	Other	4	(11%)

TABLE 2**SUGGESTIONS FOR IMPROVEMENTS TO THE NSW HEALTH SURVEY PROGRAM**

Area	Comments and Suggestions
Sampling	<ul style="list-style-type: none"> · larger rural sample
Questionnaire Development	<ul style="list-style-type: none"> · review of instrument by experts · standardisation of questions with other data sources · having consistent questions between years
Analysis	<ul style="list-style-type: none"> · more cleaning of survey dataset on HOIST * · access to a program to convert character data to numeric data
Reporting	<ul style="list-style-type: none"> · separate reports for each year · specific topic area reports, which may also incorporate other data sources · breakdown by local government area · provision of actual counts, sample number and response rate · more interpretation of results
Marketing	<ul style="list-style-type: none"> · more information on how to access survey results · more information on how to access HOIST * and better understanding of how HOIST* works

* The NSW Department of Health's Health Outcomes Information Statistical Toolkit (HOIST).

FIGURE 2**TOPIC AREAS OF USE OF THE NSW HEALTH SURVEY PROGRAM INFORMATION**

Access to the data

Data is available as summary information (that is, as aggregated data such as that presented in the Electronic Reports of the NSW Health Surveys, the *Health of the People of NSW—Report of the Chief Health Officer 2000*,² or the *NSW Older People's Health Survey 1999*)³ or as individual unit record data, such as that found in datasets in the NSW Department of Health's Health Outcomes Information Statistical Toolkit (HOIST). Most respondents to the questionnaire (87 per cent) had accessed summary information, while less than half (43 per cent) had accessed unit record data either from HOIST or from special requests for data from the HSP.

Eighteen of the questionnaire respondents (51 per cent) had accessed summary information in the hard copy of *The Health of the People of NSW—Report of the Chief Health Officer 2000*,² while nine (26 per cent) had used the hard copy report *NSW Older People's Health Survey 1999*.³ Just under half of respondents reported that they had accessed summary information electronically via the NSW Department of Health's Intranet (14, or 40 per cent), and a similar number reported accessing it via the Internet (14, or 40 per cent) (Table 1).

Of those accessing unit record data, almost all (14) reported that they obtained the data via the NSW Department of Health's Health Outcomes Information Statistical Toolkit (HOIST) facility, while only two respondents had obtained it via a special request to the Epidemiology and Surveillance Branch.

USES OF NSW HEALTH SURVEY PROGRAM DATA AND INFORMATION

The survey identified 116 separate examples of uses of the information from the HSP, covering a wide variety of purposes (Figure 1) and a wide range of topic areas (Figure 2).

HSP data has been used to fulfil State and Commonwealth reporting requirements, including reports to the Commonwealth on National Aboriginal Health Indicators,⁴ influenza immunisation rates for Immunise Australia,⁵ and indicators of satisfaction with health services for the Commonwealth Productivity Commission;⁶ and reports to the NSW Council on the Cost of Government,⁷ NSW Budget Estimates Committee,⁸ and NSW Treasury.⁹ The data have also been used to produce NSW Area Health Service Health Status Profiles,⁹ which support performance management within NSW Health.

HSP data have contributed to a range of monographs and reports, including:

- *The Health of the People of NSW—Report of the Chief Health Officer 2000*,²
- 1997 NSW Health Survey,¹⁰
- NSW Health Surveys 1997 and 1998,¹¹
- NSW Older People's Health Survey 1999,³
- *Cancer in the Bush*,¹²
- Down River—Needs assessment of Lower Clarence,¹³
- NSW Older People's Health Survey, 1999—Comparison between results for Mid-Western Area Health Service and NSW,¹⁴
- Healthy Northern Rivers 2002—Northern Rivers Area Health Profile,¹⁵
- reports for cancer and respiratory diseases.^{16,17}

The HSP has provided information to support planning, policy and strategy development, including strategies for public health in NSW (such as *Healthy People 2005*),¹⁸ alcohol harm,¹⁹ and men's health;²⁰ and campaigns for pneumococcal immunisation,²¹ influenza immunisation, physical activity (Active Australia),²² sun safety,²³ and injury prevention.²⁴

FIGURE 3

USES OF HEALTH SURVEY PROGRAM DATA BY TYPE OF USER

	State-Commonwealth reporting requirements	Monographs and reports	Information to support planning, change policy or practice and strategy development	Evaluation of policies and programs	Publications in peer reviewed journals	Conference presentations	Other
NSW Department of Health	✓	✓	✓	✓	✓	✓	
Research institutions	✓	✓	✓	✓	✓	✓	✓
Postgraduate education				✓	✓	✓	
Area Health Services		✓	✓	✓	✓	✓	
Other Government Departments	✓	✓	✓	✓			
Consultants				✓			✓
Specialist health Services			✓	✓			
✓ NSW Health Survey used for this purpose							

FIGURE 4**USES OF HEALTH SURVEY PROGRAM DATA BY TOPIC AREA**

	State–Commonwealth reporting requirements	Monographs and reports	Information to support planning for change, policy or practice and strategy development	Evaluation of policies and programs	Publications in peer reviewed journals	Conference presentations	Other
Asthma	✓	✓	✓	✓	✓	✓	✓
Injury	✓	✓	✓	✓	✓	✓	✓
Oral health	✓	✓	✓	✓			
Persistent pain	✓	✓	✓	✓	✓	✓	
High blood pressure, cholesterol and heart condition	✓	✓	✓	✓		✓	✓
Vaccination status	✓	✓	✓	✓			
Attitudes to smoking and public places		✓	✓	✓		✓	✓
Sun protection or shade policy	✓	✓	✓	✓		✓	✓
Screening for colorectal cancer		✓		✓			
Access to and satisfaction with health services	✓	✓	✓	✓		✓	
Breast and cervical cancer screening		✓	✓		✓	✓	
Alcohol		✓				✓	
Physical activity		✓	✓	✓			
Smoking	✓	✓	✓		✓		✓
Other		✓	✓		✓	✓	✓

✓ NSW Health Survey used for this purpose

Uses of the HSP to evaluate policies and programs include evaluation of use of asthma ‘preventer’ medications,²⁵ trends in physical activity,²⁶ influenza immunisation campaigns, and cervical cancer screening.^{27,28}

HSP data have been used to produce a range of publications in peer-reviewed journals, including papers on chronic pain,²⁹ use of self-report to monitor overweight and obesity,³⁰ cervical screening,²⁸ use of asthma ‘preventer’ medications and written management plans,²⁵ health inequalities,³¹ risk factors that can be modified to prevent cancer,³² informal caring,³³ factors associated with smoke-free homes,³⁴ and urinary symptoms and incontinence.³⁵

The data have contributed to conference presentations on topics including prevalence and management of diabetes,³⁶ prevalence of chronic pain and its interference with daily activities,³⁷ measuring quality of life using the EQ-5D instrument,³⁸ and alcohol harm.¹⁹

Uses of HSP by type of user and by topic area are summarised in the matrixes presented as Figures 3 and 4.

Use of Area Health Service level information and other supporting sources of information

Of the projects identified through the questionnaire, 33 (62 per cent) had involved analysis of the data at area health service level.

One-third of projects (18, or 33 pr cent) used HSP data only, while eight (15 per cent) also used the ABS National Health Survey, and 12 (22 per cent) used other additional sources of data such as National Injury Surveillance Unit reports, the National Drug Strategy Household Survey, the NSW Midwives Data Collection, the NSW Central Cancer Registry, and local health surveys.

Suggestions for improvement

Twenty-eight (80 per cent) respondents to the survey questionnaire provided suggestions for improvements to the HSP. These fell into five broad categories: sampling, questionnaire development, analysis, reporting, and marketing (Table 2).

DISCUSSION

State health departments around Australia, and overseas, are conducting regular population telephone surveys to address their requirements for population health information. Examples include:

- United States Behavioural Risk Factor Surveillance System (BRFSS),³⁹
- California CATI (Computer Assisted Telephone Interview),⁴⁰
- Hawaii Health Survey,⁴¹
- South Australian Social, Environmental and Risk Context Information System (SERCIS),^{42,43}

- Western Australian Health Survey,⁴⁴
- Queensland Regional Health Survey,^{45,46}
- Victorian Health Survey program,⁴⁷
- Tasmanian Healthy Communities Survey.⁴⁸

Surprisingly, however, publications describing the uses made of such health survey data are scarce, except for reports from the BRFSS.^{49,50,51,52,53}

Our survey identified a wide range of uses of NSW Health Survey Program data. Encouragingly, the most frequently reported use was to provide information to support planning and strategy development, and to change policy or practice. Remmington et al. and Figgs et al. examined uses of the BRFSS by identifying publications using BRFSS data in each of the contributing states, and through questionnaires completed by the state BRFSS managers.^{50,51} The main uses they identified—support for state and local health policy and planning of interventions—were similar to those found in our survey.

Barriers to use of health survey data identified in our study were similar to those found by others. Spencer et al. reported that collaboration between data creators and users was important for addressing information needs for health policy, and for prioritising these needs.⁵² Bloom et al. undertook focus groups with BRFSS users, and identified barriers including lack of knowledge regarding availability of the survey data and the need for larger sample sizes to examine smaller areas.⁵³

With a move to reorient the NSW HSP to a continuous data collection from the beginning of 2002 (see the article on page 235 of this edition of the Bulletin), the information collected through the user survey, and through ongoing user feedback, will be used to refine topic and question content. It will also assist in developing mechanisms to improve the program, and to maximise the use made of its products. Figgs et al. reported an increase in the use of BRFSS data from the 1980s to the 1990s.⁵¹ It is anticipated that the uses made of NSW HSP data will increase in a similar way as the program evolves and matures.

When planning the survey of users, we thought that many of the uses of data from the NSW HSP would be known to us. However, this was not the case, with around half of the projects we identified as being new to us. The survey was thus an important step in measuring and documenting the value of the Program. The projects that were identified have been included on a register. Any other users of the NSW HSP are encouraged to send us information about their projects so that they can be added.

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USING NSW HEALTH SURVEY DATA TO MONITOR ASTHMA PREVALENCE AND MANAGEMENT IN NSW

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Asthma is a major public health issue in Australia. State and commonwealth governments recognise asthma as a priority area for both policy development and resource allocation. To inform and evaluate policy in this field, measurements of indicators of the level of disease, time trends, distribution of disease burden, avoidable risk factors, and the institution of effective management practices, are all required. Routine data sources have value for this purpose, but with important limitations.

The most severe adverse outcome of asthma is death; and, on occasions, epidemics of asthma resulting in deaths have alerted authorities to important management problems.^{1,2} However, death resulting from asthma is rare, and consequently mortality data are a poor guide to the burden of disease and the need for resource allocation. Fortunately, for most patients with asthma the most serious adverse outcome is admission to hospital. While hospital separation data do provide important insights into the distribution of the disease, both geographically and over time, these data also have limitations. Variation in hospital admission rates may reflect variation in disease prevalence, the effectiveness of disease management, accessibility of in-patient care, or a combination of these factors.

The policy implications of these alternative drivers of hospital separation rates are quite diverse. Other potential routine sources of information, such as medical consultation data (from the Health Insurance Commission) and the use of asthma medicines (from the Pharmaceutical Benefits Scheme) are limited in their interpretability by the lack of data linked to diagnosis. To provide adequate information on the broad range of asthma indicators, it is necessary to conduct health surveys specifically for this task. This article describes how the results from the NSW Health Survey Program have been used for this purpose.

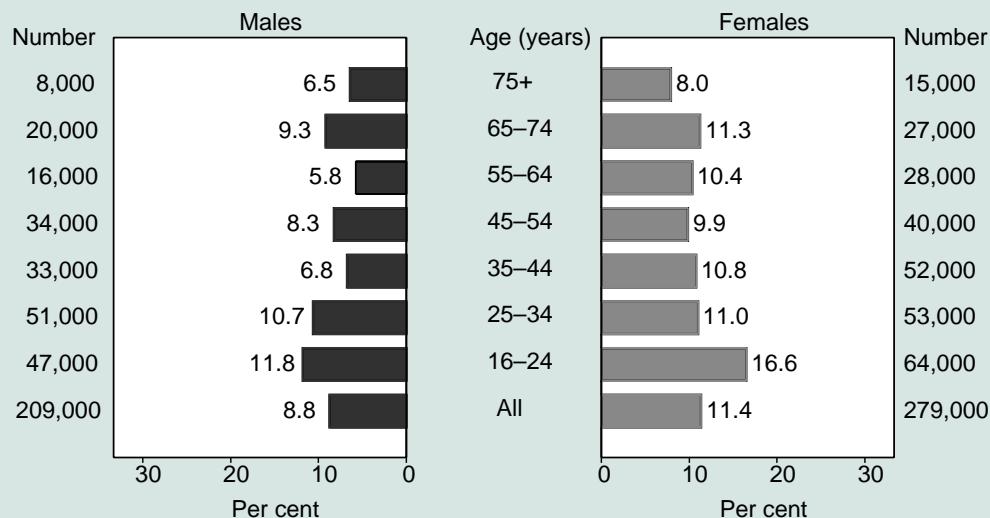
The NSW Health Surveys of 1997 and 1998 collected data on the prevalence of asthma symptoms, the effect of the disease, health service utilisation, and the extent of disease management practices among adults in NSW.³

Current asthma—that is, reported symptoms of and/or treatment for asthma within the last 12 months in respondents told by a doctor that they had asthma—was present in 8.8 per cent of men and 11.4 per cent of women. The prevalence of current asthma tended to decrease with age (Figure 1). Higher rates were observed in people born in Australia compared with people born overseas. There was some variation between health areas, with certain rural areas having higher than average rates.

Most people with asthma (67.5 per cent) reported that it had not interfered with their activities at all during the

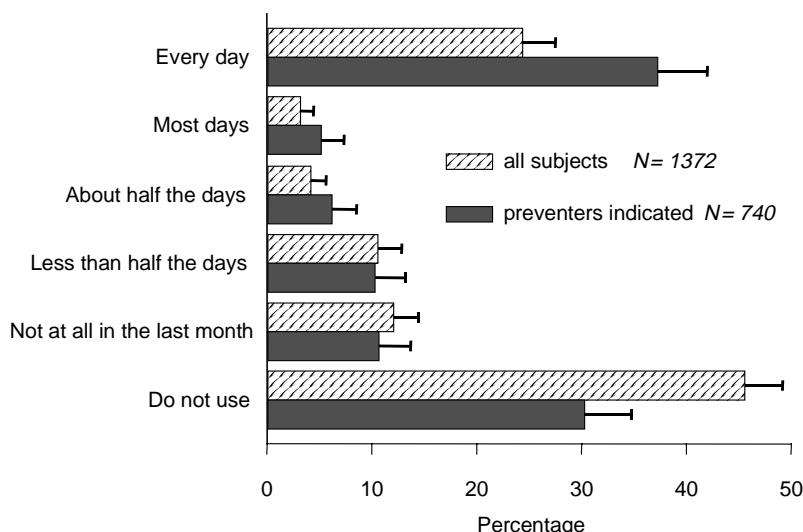
FIGURE 1

CURRENT DOCTOR DIAGNOSED ASTHMA BY AGE AND SEX, PERSONS AGED 16 YEARS AND OVER, NSW 1997 AND 1998



Note: Estimates based on 35,025 respondents (17,531 in 1997; 17,494 in 1998). 55 (0.2%) not stated for current doctor diagnosed asthma.

Source: NSW Health Surveys 1997 and 1998 (HOIST). Epidemiology and Surveillance Branch, NSW Department of Health.

FIGURE 2**DISTRIBUTION OF FREQUENCY OF USE OF PREVENTER MEDICATIONS AMONG ALL SUBJECTS WITH CURRENT ASTHMA AND SUBJECTS WITH ASTHMA FOR WHOM PREVENTERS ARE INDICATED**

Note: Upper 95 per cent confidence intervals are shown.

preceding 12 months. However, for 11.6 per cent of people with asthma, the disease interfered with activities ‘a lot’ or ‘extremely’; and 6.9 per cent had 10 or more days in the preceding year in which they could not go about their normal activities or tasks because of asthma. Sleep disturbance due to asthma occurred on 10 or more nights in the preceding month in 9.3 per cent of respondents with current asthma.

Health service utilisation for asthma is an indicator of the severity of disease and the accessibility of health care. Nearly nine percent of respondents had visited their general practitioner (GP) for the treatment of asthma three or more times in the preceding year. Overall, 6.4 per cent reported having visited a hospital Emergency Department because of an exacerbation of asthma in the past year; and, of these, one quarter (1.7 per cent of all with current asthma) had attended on more than one occasion in that time. Admission to hospital is a rare event for most adults with asthma—only 3.5 per cent had been admitted for an exacerbation within the preceding year.

Two key elements of asthma management are the regular use of medications that prevent asthma, and the possession of a written asthma management plan.⁴ However, not all patients with asthma require these interventions. Data from the NSW Health Survey were used to identify a sub-group of people with asthma for whom current guidelines would recommend use of preventer medications.⁵ These were people who reported one or more of the following:

- sleep disturbed by asthma 3–4 nights or more in the last month;

- used medication to relieve the symptoms of asthma half the days, or more, during the last month;
- asthma interfered with ability to work, study, or ability to manage day-to-day activities to a moderate, or greater, extent during the last month;
- visited a GP for an attack of asthma three or more times in the last 12 months.

These criteria identified 54 per cent of people with current asthma aged 16 to 54 years. Of these individuals, no more than 43 per cent were using preventer medications effectively; that is, on most days of the preceding month (Figure 2). Further analysis revealed that younger adults were more at risk of non-compliance with regular use of preventer medications. However, gender and rural (as opposed to urban) residence were not risk factors for non-compliance. Less than half of those with more severe asthma, for whom preventer medications were indicated, had a written asthma management plan. This tended to be least common in those who purchased their medications for the relief of asthma symptoms ‘over the counter’.

Future health surveys, using a similar methodology, have the potential to extend the knowledge gained from this survey by examining time trends in these indicators. More challenging tasks lie ahead, such as how to use health surveys to identify the impediments to implementation of effective management. When the avoidable risk factors for asthma have been identified with more certainty, future surveys will have an important role in monitoring exposure to those risk factors.

ACKNOWLEDGEMENTS

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PREVALENCE AND MANAGEMENT OF DIABETES IN NSW: IS CARE ADHERING TO THE CLINICAL GUIDELINES?

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Diabetes is among the most costly of health conditions both for the person with diabetes and its complications and for the health service providing care.¹ There is now good evidence that optimal standards of care for people

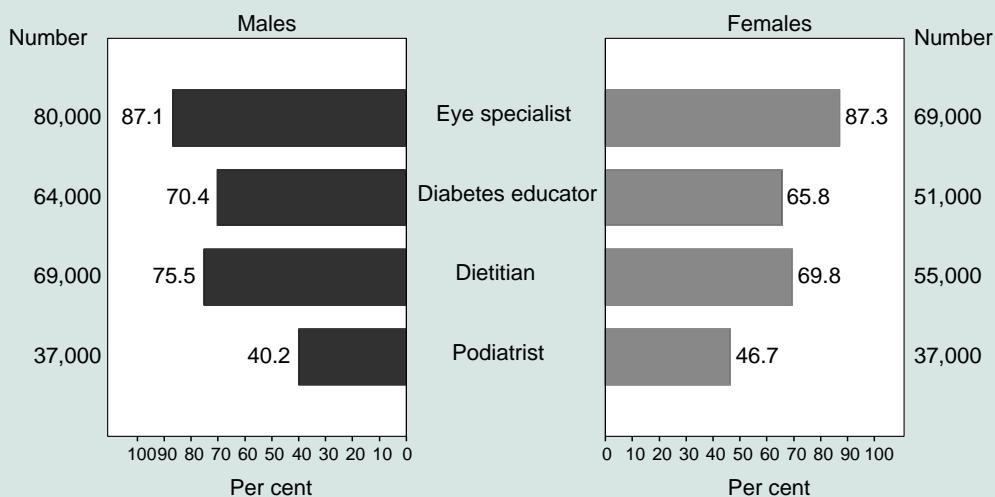
with diabetes will ultimately reduce the burden of the disease on individuals and the community.²

In 1996, the NSW Principles of Care and Guidelines for the Clinical Management of Diabetes Mellitus (the Guidelines) were developed by an expert group of clinical and public health professionals, and consumer representatives.³ The Guidelines were aimed at improving the primary care of diabetes and reducing its complications. Since 1997, these Guidelines have been disseminated through primary care and professional

TABLE 1

PRINCIPLES OF CARE AND CLINICAL MANAGEMENT GUIDELINES AND THE KEY INDICATORS FOR MEASURING CONFORMITY TO BEST PRACTICE DIABETES MANAGEMENT.

Principles of Care and Clinical Management Guidelines	Corresponding Indicator(s)
It is a fundamental right of people with diabetes to have access to general education about diabetes, its effects and self management skills	Proportion of people with diabetes who have ever seen a diabetes educator.
It is a fundamental right of people with diabetes to have access to dietary assessment and education	Proportion of people with diabetes who have ever seen a dietitian.
It is a fundamental right of people with diabetes to have access to regular clinical screening and ongoing care .	Proportion of people with diabetes who have ever seen an eye specialist. Proportion of people with diabetes who have ever seen a podiatrist.
Ensure a comprehensive ophthalmological examination is carried out every 1-2 years	Proportion of people who have had the back of their eyes checked for diabetes-related eye problems at least once in the last 12 months.
Measure blood pressure every visit	Proportion of people who had their blood pressure measured in the last 3 months.
Examine feet at every visit or every six months	Proportion of people who had their feet checked for signs of ulcers, infections and abnormalities by a health professional at least twice in the last 12 months.
Measure cholesterol every 1-2 years or 3-6 months if abnormal or on treatment	Proportion of people who had their cholesterol measured in the last year.

FIGURE 1**EVER CONSULTED HEALTH PROFESSIONAL FOR DIABETES BY SEX, PERSONS AGED 16 YEARS AND OVER WITH CURRENT DIABETES, NSW 1997 AND 1998**

Note: Estimates based on 1,426 respondents with current diabetes (721 in 1997; 705 in 1998). 4 (0.3%) not stated for ever consulting a health professional for diabetes.

Source: NSW Health Surveys 1997 and 1998 (HOIST). Epidemiology and Surveillance Branch, NSW Department of Health.

organisations, specialist diabetes services and the NSW Branch of Diabetes Australia.

The Guidelines set out the principles of care for all people with diabetes. They include seven clinical management guidelines for key areas of diabetes care: blood glucose control, diabetic eye disease, body mass index (BMI), blood pressure, diabetic foot care, lipids, and diabetic nephropathy; and also a series of process and outcome indicators to monitor adherence to the guidelines and improvements in the health of people with diabetes.

In 1997, no timely sources of information were available to monitor compliance with the Guidelines across NSW. To help to address this information gap, a module of diabetes questions was included in the 1997 and 1998 NSW Health Surveys. This paper presents the combined results from the two surveys for self-reported prevalence of diabetes and aspects of diabetes care, and an assessment of how closely the diabetes care reported complied with the Guidelines.

METHODS

A module of diabetes questions was prepared as part of the question development process for the NSW Health Survey Program.^{4,5} The first section of this module consisted of questions to identify respondents who had been diagnosed with diabetes or high blood sugar. For people reporting doctor-diagnosed diabetes or high blood sugar, there were additional questions seeking information about their type of management (insulin or tablets, physical activity, and diet) and their access to specialist

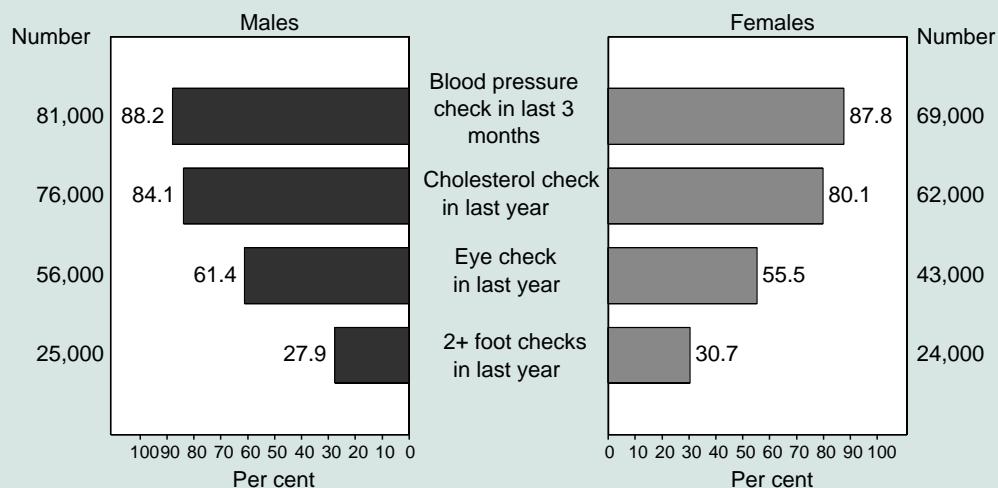
diabetes services (podiatrists, diabetes educators, dietitians, and eye specialists). There were also questions on the frequency of screening for certain risk factors for—or signs of—complications, including elevated cholesterol levels and blood pressure, diabetic eye disease, and diabetic foot problems. Table 1 outlines the key indicators examined and the associated principle of care or clinical guideline.

RESULTS

Of the 35,000 respondents in the 1997 and 1998 NSW Health Surveys, 1,426 (721 in 1997 and 705 in 1998) reported having diabetes. The prevalence of current diabetes was estimated to be significantly higher for males at 3.9 per cent compared to females at 3.2 per cent. From the survey data, it was estimated there were almost 171,000 people aged 16 years and over in NSW with diabetes.

The following results refer only to people with doctor-diagnosed diabetes. Almost 90 per cent of people with diabetes reported that they had seen an eye specialist. Around two-thirds of respondents reported having consulted a dietitian at least once, and a similar proportion reported having consulted a diabetes educator at least once (Figure 1). Just over 40 per cent reported having ever seen a podiatrist.

Figure 2 presents results for compliance with four guidelines. Most people with diabetes (88 per cent percent of both males and females) reported that they had their blood pressure checked in the last three months. A similarly large proportion reported having had their cholesterol checked in the last 12 months (84 per cent of

FIGURE 2**COMPLICATIONS SCREENING BY SEX, PERSONS AGED 16 YEARS AND OVER WITH CURRENT DIABETES, NSW 1997 AND 1998**

Note: Estimates based on 1,426 respondents who have current diabetes (721 in 1997; 705 in 1998). 67 (4.7%) not stated for at least one type of complications screening.

Source: NSW Health Surveys 1997 and 1998 (HOIST). Epidemiology and Surveillance Branch, NSW Department of Health.

males and 80 per cent of females). Only 30 per cent of people with diabetes reported having two or more foot examinations in the last 12 months, while over half (61 per cent of males and 56 per cent of females) reported having had at least one eye examination in this period.

DISCUSSION

The questions about diabetes used in the 1997 and 1998 NSW Health Surveys were well received by respondents and the results are consistent with other similar surveys,^{6,7} indicating that their inclusion is a useful method for monitoring practice.

The majority of people with diabetes reported having seen a specialist diabetes care provider, and that monitoring of their blood pressure and cholesterol were performed at a frequency consistent with the Guidelines. However, reported adherence to the Guidelines for foot and eye examinations was poor—similar to overseas reports—even though eye and foot complications have serious implications for people with diabetes.^{6,7}

CONCLUSION

Overall, the results of the 1997 NSW Health Survey indicate that many people with diabetes are not receiving care that complies with the Guidelines. There is a compelling need to identify and implement more effective ways to provide appropriate care. Improving referral and access to diabetes educators and dietitians for education and advice about the day-to-day management of diabetes is an important area for action, as is improving access to podiatrists.

The NSW Health Survey has proved to be a useful tool to monitor progress towards providing every person with diabetes with appropriate care for the management of their condition and the prevention of future complications. Ongoing monitoring of diabetes care through the NSW Health Survey Program should continue, and could be extended to address the management of other chronic diseases.

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USING NSW HEALTH SURVEY DATA FOR LOCAL PLANNING AND EVALUATION IN NSW

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The NSW Health Survey provides high quality data for a range of indicators of public health importance at a state and area health service level. The data can be used to advocate for local population health priorities; to measure changes in health status or health behaviours over time; and to evaluate local interventions. The survey process also can be used to develop local research priorities. This article describes some of the ways that data from the NSW Health Survey Program have been used for local planning and evaluation in the Central Sydney Area Health Service.

USING HEALTH SURVEY DATA IN CENTRAL SYDNEY

Advocacy for population health

The value of good local data for population health advocacy cannot be understated. It is now possible to accurately identify health issues within an area health service where the levels are better or worse than in other area health services or for the state as a whole. For example, Central Sydney has a significantly higher proportion of women with raised scores for psychological distress than all other area health services in NSW, and is the only area health service that has a statistically higher level than the rest of the state.¹ Another example is that Central Sydney has the lowest proportion of households that have restrictions on smoking indoors.²

It can be of great value for advocacy or to support planning strategies to compile a summary report of key population indicators or a profile of health behaviours for an area health service.³ Experience in Central Sydney suggests that local staff refer extensively to or quote from such reports in strategic planning documents or funding applications.⁴ Of course, findings of significant local variations need to be explored, confounders identified, and explanations sought. Consequently, conclusions from reports reviewing population health data often suggest that either more research is needed to better understand a significant problem, or that funding of effective interventions is necessary.

Evidence-based public health practice

The ready availability of the data from the NSW Health Survey Program increases the capacity of public health practitioners to work according to evidence-based principles. Precise estimates of indicators means decisions about local priorities can be based on evidence, and also some of the factors associated with these priorities can be described. This is a major improvement on the past where there was no consistent or comprehensive statewide collection of population health data.

Evaluation of local interventions

Another important use of NSW Health Survey data is for the evaluation of local interventions. For example, the smoking prevalence data collected in the 1997 NSW Health Survey is being used as a baseline for one aspect of the evaluation strategy of the Central Sydney Tobacco Control Plan.⁵ The next round of data collection will indicate our progress on several key measures. Our analyses will also need to look at the rate of change in the rest of the state or other metropolitan area health services, and the NSW Health Survey data will provide the data to allow this analysis.

Development of new interventions

The low proportion of smokefree homes in Central Sydney prompted further analyses of the data and the development of a community-based intervention.² Factors found to be associated with smokefree homes in NSW included having small children in the house, speaking a language other than English at home, having more than 10 years of education, being under age 35 years, and being employed in a smoke-free workplace.⁶ A local intervention was developed to increase awareness of the importance of having a smokefree home. As resources for a rigorous evaluation were not available, a convenience sample of residents found good recall of the intervention message but no change in the proportion of smokefree homes compared with a non-equivalent comparison area.⁷ However, this evaluation strategy may not have been sufficiently comprehensive to detect real changes and new data from future NSW Health Surveys will allow further testing of this evaluation question.

Special local topics

The design of the NSW Health Survey Program allows for a short set of specific questions to be included that are only asked of respondents from within one area health service (or more if other areas share the same interest and also use the same question). The results of these questions can be linked to the main dataset for comprehensive analyses. For example, respondents from Central Sydney aged 41 years or more were asked extra questions on urinary incontinence, which has highlighted the high prevalence of urinary symptoms in older persons (53 per cent of men and 61 per cent of women).⁸ By linking data with the main dataset, significant associations between urinary symptoms and factors such as psychological distress, poor self-reported health, and lack of private health insurance, were found.⁸

Supporting research

Area health service-specific questions can also be used to further refine survey questions and are invaluable for collecting pilot data which can be used in support of research grant applications. The use of questions on sexual health behaviour administered over the phone to

randomly selected respondents demonstrated that it was feasible to collect such data, that there were very few respondents who refused to answer questions, and respondents provided data that was consistent with both the international literature and locally available data.⁹ These pilot study results contributed to funding being awarded for a large national survey of sexual health behaviour using the methodology of the NSW Health Survey.¹⁰

CONCLUSIONS

The quality of the data collected in the NSW Health Survey, and the convenience of having the data already analysed, is of great value to local area health service staff who do not have the resources to collect similar data. It indicates the maturity of the NSW public health system. I await the next round of data to assess changes, and to develop new area-specific questions to support emerging local priorities.

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USING NSW HEALTH SURVEY DATA FOR ECONOMIC ANALYSIS

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Economics is the study of how resources are allocated in order to produce commodities (that is, goods or services) which people need or desire. It builds on theories about how individuals or groups behave when faced with choices. Thus, the activities or behaviours economists are interested in understanding and evaluating are:

- production (that is, the resources or inputs used);
- consumption (that is, the commodities or outputs that are of value to consumers).¹

In economic terms, health and health improvement are commodities produced by combining inputs such as the time and knowledge of individual consumers, healthy food, exercise, the time and skills of health care professionals, drugs, and health care facilities. The process of using inputs to produce outputs is termed the ‘production function’. Economic analysis is used to examine the ‘production function’ in order to enhance the efficient production of goods and services. With respect to health care, the goal of economic analyses is to

investigate the extent to which interventions, services, or programs meet the efficiency and equity objectives of the health care system.

HOW CHERE USES NSW HEALTH SURVEY DATA

During 2000–2001, the Centre for Health Economics Research and Evaluation (CHERE) has been using data from the NSW Health Surveys 1997 and 1998, and the 1999 Older People’s Survey, to explore and understand issues such as the prevalence of risk factors, health care provision, access, and utilisation. These data have allowed us to analyse the way in which inputs (for example, the provision of breast screening services) contribute to outputs (for example, the utilisation of breast screening services). Of course, there are other factors that affect the production function in health care. Providing breast screening services is no guarantee that those who have most to gain from using them will do so. Therefore, any economic analysis must also take account of personal (for example, socioeconomic status and age) and demographic factors (for example, place of residence), as well as any geographic or organisational differences in the way services are provided (for example, equity of access). The remainder of this article describes a number of proposed

or current projects in which NSW Health survey data are being used by CHERE.

Breast Cancer Screening

A paper entitled 'Systematic variations in breast screening utilisation in NSW: a comparison of needs-based and demand-based programs' was presented at the International Health Economics Association Conference held in York, England, at the end of July 2001. In that paper, we explore the distribution of breast screening in New South Wales. Women aged 50–69 are targeted as high risk and in need of screening every two years. Women aged 40–49 and 70–79 are eligible for screens if demanded. Using the NSW Health Survey data, we have addressed the following questions:

- Is breast screening among targeted women significantly associated with socioeconomic status (SES)?
- Does the association between screening and socioeconomic status differ significantly between areas?
- Is socioeconomic status less important in explaining differences in screening in high risk groups than in other groups?

The results show that, although being in the lowest SES quintile appears not to affect the overall likelihood that women in the targeted group will be screened, it does affect the likelihood of screening among women living in rural areas. In addition, there are significant variations in screening rates among women from different area health services, and between women born in Australia and those born overseas.

Utilisation of general practitioner services

The primary aim of this study, for which a project grant application has been submitted to the National Health and Medical Research Council, is to examine the frequency and quantity of use of general practitioner services among various groups in society, with particular focus on NSW. The study will investigate any systematic differences in use of general practitioner (GP) services among various socioeconomic groups, rural and metropolitan residents, and people of different self-perceived health needs, by combining data from the NSW Health Survey and other secondary sources. The analysis will test two null-hypotheses:

- the probability and level of utilisation of GP services in a fixed period are independent of self-assessed health status;
- the relationship between the level of utilisation of GP services and self-assessed health status is independent

of socioeconomic status, region, ethnicity, Aboriginal and Torres Strait Islander background, and social support.

The results of the study aim to provide an updated representation of GP utilisation using the 1997–98 NSW Health Survey and will also utilise the 1995 and 2001 (when available) National Health Surveys. The study aims to develop a model of GP utilisation that will allow examination and testing of a number of variables, including any interactions.

Privately insured people

In our work with a private health insurance company, CHERE has used data from the NSW Health Survey to examine various aspects of health status, including risk factors for diabetes and cardiovascular disease, and utilisation of health services among privately insured people in NSW. The results have been used to inform the development of models of costs and benefits for the company. They have also been used in the development of disease management strategies for people with diabetes.

NSW Older People's Survey

Our work using data from the NSW Older People's Survey is at a preliminary stage. We are currently examining all the variables used in the survey, in particular those concerned with socioeconomic status, utilisation of health and care and other services, and burden of care, before developing a set of questions around the efficiency and equity of health care for older people in general, and for groups within the population of older people (for example, women, men, people from non-English speaking backgrounds, people from lower socioeconomic backgrounds, and people living in rural or remote parts of NSW).

CONCLUSION

Economic analyses of health care can inform policy, particularly in the context of planning and priority setting for new or altered services. Such analyses are driven by economic theory that produces hypotheses able to be tested using data such as those from the NSW Health Survey. To maximise the usefulness of any economic analysis it is essential to collect relevant socioeconomic and sociodemographic data about such factors as income, employment, occupation, education and housing.

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GETTING POPULATION HEALTH RESEARCH TO INFLUENCE HEALTH SERVICE PRACTICE: USE OF AREA HEALTH SERVICE QUESTIONS IN THE NSW HEALTH SURVEY

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The difficulty of getting research data to influence practice is well recognised in many fields including public health,^{1,2} education, social science,³ and clinical health care.⁴ A number of factors appear to limit the use of research. First, researchers and practitioners often work in isolation of each other. Second, researchers have few incentives to ensure dissemination of results apart from publication.⁵ Third, research organisations and service delivery organisations have different objectives, time frames, philosophies, and cultures. Fourth, management support for implementing changes in service delivery in response to research, though crucial, is often lacking.⁶ Last, research results may not be relevant to practitioners who often need data simply to legitimise and sustain predetermined actions.

Strengthening the capacity of practitioners to conduct their own research, or to be actively involved in research, could ensure that the data generated are relevant and useful to practitioners. The inclusion of area health service (AHS) specific questions in the 1997 NSW Health Survey provided the opportunity to examine this hypothesis, and the process of transferring research into practice in 17 different locations.

The 1997 NSW Health Survey was a telephone survey of randomly selected residents aged 16 and over in each of the 17 AHSs of NSW. In addition to the core questionnaire, each AHS was invited to submit up to three minutes of questions that were asked only of English-speaking respondents in their AHS. The AHS specific questions were included in the Survey to assist the AHSs to meet their responsibilities for the health of their populations, by providing a mechanism to collect local data to inform service planning and evaluation.⁷ AHSs were not given specific guidelines on how to develop their questions, although each was asked to nominate a contact person and support was provided by the NSW Department of Health in the form of feedback on submitted questions. Most AHSs settled on about fifteen questions that covered five broad topic areas.

The aims of this study were to investigate the:

- process by which AHSs developed their questions;

- extent to which AHSs analysed the responses to their questions;
- extent to which each AHS used the results generated from their questions;
- relationship between the process of question development, the extent of analysis, and the use of the results.

METHODS

The data were collected in two waves of semi-structured telephone interviews with AHS staff who were involved in the development of the AHS's questions. The first wave of interviews examined each AHS's process of developing the questions and the planned use of the responses. These interviews were conducted in 1998, before the responses to the AHS's questions were available. The second wave of interviews, conducted in 1999 and 2001, after the responses had been provided to the AHSs, examined the extent of data analysis, dissemination and use by each AHS. Four AHSs did not complete the second interview, as question developers were unable to be contacted. All of the first and 10 of the second wave of interviews were conducted by Julianne Quaine.

Notes recorded during the interviews were examined by the three authors to identify differences between AHSs in the processes followed to develop their questions and the subsequent analysis, dissemination, and use of the data.

RESULTS

Development of AHS questions

AHSs varied in the process of development of their questions:

- the degree of organisational structure associated with question development ranged from a loose collaboration of interested individuals to the establishment of a specific committee;
- the level of consultation varied from a very consultative approach including a wide range of participants, to consultation involving only one or two people;
- the organisational positions and roles of people involved differed among AHSs. However, in most AHSs, public health and/or health promotion staff were involved in the development of the questions;
- some AHSs selected question topics according to AHS priorities, while in others topics were determined by the personal interests of the question developers;
- during the development phase, some AHSs were very specific about the intended use of the survey data, while others were not.

TABLE 1

EXTENT OF ANALYSIS AND REPORTING OF DATA FROM AREA HEALTH SERVICE SPECIFIC QUESTIONS FOR THE 13 AREA HEALTH SERVICES THAT COMPLETED INTERVIEWS *

Extent of analysis and reporting	Number of areas
Detailed analysis of all questions and a report completed	2
Detailed analysis of some question data with some reporting	3
Simple analysis of all or some question data with limited reporting to question developers	3
No analysis	5
TOTAL	13

* Four AHSs did not complete the second interview.

Analysis and use of AHS data

The analysis and use of data also varied between AHSs:

- the level of data analysis ranged from none to extensive, involving for instance cross tabulations with age and sex and other demographic variables. Within AHSs that had performed analyses, the extent of the analysis varied among topic areas;
- the reporting of the analysis of the question responses varied from an internal report to a more detailed report or a paper for publication—where more complex analysis was undertaken, the reporting was likely to be in a paper for publication;
- where analysis of the question responses had occurred, the degree of dissemination of the analysis varied from limited circulation among the question developers to wide dissemination, either to a range of groups across the AHS or via publication of results.

AHSs were classified into four groups according to the degree of analysis and reporting of the data generated by their questions (Table 1).

Overall, respondents reported that the results arising from the AHS specific questions had little influence on AHS priorities, policies or services; in fact the questions were said to have had an influence in only three AHSs. However, some respondents pointed out that the data had confirmed what they knew or suspected about an issue and so the effect had been to maintain a status quo.

Where little or no analysis of the data had been undertaken, respondents cited a number of reasons for this. Foremost was a lack of skills or resources to undertake the analysis. Some AHSs felt that the data did not appear to be very useful or provide the information they had expected. In a number of AHSs, staff who had been involved in developing the questions had left, resulting in data that were no longer considered relevant to the AHS.

Predictors of analysis of AHS data

The five AHSs where a detailed analysis had been undertaken were examined to identify possible predictor

variables in the question development process. These AHSs had several similar features:

- senior population health-oriented staff were involved in question development;
- they followed a structured approach in the development of their questions;
- consultation in the development of the questions was restricted to a defined group of people within the AHS, usually within population health services;
- there was at least one local champion for the questions. It appeared that questions that were of interest to individual members of the question development group were more likely to be analysed in detail compared with questions that were proposed to the group by others;
- the question champion(s) still worked in the AHS when the data became available;
- they were able to state clearly at the first interview how the data were going to be used. This was true even within AHSs where there was internal variation in the degree of analysis of the questions—those questions for which the question developers were clearly able to articulate the planned use of the data were more likely to have been analysed.

In contrast, the eight AHSs where little or no analysis occurred also shared features in common in the development of their questions:

- the main question developer was generally in a junior position within the AHS, with limited support from more senior staff;
- the process to determine the questions was generally unstructured, regardless of whether it involved few or many people;
- there was a low level of interest in the AHS in the development of the questions;
- there was a lack of clarity about how the data were to be used.

Predictors of the data influencing practice

Only three AHSs reported that the data from the AHS specific questions had any influence on the programs or priorities of the AHS. It is therefore difficult to identify predictor variables for this. However, common features were again clarity about the intended use of the data, and the involvement of an individual who was particularly interested in the data.

CONCLUSIONS

We are conscious that no definite conclusions can be drawn from such a small study. The inclusion of AHS specific questions in the 1997 NSW Health Survey was, however, a ‘natural experiment’ and we believe that with limited resources we have identified some interesting findings. The involvement of local service providers in the development of AHS specific questions did not guarantee that the data generated would be analysed or

used. However, this study suggests that involving practitioners in research is more likely to result in the data being analysed if certain conditions are present:

- question development occurs within a structured process involving relatively few, senior, population health-oriented staff;
- the proposed use of the data is clear during the question development process;
- a champion for the questions is involved from start to finish;
- there are sufficient skills and resources to undertake the analysis.

There are several possible reasons why the data had limited local influence. First, AHSs are likely to be influenced to change priorities or services by a whole range of factors. Thus, local data are likely to be used only in conjunction with other information and requirements. Second, some data supported an AHS's existing understanding of an issue and therefore changes were not required. Confirming the appropriateness of current services or priorities is, we believe, a legitimate use of data. Third, this was the first

time that AHSs had had the opportunity to contribute locally generated questions to a statewide survey.

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COLLECTING INFORMATION FROM PEOPLE OF NON-ENGLISH SPEAKING BACKGROUND: TRANSLATION OF SURVEY INSTRUMENTS IN THE NSW HEALTH SURVEY PROGRAM

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Around one-quarter of NSW residents were born overseas, and 50 per cent of these were born in countries where English is not the main language spoken. Of these, over 25 per cent do not speak English proficiently enough to complete a telephone survey in English.¹ In order to improve the representation of people of non-English speaking (NES) background in the surveys, the questionnaires for the 1997 and 1998 NSW Health Surveys, 1999 Older People's Health Survey, and 2001 Child Health Survey, were translated into the major community languages where English proficiency is poor. This article describes the challenges of translating health survey instruments, lessons learnt through experience, and issues for consideration in the future.

CHALLENGES

The main aim of any translation is to ensure that the meaning of the text is maintained, as opposed to the actual content of the text.² When translating health survey instruments, not only must the meaning be maintained,

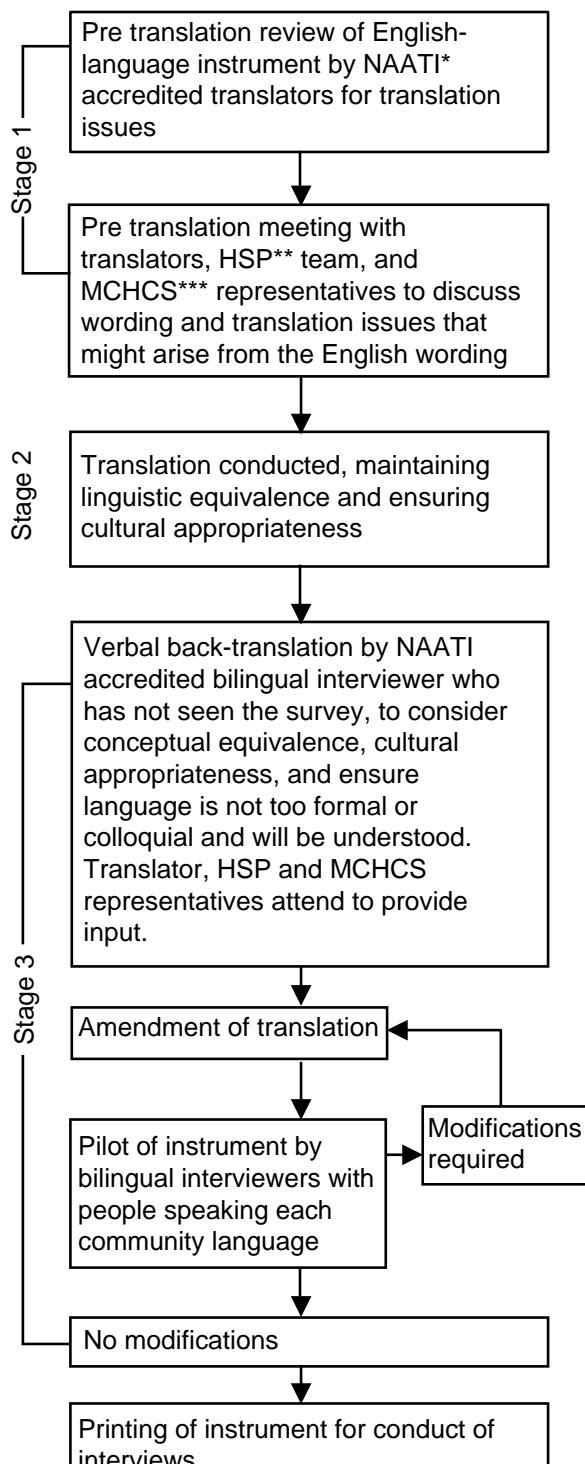
but differences among cultures in how 'health' is perceived and expressed must also be incorporated.

In population surveys of this kind, an additional challenge is to incorporate the translation process within the overall survey development program, to ensure that it is simple and cost-effective. Conversely, the number of languages to be translated needs to be minimised, and the translated questionnaires need to be able to accommodate the differences within language groups such as dialect, regional variation, and cultural nuance.

NSW HEALTH SURVEY PROGRAM TRANSLATION MODEL

In order to address these difficulties, and other related issues, staff working on the NSW Health Survey Program examined models for translation,^{3,4,5} and from these developed a translation model. This model has three main stages: pre-translation, translation, and back-translation (Figure 1).

The current translation model has been used by the NSW Health Survey Program since 1997, with only minor amendments. Translated questionnaires have been

FIGURE 1**NSW HEALTH SURVEY PROGRAM TRANSLATION MODEL**

* National Association for the Accreditation of Translators and Interpreters

** Health Survey Program

*** Multicultural Health Communication Service

produced in the following community languages: Arabic, Chinese, Greek, Italian and Vietnamese.

ISSUES AFFECTING THE SUCCESS OF TRANSLATION

Over the years, staff involved in the translation process have identified a range of issues that influence its success:

- maintaining the integrity of the initial instrument through multiple stages of transformation is very difficult. This often involves adapting self-administered survey instruments (often from the United States or United Kingdom) into a telephone interview instrument, then adapting the expression to suit the Australian setting, and finally translating the instrument into the chosen languages;
- the requirement to translate names for, and describe types of health and welfare services varies among NES groups. Familiarity with these services tends to increase with the length of time spent in Australia, regardless of the level of English-language proficiency;
- the level of similarity in language structure between English and the non-English language affects the ease of translation. Translations into European languages such as Italian are more straightforward than translations into Arabic and Asian languages;³
- piloting the translated instrument with native language speakers, who then provide feedback through discussion groups on specific issues such as language formality and the suitability for use over the

BOX 1

Respondents were asked: 'Can you tell me all the reasons why you had your last test for bowel cancer?' One option was 'blood in the stool'.

In Arabic, the word 'stool' was not understood, and there was no equivalent word. Therefore it did not initially get translated. In Greek 'stool' was initially translated as 'the object you sit on'!

Respondents were asked to rate their health on a scale from 1–100.

Arabic and Italian peoples had difficulty with this concept, as from a very early age they are taught to think in terms of 1–10. Even grades at school are given a mark out of 10.

Respondents were asked how many serves of fruit-vegetables they ate every day, with a serve defined in cup measures.

Chinese people did not understand the concept of 'serve' and how big this would be. 'Small bowl' was substituted for 'serve'.

Similarly, Italian and Vietnamese peoples would not use 'serve' or 'cup' but understand a volume measure such as '250mls or quarter of a litre'.

BOX 2**Female respondents were asked '... have you ever heard of a Pap smear test?'**

A Pap Smear is sometimes difficult to explain to Arabic-speaking women, as it is not commonly done in Arabic countries. It may also be considered to be an offensive question, especially if women are single or only recently married. In this instance, Arabic-speaking interviewers were provided with backup information about the recommendations for Pap smears to discuss with respondents who did not understand or were offended by the question.

Parents–carers were asked 'In the past three months, how often have you helped out any local group or organisation such as a school, scouts and brownies, a sporting club, or hospital as a volunteer, or other organisation?'

Participation in 'Scouts' and 'Brownies' would be unfamiliar activities to most Chinese language-speaking people. These examples were removed from the translated questionnaire.

telephone, improves the 'friendliness' of the instrument;

- some words and concepts are not transferable from one language and cultural context to another. This may be due to a lack of an equivalent word or phrase, or be due to cultural differences in the way quantities are scaled or measured (Box 1);
- translating language that describes a practice that is not familiar or culturally acceptable can be difficult and may require extra sensitivity (Box 2).

ISSUES NOT ADDRESSED BY THE CURRENT TRANSLATION MODEL

The current translation model used by the NSW Health Survey Program does not fully address three important issues.

First, translation occurs after the English-language instrument is completed, thereby limiting opportunities for minimising:

- ambiguities in the English-language version that might be identified during the processes of translation and back-translation, when the meaning of the instrument is closely scrutinised;
- concepts in the English-language version which are not easily translated from English into other

languages, and therefore become either meaningless or have different meanings to the target populations;

- excessive formality of the translated language.

Second, there is no formal testing of the quality of the translated instruments, in terms of comprehensibility by the target population, content and face validity, reliability and the cultural suitability of any question scales incorporated into the instrument.

Third, other translation models have suggested that two independent translators should undertake the translation, to highlight errors and ambiguous interpretations, and to diminish personal idiosyncrasies. However, adoption of this process would substantially increase the costs of translation.

CONCLUSIONS

Although the translation model used by the NSW Health Survey Program is not perfect, it has yielded translated questionnaires that have been successfully administered to more than 1400 NES respondents in five languages over four surveys.

In the near future, staff of the NSW Multicultural Health Communication Service want to develop a set of standardisation guidelines for the cross-cultural adaptation of health survey instruments, based on the NSW Health Survey Program model. Participation in this process, and consideration of the issues identified in this paper, will contribute to an assessment of how the current model can be improved, without compromising its cost-effectiveness.

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MAXIMISING QUALITY IN HEALTH SURVEYS: LESSONS FROM THE FIELD

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The NSW Health Survey Program (HSP) has a goal to maximise the quality of the data it collects. This requires a comprehensive approach to quality control, which includes the implementation of procedures to ensure that minimum standards are met, the ongoing training of interviewers, and the motivation of interviewers to achieve high professional standards. Implicit in this approach is the notion that quality and productivity are not competing priorities. This article describes some of the mechanisms for quality control implemented by the HSP.

INTERVIEWER TRAINING AND CODE OF CONDUCT

When they join the HSP, all interviewers attend two four-hour training sessions that cover the theory and practice of telephone interviewing, the aims and content of the health surveys, and the NSW Health Survey Code of Conduct and Confidentiality Agreement. A written manual accompanies the training sessions.

The NSW Health Survey Code of Conduct and Confidentiality Agreement was developed specifically for the HSP to ensure that it complies with the codes and regulations regarding the protection of privacy and personal health information. The Code is an amalgamation of several professional codes, including the NSW Health Information Privacy Code of Practice, the Code of Professional Behaviour for the Market Research Society of Australia, and the Code of Ethics for Interpreters and Translators.¹

The Code of Conduct establishes a guideline for an acceptable standard of performance and behaviour. The Code of Conduct also addresses data security and confidentiality issues relating to the conduct of health survey interviews, and issues pertaining to the storage of and access to survey data. All interviewers are required to sign the Confidentiality Agreement prior to starting to conduct interviews.

VALIDATION OF INTERVIEWS

HSP supervisors recontact a random sample of 10 per cent of households that have been interviewed, to verify that the interview has occurred, and that the data are being recorded correctly. This ensures a minimum standard of quality is met, but does not guarantee that all the questions are being administered in a consistent and appropriate manner. For example, it is not possible to gauge reliably whether interviewers are prompting the respondent with possible answers to questions, or if they are probing for greater detail in a manner that influences the response given.

OBSERVATION OF INTERVIEWS

For reasons of privacy, it is not possible or appropriate to monitor interviews by listening to conversations between interviewers and respondents. However, HSP supervisors regularly observe interviewers by sitting behind them to check that they are following the questionnaire instructions correctly. This is particularly useful for providing feedback on their performance to interviewers who are new to the HSP. However, the value of this method is limited because interviewers know when they are being observed, and may change their habits accordingly.

COMMITMENT TO QUALITY

Because of the limitations of the procedural methods of quality control, achievement of more than a minimum level of quality in health survey fieldwork relies on the integrity and commitment of the interviewers themselves. The commitment to quality demonstrated both by the supervisors and senior staff involved in the HSP is important in fostering a 'desire to achieve' in the interviewers.

The management style of the HSP is based on the concept of Total Quality Management. Elements of this approach include; adopting meaningful measures of quality, adopting modern training methods, statistically validating quality, and teamwork.² An integral part of this approach is the concept of intrinsic motivation versus extrinsic motivation (see Box). According to this theory, people have to want to do their work more efficiently and effectively through self-motivation and pride in their work. If the motivation is only extrinsic, the drive for improvement or quality will disappear as soon as the external reinforcement mechanisms cease to exist or be effective.³

Extrinsic motivation

The motivation to perform an activity as an external consequence of the activity (such as social approval, status, material rewards).

Intrinsic motivation

The motivation to perform an activity for its own sake (such as pleasure, mastery, curiosity, or fun).

Maintaining the intrinsic motivation of the interviewer relies on their high regard for the organisation. The recruitment process undertaken by the HSP,¹ although standard for the public sector, differs significantly from the usual process used for employing market researchers. The rigour of the process, and the time spent in recruiting and training, demonstrates to the applicants the value of the organisation that they are seeking to join, and assists in instilling purpose and motivation.

To further build and maintain this motivation, management staff of the HSP give interviewers regular feedback on their performance including response rates, queries received about the survey, and reports on previous data collected, and the usefulness of that data.

A survey of interviewers employed by the HSP recently carried out within the HSP highlighted that it is not only the task that motivates interviewers to perform, but also the environment of which they are a part. The factors mentioned by interviewers as contributing to interview quality include:

- ‘... a happy relaxed environment’;
- ‘... all supervisors are helpful in attending promptly to any queries ... team spirit is great’;
- ‘knowing the importance of our part or contribution to the quality of the data’.

CONCLUSIONS

The NSW Health Survey Program has adopted a holistic approach to quality control, involving both procedural quality control measures and methods to build interviewer motivation and performance. Further examination of specific aspects of the HSP’s operation, such as reasons for staff turnover, will enable HSP staff to further refine its human resource management.

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CONTINUOUS DATA COLLECTION UNDER THE NSW HEALTH SURVEY PROGRAM—WHAT WILL IT MEAN?

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NSW Department of Health

From January 2002, continuous data collection under the NSW Health Survey Program (HSP) will commence. The new continuous Health Survey data collection will focus on providing information to support the public health priority areas outlined in Healthy People 2005—New directions for public health in NSW:¹ social determinants of health, individual or behavioural determinants of health, major health problems, population groups with special needs, settings, partnerships, and infrastructure. This article describes the proposed changes to the HSP and how they will affect users and collaborators.

CHANGES TO THE HEALTH SURVEY PROGRAM

Six major changes from the existing HSP are proposed:

- there will be a five-year development, collection and reporting plan;
- the sample will include the whole population (from birth upwards), with parents or carers of children under 16 being interviewed;
- interviews will be conducted throughout the whole year, instead of for the discrete period for each survey;
- at least 2,000 interviews will be completed each month (except for a month over Christmas and New Year period), giving a total of 22,000 interviews each year divided equally among the NSW area health services;
- interviews will be conducted in all area health services all year round;

- there will be improved reporting, using automated and interactive reporting facilities.

Survey development

The continuous Health Survey data collection will continue to use the methodologies developed since 1996 by the Epidemiology and Surveillance Branch of the NSW Department of Health.²

The existing questionnaires from the 1997 and 1998 NSW Health Surveys,³ 1999 Older People's Health Survey,⁴ and 2001 Child Health Survey, will be combined and rationalised to develop core sets of questions. These will include questions on demographics and key indicators for all ages, including the access to and satisfaction with health services; plus core questions specific to each age group (infants, toddlers, primary school children, youth, adults, and older persons). Table 1 presents the topic areas that will be covered.

As well as these core questions, the questionnaire will include modules of questions that explore particular issues, which will be delivered to only a proportion of the population and/or for discrete periods of time. Where possible, these questions will be drawn from those used in previous surveys of the HSP for the relevant topic. The new questionnaire will also include area health service-specific questions and questions to address emergent issues.

As far as possible, the continuous survey tool will be kept to a maximum of 20 minutes interview time, with time allocated for each type of question as follows:

TABLE 1**TOPIC AREA IN THE CONTINUOUS HEALTH SURVEY PROGRAM****Social determinants of health**

- demographics
- social capital
- family functioning and parent support

Environmental determinants of health

- environmental tobacco smoke
- shade availability
- injury prevention
- environmental risks

Individual or behavioural determinants of health

- physical activity and inactivity
- body mass index
- nutrition and food handling
- current smoking
- alcohol consumption
- sun protection behaviours
- immunisation
- health status

Major health problems

- asthma prevalence and management
- diabetes prevalence and management
- cardiovascular disease prevalence and management
- cancer screening
- oral health
- mental health

Settings

- access to, use of and satisfaction with health services
- area health service-specific questions
- childcare and school attendance

Infrastructure

- evaluation of campaigns and policies

- 10 minutes for core all-person and age-specific questions (equally allocated across the public health domain areas);
- six minutes for topic modules;
- two minutes for area health service-specific questions;
- two minutes for emergent issues.

The proposed set of core (all person and age group) questions will shortly be available for comment on the Epidemiology and Surveillance Branch Web site at www.health.nsw.gov.au/public-health/survey/hsurvey.html.

Field-testing of the core questions will be undertaken in the later part of 2001, with continuous data collection beginning in January. It is planned that the

core questions will remain consistent over time, with review occurring every five years.

Individuals or groups wishing to propose topics or questions for inclusion in the new HSP, will need to prepare a rationale for the collection, inclusion of participants (for example, age, sex, and geographic area) and a collection and reporting plan (Table 2). This documentation will need to be received by the HSP Unit three months before the proposed inclusion of the questions into the survey (September 2001 for a January 2002 beginning, then three monthly thereafter), in order for the necessary processes for approval and testing to be completed.

Improved reporting

The collection of at least 2,000 participant responses each month will allow for:

- quarterly NSW key indicator reports (6,000 respondents);
- detailed NSW data set and report each year (22,000 respondents);
- summary area health service data sets (1,400 per area) and reports each year;
- age- and topic-specific data sets and reports every two to five years.

In order to meet the planned reporting schedule, much of the reporting will be automated. This will involve developing a suite of computer programs that will enable continuous presentation (or 'surfacing') of survey data in a form that can be analysed, and the establishing of a set of continuously updated 'core' indicator pages. These will be made available on the Health Net and Health Web as well as in periodic reports in hard copy.

More detailed reports will continue to require substantial involvement by all the staff of the Epidemiology and Surveillance Branch of the NSW Department of Health, as well as topic-specific experts, in order to produce reports of similar quality and detail to the electronic reports for the 1997 and 1998 Health Surveys,³ the report of the Older People's Health Survey 1999,⁴ and the Report of the Chief Health Officer on the Health of the People of NSW.⁵

The Health Outcomes Information Statistical Toolkit (HOIST) will still be used for accessing unit record data from the HSP. Planned improvements to HOIST through easier-to-use interfaces and the development of a training package will facilitate use of the data. It is also planned to develop a user-driven reporting and modeling facility as part of the Program for Enhancing Population Health Infrastructure (PEPHI),⁶ to allow quick, ad hoc, analyses.

CONCLUSION

The new continuous data collection will represent the maturation of the existing HSP to meet the changing needs of NSW Health, by providing a more flexible and timely survey data collection system. It will enable the NSW Department of Health to report on indicators, evaluate

TABLE 2**INFORMATION FOR MODULAR QUESTIONS TO BE CONSIDERED INTO THE PROGRAM.**

Contact Details	Name _____ Institution _____ Contact details _____
Topic Area	Topic: Description: (include known or estimated prevalence; sensitivity of the topic; information required, possible number of questions)
Frequency of data collection and target population	(include information on frequency of collection, areas to be included (for example, all state or specific area health services); target groups by age and sex)
Rationale	(include information needs, links with national, state and local priorities; alternative sources of information, justification of frequency and population)
Analysis and reporting requirements	(include types of analysis required; trend analysis point frequency; cross-tabulation requirements such as by sex, age, area health service and the required reporting and data frequency)
Uses of the data	(include both planned and current uses of similar information)
Note: Attach questions if available with source of questions	

programs, provide evidence for policy development and undertake research to improve the health of the NSW population.

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HEALTH SURVEYS CONDUCTED BY THE AUSTRALIAN BUREAU OF STATISTICS

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Through its population survey program, the Australian Bureau of Statistics (ABS) collects and disseminates a broad range of public health information to assist decision making, debate and discussion on all aspects of health, illness and related behaviours. While some surveys are conducted regularly, others have been conducted on an ad hoc basis or with funding from users. Table 1 shows the key health surveys conducted by the ABS to date, and indicates the frequency with which they will be conducted in the future. Each of the surveys is described in more detail in this article.

NATIONAL HEALTH SURVEYS

The National Health Surveys (NHS) provide national benchmark information on a range of health-related issues and enable the monitoring of trends in health over time. All NHS's have collected information on health status,

health related actions (such as use of health services and medications) and health risk factors (such as smoking and exercise).

The 2001 National Health Survey is the first in a series of triennial surveys, made possible through a funding partnership agreement between the ABS and the Commonwealth Department of Health and Aged Care. Results from the survey are expected to be released from September 2002.

In 2001, the NHS sample will number around 31,000 respondents from across Australia (including 7,200 from NSW). This sample will support analysis of more common health characteristics at the state and territory level. There will be a supplementary indigenous survey of approximately 2,800 indigenous adults and children from across Australia, including remote areas. In 2004–05, the NHS will include a larger indigenous supplementary survey that, again, will support analysis at the state and territory level.

TABLE 1**KEY HEALTH SURVEYS CONDUCTED BY THE AUSTRALIAN BUREAU OF STATISTICS**

ABS Surveys	Years conducted	Future frequency
National Health Survey	1977, 1983, 1989–90, 1995, 2001	3 yearly from 2001
National Health Survey (indigenous)	2001	6 yearly from 2004
Survey of Disability, Ageing, and Carers	1981, 1988, 1993, 1998	6 yearly from 2003
National Nutrition Survey	1995	—
Survey of Mental Health and Wellbeing, of adults	1997	—
General Social Survey	2002	3 yearly from 2002
Indigenous Social Survey	1994,* 2002	6 yearly from 2002
Children's Immunisation and Health Screening Survey	1995	Immunisation data are collected in 2001 NHS
Health Insurance Survey	1979–84 (annual), 1986–92 (biennial), 1998 Also in 1995 NHS	Private Health Insurance data are collected in 2001 NHS

* National Aboriginal and Torres Strait Islander Survey

NATIONAL NUTRITION SURVEY

The 1995 National Nutrition Survey (NNS), a joint project with the Commonwealth Department of Health and Aged Care, was conducted on a sub-sample of the 1995 NHS respondents. It collected information on food and beverage intake, physical measurements, food-related habits and attitudes and usual food consumption patterns over the previous 12 months. The daily intakes of energy, macronutrients (such as carbohydrate, fat, and fibre), and selected micronutrients (such as thiamine and calcium) were derived from reported food intake for the day prior to interview using a 24 hour recall method. The physical measurements taken were height and weight, waist and hip circumferences, and blood pressure. The sample of around 14,000 persons (with almost 2,900 in NSW) provides detailed information at the state level and relatively detailed comparisons between capital cities and the rest of the state. The survey provides insight into how eating patterns vary between different groups within the Australian population and how physical measures, such as the level of obesity, vary by age and sex.

A short module of questions from the 1995 NNS has been included in the 2001 NHS to allow some time series analysis of particular dietary indicators.

SURVEY OF MENTAL HEALTH AND WELLBEING OF ADULTS

The 1997 Survey of Mental Health and Wellbeing (SMHWB) was funded by the Commonwealth Department of Health and Aged Care under the National Mental Health Strategy. It provides information on the prevalence of selected major mental disorders, level of disability, health services used, and help needed as a consequence of a mental health problem, for Australians aged 18 years

or more. A modified version of the Composite International Diagnostic Interview (CIDI) was used to provide diagnostic information on the more prevalent mental disorders such as anxiety disorders, affective disorders, and substance use disorders. Measures of general health were included, and limited information was collected on chronic physical conditions. The SMHWB sample numbered around 10,600 people (with 3,200 in NSW), supporting broad level estimates at the state level. This survey confirmed that approximately one in five Australian adults suffer from a mental disorder in any year; and revealed that, due to their higher rates of substance use disorders, younger people are more likely to suffer from a mental disorder than older people. It also showed that people with a mental disorder are much more likely to seek assistance from their general practitioner than any other health professional or service.

The Kessler module (K10) on psychological distress, used in the SMHWB, has been included in the 2001 NHS, as well as a series of questions on medication use.

SURVEY OF DISABILITY, AGEING, AND CARERS

The Survey of Disability, Ageing, and Carers (SDAC) provides information on three populations of interest to government policy: people aged 60 and over, people with disabilities, and their carers. People with disability are identified through filter questions on impairment and underlying health conditions. This population is then asked about their need for, and receipt of, assistance with a range of common activities. The survey provides details on prevalence of disability and levels of restriction; activity limitations leading to a need for assistance in the 'activities of daily living' (self-care, mobility and communication), plus health care; and participation

restrictions leading to a need for assistance in the 'instrumental activities of daily living' (housework, property maintenance, meal preparation, transport, and personal business affairs). The sample was selected from households and cared accommodation settings. In total, some 43,300 people were surveyed in the 1998 SDAC, supporting estimates at state level, and for some broad items, at the statistical region level.

GENERAL SOCIAL SURVEY

The General Social Survey (GSS) is a new survey due to be first run in 2002, and then triennially. The objectives of the GSS are to collect data from a range of areas of social concern, to allow information to be connected in ways not generally available. The sample will include around 15,000 people nationally, and will support state and territory level estimates. Topics related to health that will be included in the GSS are self-assessed health status (single question) and disability status.

INDIGENOUS SOCIAL SURVEY

The Indigenous Social Survey (ISS) aims to provide information on the indigenous population across a range of areas of social concern. The last survey of this kind on a national scale was the National Aboriginal and Torres Strait Islander Survey conducted in 1994. The ISS is planned to be conducted in 2002 and then on a six yearly basis. It is intended to be comparable to the General Social Survey (GSS), based on a similar collection methodology and having a range of data items in common between the

two surveys. The sample for the GSS will be up to 10,000 people, sufficient to support state estimates. The content of the ISS for sparsely settled (remote) areas will be a subset of data collected for non-sparsely settled (non-remote) areas, taking into account collection difficulties and the appropriateness of concepts.

HEALTH INSURANCE SURVEY

The Health Insurance Survey (HIS) establishes the level of the population with and without private health insurance, provides a broad indication of the type of cover and related information (such as reasons for cover or non-cover, and changes to cover). The series of surveys enable changes in these elements to be monitored over time. A particular strength of this collection relative to data on private health insurance coverage available from industry sources, is its ability to compare population groups.

DATA AVAILABILITY

Results from ABS surveys are available in the form of:

- publications,
- confidentialised unit record files (CD-ROM) of selected surveys,
- consultancy services.

For more information about ABS surveys email health@abs.gov.au; or write to the Health Section, Australian Bureau of Statistics, W31c, PO Box 10, Belconnen, Australian Capital Territory, 2616; or telephone 1800 060 050. ■

3RD AUSTRALIAN COMPUTER ASSISTED TELEPHONE INTERVIEW (CATI) FORUM : CATI HEALTH SURVEYS IN AUSTRALIA—THE CHALLENGES AHEAD

Date: Tuesday 27 and Wednesday 28 November 2001

Venue: Powerhouse Museum, Sydney

Conference Themes:

- Current progress on CATI health surveillance in Australia
- Measurement and monitoring of inequalities in health
- How health surveillance can influence policy development
- Challenges of maximising survey participation and data quality
- Strategies to meet the challenges ahead.

For conference registrations please contact: Conference Secretariat, 21 Kent St Deakin ACT 2600; by telephone: (02) 6281 6624; by fax: (02) 6285 1336; or by email: conference@conlog.com.au.

For further information please contact: NSW Health Survey Program, NSW Department of Health, 73 Miller Street North Sydney, by telephone: (02) 9424 5707; by fax: (02) 9424 5755; or by email: catimail@doh.health.nsw.gov.au.

This conference is hosted by the National Public Health Partnership Computer Assisted Telephone Interview—Technical Reference Group (CATI-TRG); and is sponsored by the Commonwealth Department of Health and Aged Care and the NSW Department of Health.

WHAT IS RUBELLA?

- Rubella (or German measles) is an infectious viral disease of humans.
- Although most people who get rubella do not experience serious complications, preventing rubella is very important because infection in early pregnancy can cause serious birth defects or miscarriage.

WHAT ARE THE SYMPTOMS OF RUBELLA?

- The symptoms of rubella may include a mild fever, rash, runny nose, sore throat and often swollen lymph nodes. Aching joints are also common, especially in women.
- In rare cases, rubella infection can be complicated by a lowering of the platelet count (thrombocytopenia) which can cause bleeding, or by encephalitis (swelling of the brain).

WHAT IS CONGENITAL RUBELLA SYNDROME?

- Congenital rubella syndrome occurs in up to 90 per cent of babies born to women who are infected with rubella during the first three months of pregnancy.
- Congenital rubella syndrome can cause birth defects including heart defects, deafness, mental retardation, and eye problems including cataracts.

HOW DO YOU CATCH RUBELLA?

- Rubella is spread from an infected person through the air. Rubella is easily spread to people who have not been vaccinated or had the infection before.
- The time from exposure to the rubella virus to onset of illness is usually 14 to 21 days. People with rubella are usually infectious from seven days before the rash occurs to four days after.

HOW IS RUBELLA DIAGNOSED AND TREATED?

- Rubella can be difficult to diagnose because there are many other viruses that cause similar illnesses with a fever and a rash. Definite diagnosis requires a blood test.

- Confirming the diagnosis is important so that other people who may be at risk of rubella, particularly pregnant women, can be identified. Rubella is notifiable by laboratories in NSW.
- Treatment for symptoms of rubella are rest, plenty of fluids and paracetamol for fever. Where rubella causes complications, other treatments may be needed.
- While infectious with rubella, it is important to stay at home so as not to spread the virus to other people.

HOW CAN I PROTECT MYSELF AGAINST RUBELLA?

- The best protection against rubella is through vaccination with MMR vaccine, which protects against infection with measles, mumps and rubella.
- MMR vaccine should be given to children when they are 12 months and at four years of age. Two doses of MMR provides protection against rubella to over 99 per cent of those vaccinated.
- MMR vaccine is a safe and effective vaccine that has been used worldwide for many years.
- While many older adults are immune to rubella because they were infected as children, young adults, especially men, may not have received rubella vaccination. Vaccination against rubella is very important for women (and men) of child bearing age to prevent the possibility of pregnant women coming into contact with and contracting rubella infection.
- It is very important that all women of child bearing age, and especially those planning a pregnancy, know whether they are immune to rubella. Women planning a pregnancy should have a blood test, which can be done by their local doctor, to check that they are protected against rubella. Rubella vaccine should not be given to pregnant women, and pregnancy should be avoided for two months following vaccination.

For further information contact your doctor, community health care centre or your nearest public health unit.

August 2001. ■

COMMUNICABLE DISEASES REPORT, AUGUST 2001

TRENDS

The onset of winter in NSW has seen a decline in arboviral infections and pertussis, but heralds the onset of the meningococcal season (Figure 1, Table 1).

MENINGOCOCCAL DISEASE

Clinicians are urged to be alert to the diagnosis of meningococcal disease in people who present with otherwise unexplained fever. While the disease has two main presentations (meningitis or septicaemia), cases can sometimes present without classical manifestations. Young children may be unable to express some of the classic symptoms of headache, and young adults may be less inclined to re-present to a clinician should their condition deteriorate. Patients with a systemic febrile illness who are not admitted to a hospital, especially children or young adults, should be kept under frequent and regular review, and urgently reassessed if they deteriorate or if a rash occurs. Early treatment with intravenous benzylpenicillin (or ceftriaxone), and urgent transfer to hospital, can be life saving in patients with suspected meningococcal disease.

MEASLES

A cluster of seven cases of measles has been reported in Western Sydney. The first person became ill on 16 May (and possibly acquired the illness in Hong Kong), and the latest person became ill on 25 June. Five cases have been confirmed by laboratory tests. Three cases are infants aged 8–12 months (and were not immunised because the vaccine is not due to be administered until 12 months of age). The other four cases are aged 19–26 years, and are unlikely to have been immunised against measles.

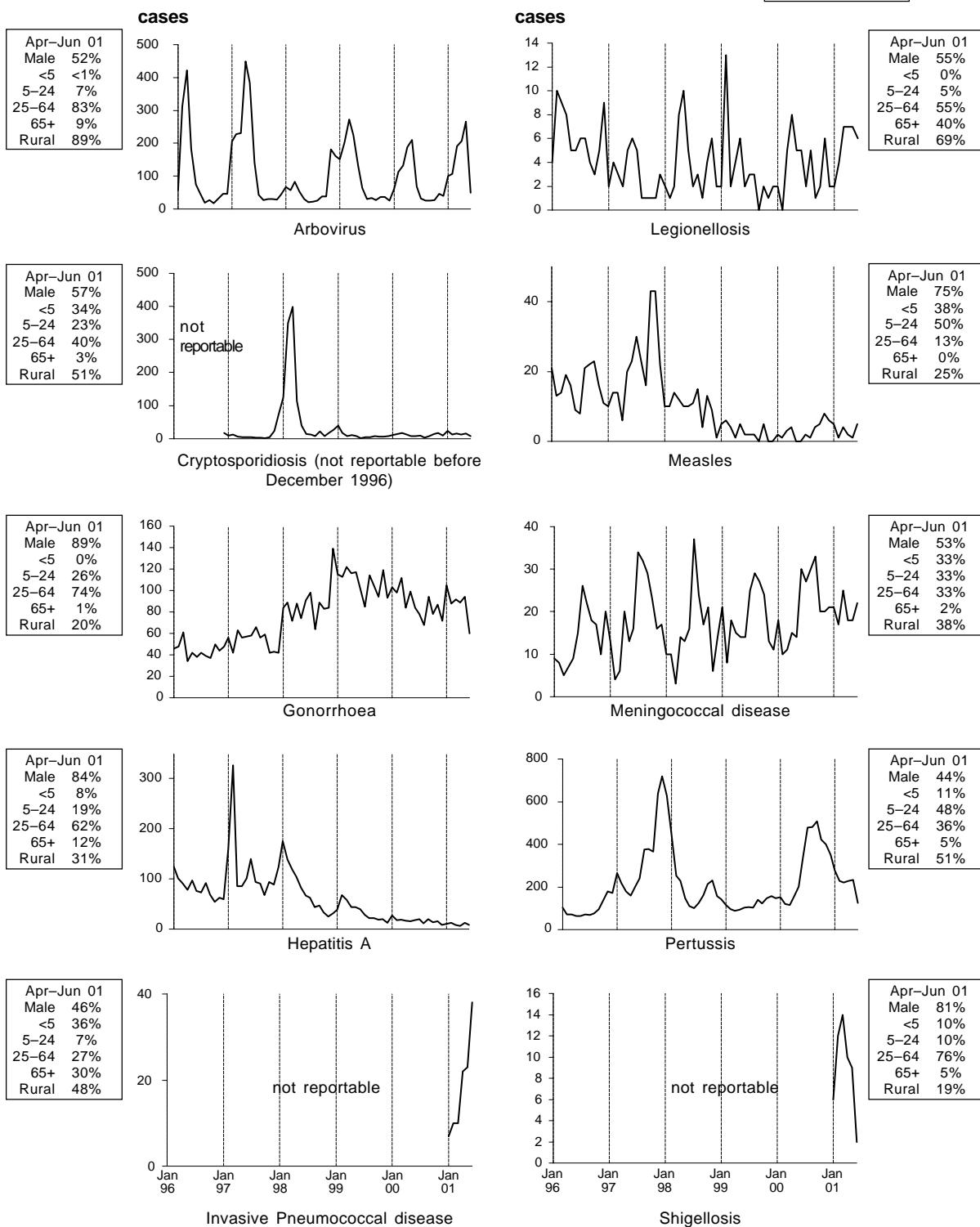
To prevent the spread of measles:

- parents are urged to ensure that their children are fully immunised;
- young adults (aged 18–30 years) are encouraged to see their general practitioner and be vaccinated with MMR vaccine (the vaccine that protects against measles, mumps and rubella);
- people with suspected measles should avoid contact with others (including at doctors' surgeries for at least four days after onset of the rash). ■■

FIGURE 1
**REPORTS OF SELECTED COMMUNICABLE DISEASES, NSW, JANUARY 1996 TO JUNE 2001,
BY MONTH OF ONSET**

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

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



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

TABLE 1 REPORTS OF NOTIFIABLE CONDITIONS RECEIVED IN JUNE 2001 BY AREA HEALTH SERVICES

Condition	CSA	NSA	WSA	WEN	SWS	CCA	HUN	Area Health Service (2001)										Total for Jun [†]	To date [†]	
								ILL	SES	NRA	MNC	NEA	MAC	MWA	FWA	GMA	SA	CHS		
Blood-borne and sexually transmitted																				
AIDS	1	2	-	1	-	-	-	-	3	-	-	-	-	-	-	-	-	7	59	
Chancroid*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chlamydia (genital)*	17	47	28	16	-	12	29	7	86	12	5	22	13	36	2	12	7	3	354	2,069
Gonorrhoea*	-	18	3	-	-	1	2	2	50	1	-	7	-	3	4	-	1	3	98	573
Hepatitis B - acute viral*	1	1	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	4	43	
Hepatitis B - other*	29	41	1	5	-	5	3	4	50	3	1	4	-	2	2	2	1	3	159	1,864
Hepatitis C - acute viral*	1	3	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1	66	
Hepatitis C - other*	69	27	87	43	-	24	36	11	100	36	15	10	6	30	3	11	29	58	597	4,394
Hepatitis D - unspecified*	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	1	9
HIV infection*	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	144
Syphilis	8	4	7	1	-	3	-	1	8	1	1	3	-	1	-	-	1	-	39	292
Vector-borne																				
Arboviral infection (BFV)*	-	-	-	1	-	-	-	-	-	15	62	-	-	-	2	-	4	-	84	281
Arboviral infection (Other)*	2	-	1	-	-	-	-	-	2	-	2	-	-	-	-	1	-	-	8	27
Arboviral infection (RRV)*	-	2	8	4	-	5	20	1	1	11	7	3	2	11	-	-	8	-	83	666
Malaria*	-	2	-	1	-	-	2	-	1	1	-	-	-	-	-	2	-	-	11	77
Zoonoses																				
Anthrax	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Brucellosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Leptospirosis*	-	-	-	-	-	-	3	-	-	1	1	-	-	-	-	-	-	5	38	
Lyssavirus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Psittacosis	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	14	
Q fever*	-	-	-	-	-	-	-	1	-	8	3	6	1	9	-	-	1	-	29	85
Respiratory and other																				
Blood lead level*	1	-	-	2	-	-	4	5	1	-	1	-	-	-	9	-	1	-	24	245
Influenza	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	
Invasive pneumococcal infection	-	9	1	5	-	10	7	2	4	-	-	-	-	-	-	-	-	-	38	105
Legionnaires' longbeachae*	1	-	1	-	1	-	1	-	4	-	-	-	1	-	-	-	-	-	9	20
Legionnaires' pneumophila*	-	-	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-	-	3	16
Legionnaires' (Other)*	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	1	1	
Leprosy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	
Meningococcal infection (invasive)	4	2	1	-	1	2	1	3	2	1	-	-	2	-	-	1	1	-	22	125
Tuberculosis	6	4	2	1	-	1	-	3	-	1	-	-	-	-	-	-	-	-	18	176
Vaccine-preventable																				
Adverse event after immunisation	-	1	1	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	4	43
H.influenzae b infection (invasive)*	-	-	1	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	3	6
Measles	-	1	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6	19
Mumps*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	14	
Pertussis	16	26	18	11	15	9	12	6	31	19	4	25	20	15	-	16	2	-	245	1,579
Rubella*	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	2	37	
Tetanus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Faecal-oral																				
Botulism	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cholera*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cryptosporidiosis*	-	-	1	-	-	1	-	1	1	2	-	-	-	-	-	-	-	6	91	
Food borne illness (not otherwise specified)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16	
Gastroenteritis (in an institution)	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	216	
Giardiasis*	-	14	-	8	-	5	10	-	9	6	3	7	1	5	2	5	2	-	77	515
Haemolytic uraemic syndrome	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	
Hepatitis A*	1	-	1	-	-	1	-	-	3	3	-	-	-	-	-	-	-	9	65	
Hepatitis E*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	
Listeriosis*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	
Salmonellosis (not otherwise specified)*	9	12	19	4	-	1	5	3	12	18	7	4	1	2	-	5	1	-	103	936
Shigellosis	-	-	-	-	-	-	-	-	1	3	-	-	-	-	-	-	-	4	54	
Typhoid and paratyphoid*	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	2	18	
Verotoxin producing E. coli*	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

* lab-confirmed cases only

† includes cases with unknown postcode

CSA = Central Sydney Area
 NSA = Northern Sydney Area
 WSA = Western Sydney Area

WEN = Wentworth Area
 SWS = South Western Sydney Area
 CCA = Central Coast Area

HUN = Hunter Area
 ILL = Illawarra Area
 SES = South Eastern Sydney Area

NRA = Northern Rivers Area
 MNC = North Coast Area
 NEA = New England Area

MAC = Macquarie Area
 MWA = Mid Western Area
 FWA = Far West Area

GMA = Greater Murray Area
 SA = Southern Area
 CHS = Corrections Health Service

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Dr Michael Giffin is managing editor.

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

Submission of articles

Articles, news and comments should be 1000–1500 words or less in length and include a summary of the key points to be made in the first paragraph. References should be set out in the Vancouver style, described in the *New England Journal of Medicine*, 1997; 336: 309–315. Send submitted articles on paper and in electronic form, either on disc (Word for Windows is preferred), or by email. The article must be accompanied by a letter signed by all authors. Full instructions for authors are available on request from the managing editor.

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