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# Australian Health Statistics

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## Introduction

The impetus for this paper was a workshop held earlier this year to identify current problems associated with Australian health statistics and determine priorities for a national health data base. Generally, academic researchers in Australia have focussed on aetiology, that is the study of causes of diseases, and attention will be given to the data used to develop aetiological hypotheses and, ultimately, test these hypotheses. By identifying the major causes of avoidable death, disease or disability as well as possible with existing data, the gaps in the data will be identified and priorities for the collection of new data will be established.

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*Editors note: Unfortunately the accompanying tables were not submitted with this paper. We have therefore deleted all specific table references. With apologies to the author.*

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## Data Requirements

Increased attention is being given to the need for improved occupational health surveillance in western societies. In Australia, concerns about potential health effects of exposure to the herbicide 2,4,5-T and its dioxin contaminant, Vietnam War service in general, proximity to atomic testing, past employment in uranium mines, and exposure to asbestos and lead are prominent among the issues that have focussed attention on occupational risks. The risks of cancer resulting from occupational exposures have been discussed widely, and the patterns of accidents, injuries and illnesses associated with industry and occupation examined.

Personal and lifestyle factors such as diet, cigarette smoking, alcohol consumption, stress and drug use are also now recognised as important 'risk factors' associated with the health status of the population. There is now evidence to support the view that the chronic, degenerative diseases such as heart disease and cancer which are the major killers of Australians substantially result from these socio-behavioural factors rather than simply being the diseases of old age.

The main causes of death and hospitalization in Australia, for people below the age of 45, are motor vehicle accidents and other accidents, poisoning and violence, including suicide. For older people the chronic diseases of ischaemic heart disease, stroke and other diseases of the circulatory system and various cancers predominate.

A number of factors are known to influence, or to be associated with these causes of death. The most important behavioural factors, in terms of the amount of resultant disease, are almost certainly smoking and alcohol consumption. The Commonwealth Department of Health suggested that there were 16,200

deaths in Australia associated with tobacco use in 1980, equivalent to 110 deaths per 100,000 population. The diseases with which smoking is associated are clearly indicated in the warning 'Smoking causes lung cancer, as well as heart and other lung disease' which the NH & MRC (*editor's note:*) (National Health and Medical Research Council) recommended to replace the less specific 'Smoking is a health hazard' on cigarette packets sold in Australia. Almost half the number of deaths attributed to alcohol are associated with road traffic accidents, from which disability and injury also result. Diet is also implicated in several of the major causes of alcohol-related deaths.

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### Descriptive Studies

Considerable difficulties arise when trying to establish causal links with diseases, such as the argument over smoking and cancer. Individual studies are rarely definitive and considerable time may elapse before sufficient evidence is available to assume a causal relationship. Such studies can also be expensive. Accordingly, less intensive descriptive studies are undertaken in the first instance, using readily available data sources from which crude measures may be derived in order to generate or provide an initial check of hypotheses. Fully developed analytical studies would only follow when the results of exploratory investigations are sufficiently suggestive and important to warrant the expense of more rigorous confirmatory research.

Information for general descriptive studies may be available from routine collections of health event data or from prevalence surveys of population samples.

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### Routine Health Collections

The routine health reporting systems in Australia are poorly developed in comparison to other developed countries, particularly at the national level. Under the federal/state system of government that operates in Australia, state governments are primarily responsible for the provision of hospital and health services within their own borders, and for the collection of health event data associated with these services. While all states administer similar collections, substantial variation exists in terms of coverage, scope and means of collection.

Mortality data play an important role as health status indicators. Data are compiled in each state by the Registrars of Births, Deaths and Marriages and causes of death coding is added by the Australian Bureau of Statistics (ABS) from medical certificates. At the present time, there is no national compilation, although health ministers have agreed to establish a National Death Index, subject to appropriate confidentiality legislation being enacted. To obtain Australia-wide mortality tapes at present, with personal identifiers removed, separate tapes for each state would have to be developed by the ABS and sent to the state registrars for release, subject to their approval, and re-aggregated by the researcher. Clearly this is a very cumbersome procedure. The main public source of data at present is the ABS publication 'Causes of Death'.

Hospital morbidity collections based on data collected on patients leaving hospitals are compiled by the health authorities in each state, providing limited information on the demographic background and illnesses of hospital in-patients. In all states, data are collected on separations of public patients from public hospitals, but private hospitals, psychiatric hospitals and nursing homes may be included in some states and not in others, so that

comparisons between states and aggregation across states cannot be accomplished from published results, although a uniform minimal data set could be achieved with access to the computerised records.

Records of primary contact between the public and health professionals such as private medical practitioners, community health centres, hospital clinics and casualty services are totally lacking at present, at least in any unified form. However, the introduction of the universal health insurance scheme, Medicare, in February 1984 has created an opportunity to obtain more information in this area. Medicare gives automatic entitlement to a subsidy of 85% of the schedule fee for medical services provided by private practitioners, and approximately 100 million records per year relating to claims are stored and interfaced with a Medicare enrolment file containing personal data. However, as yet, only the information necessary for payment of benefit is being collected: name, date of birth, sex, geographic area, and usual residence, and a provider's identifier. No data are collected about either diagnoses or procedures.

With regard to specific diseases, each state now has a Cancer Registry based on notifications by hospitals and laboratories of cancer patients and by Registrars of deaths attributed to cancer. A proposal to establish a National Cancer Statistics Clearing House is currently before the NH & MRC and, if accepted, national figures should be available within a few years. Instances of communicable diseases are reported to state health authorities and collated by the Department of Health but are of very limited research value. Information on work-related health problems can be obtained from compensation claims to the state-based insurance schemes, but large numbers of workers are not covered and there would be under-reporting because neither medical practitioners nor workers are aware of the significance of work factors in the aetiology of many chronic diseases. Police, legal authorities and traffic

authorities collect information which yields statistics on road traffic accidents, and on drink-driving offences and drug offences. At present, these have no research value, but the Department of Transport is developing a National Road Traffic Accidents data base based on police reports of accidents involving fatalities and casualties.

How can these routine reporting systems be used to develop and check hypotheses about causes of disease? The traditional approach is to produce estimates of the risk of various health outcomes across various subgroups of the population under study. Thus, for example, an indicator of the health risk associated with particular occupations is given by ratios of the number of deaths from various causes to the population at risk and making comparisons across occupational categories. The population at risk is usually obtained from census data. Clearly there are severe limitations with this type of unlinked data analysis, particularly in the lack of ability to apply controls for what might be relevant covariables. This is limited to those factors coded in both the census and health event data, and there are usually very few in the latter - age, sex, location and perhaps occupation, often in groups too broad to be useful.

The value of this type of data is greatly enhanced when it can be linked directly at individual level to data on personal characteristics and lifestyle factors. In this case, files must include full names, previous surnames and dates of birth at least. Concern about confidentiality is, however, very high in Australia and the opportunities for record linkage are very limited, although some useful work has been done by linking cancer records and death records to employment records. However, identifiable census returns have been destroyed in Australia since the start of the century and proposals that a sample of these be retained, as has been done recently in England and Wales, seem unlikely to succeed.

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## Population Surveys

Given the poor state of routine health data collections, it is fortunate, though perhaps not unrelated, that Australia shows up reasonably well in the area of health surveys in the International Health Data Guide. This is probably due to the preference of the Australian Bureau of Statistics for using its limited resources for population surveys which can cover a range of topics rather than for more specific health related collections. In addition, state health authorities and other agencies have undertaken a number of surveys relating to lifestyle factors, particularly cigarette smoking, alcohol consumption and drug use.

Prevalence surveys of population samples have the advantages that, for established risk factors, such as smoking, they can be used to describe cross-sectional and longitudinal variations which may relate to health outcomes, and they provide a basis for evaluating community behaviour - intervention programmes. For postulated or possible risk factors, they can be used to examine relationships with health outcomes and may provide clues about causal factors in disease.

The Australian Health Surveys in particular provide valuable information on the health status of the population, particularly since recent changes to the ABS Act now permit the release of de-identified unit record data. A data file from the 1977-78 survey has been released, and the 1983 data file should be available later this year. A further survey is planned for 1986.

The surveys give detailed information on a wide range of personal characteristics, although the categories of such important variables as occupation and birthplace were too broad in the unit record file for many research purposes. Categories had been collapsed in order to ensure non-identifiability of respondents,

particularly those in small subgroups of the population. For such subgroups, of course, sample surveys are of little value because of the small number, if any, of cases interviewed. Nevertheless the practice of collapsing variables into standard classifications without giving sufficient thought to the potential research uses needs to be changed.

Interview data on self-reported health status may also be a suspect, and it would be useful to have some medical verification of a subsample of respondents or from pilot tests. Another shortcoming of these data is the lack of information on health risk factors such as smoking and drinking, although 12 items from the General Health Questionnaire were included.

Several community health studies have been carried out in Australia in recent years, and these may provide clues to the relationship between life-style characteristics and health status. One of the advantages of such studies is that they often include clinical checks on the self-reported health status of respondents. The main disadvantage is that the sample sizes are generally too small to allow tests of hypotheses.

The prevalence of heart disease as a major cause of morbidity and mortality has generated a number of studies aimed at determining the associated life-style factors. The best of these are the two Risk Factor Prevalence Studies conducted by the National Heart Foundation in 1980 and 1983. Both studies used large national random samples and included clinical examinations to obtain height, weight, blood pressure and blood lipid levels in addition to interview data on tobacco, alcohol and medication consumption, diet, physical activity and psychological stress.

While major programmes designed to influence the smoking behaviour of the community have been launched throughout Australia, the ABS has chosen to cease conducting surveys on smoking and to exclude questions on smoking

from the Health Surveys. The last national survey on smoking conducted by the ABS was in 1977. A series of much smaller national surveys, on about 6000 adult respondents, have been conducted by the Anti-Cancer Council of Victoria in 1974, 1976, 1980 and 1983. However, a large number of school-based surveys of alcohol, tobacco and drug use have been undertaken, although as a basis for national figures these have problems of comparability. Two national surveys of school children aged 9-16 years were conducted by the NH & MRC in 1969 and 1973, and a similar survey has recently been carried out by the Australian Cancer Society and the National Heart Foundation.

Efforts to reduce the number of road traffic accidents have centred on programmes designed to reduce alcohol use with random breath testing being introduced in most states of Australia and substantial expenditure on television advertising campaigns. However, the availability of statistical data to evaluate the effectiveness of these approaches is limited largely to the mortality and morbidity statistics and some small studies on knowledge, attitudes and behaviour relating to drink-driving.

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### Concluding Comments

As indicated in the above brief review of Australian health status data, only limited attention has been given to the needs of researchers for aetiological analyses. Routine health collections lack uniformity across state boundaries and do not include sufficient information on parents' background or possibly associated risk factors. Record linkage could overcome some of these deficiencies but has generally been resisted by the appropriate authorities.

Concerns about invasion of privacy, the lack of legislation on the preservation of confidentiality for some collections (morbidity), and over-rigorous interpretation of such legislation in others (census), have restricted the use that could be made of these data. Population surveys have been adopted as an alternative, but these are generally too small for detailed analytic studies and are thus limited to monitoring the prevalence of established risk factors.

The National Health Statistics Workshop held in February expressed its concern over this lack of appropriate data and recommended that a national health statistics agency be established as part of the newly formed Australian Institute of Health. This new agency should promote the development of national collections such as the natural death index, cancer index and morbidity collections, and ensure that the necessary legislation is enacted to provide for preservation of confidentiality. Priority should be given to assembling data already available in most cases at state level into unified national collections, to the development of record linkage procedures, and to risk factor surveys of diet, smoking, alcohol and illegal drugs.

This is obviously a large agendum which will require considerable resources and time to implement. Nevertheless, there is strong support behind the recommendations and a reasonable hope that a substantial improvement in Australian Health Statistics will be achieved. □