National data sources

This chapter presents information on the following national data sources:

- Australian Bureau of Statistics' National Health Survey 1995;
- Drug Utilization Sub-Committee Database;
- Medicare and Department of Veterans' Affairs medical benefits data;
- National Hospital Morbidity Database;
- Survey of Morbidity and Treatment in General Practice in Australia 1990–91.

Australian Bureau of Statistics' National Health Survey 1995

Introduction

The aim of the 1995 Australian Bureau of Statistics' National Health Survey was to collect information about the health status of Australians, their use of health services and facilities, and health related aspects of their lifestyle (Australian Bureau of Statistics 1997a).

The survey was conducted during the 12 month period January 1995 to January 1996. Information was collected by personal interview in homes drawn from a random sample. Data on approximately 54,000 Australians of all ages was collected in the survey. Information collected that is of relevance to this report include data on:

- demographics;
- long-term, chronic health conditions (i.e. in the 12 months prior to interview);
- recent illness (i.e. in the two weeks prior to interview);
- conditions for which health related action was taken in the two weeks prior to interview;
- hospital admitted patient episodes;
- visits to casualty/emergency/outpatients;
- visits to day clinics;
- doctor consultations;
- consultations with other health professionals; and
- use of medications.

Definitions of these data items can be found in **Appendix A**.

Uses for monitoring medical care of cardiovascular disease

The methodology used in the 1995 National Health Survey enables direct linkage of health related actions to medical conditions experienced as they were reported together. Therefore, information from the survey can be used to provide estimates of the proportion of Australians suffering from cardiovascular conditions and the health related actions they

may have taken for those conditions. Cardiovascular conditions included in the survey are shown in **Appendix B**.

The prevalence of cardiovascular conditions, and related health actions, can be estimated for the overall population and for population subgroups. The data can also be used to describe how the type of health related action taken varies for different cardiovascular conditions and for different population subgroups.

Limitations

There are several limitations of the 1995 National Health Survey which may affect the size and accuracy of the estimates for cardiovascular conditions and action taken for those conditions. These limitations include the following:

- information collected in the National Health Survey is essentially self-reported and is not medically verified;

- information is reliant on the respondent's memory;

- cardiovascular conditions that have a considerable effect on the respondent are more likely to be reported than conditions having lesser effects;

- respondents may be unaware that they have a particular condition, especially if it has not been professionally diagnosed;

- medical conditions reported in the survey are those that are more commonly experienced in the community. Therefore, acute conditions requiring hospitalisation such as heart attack would be under represented particularly if potential respondents were still in hospital at the time of the survey or were too sick to respond;

- estimates for less prevalent conditions may be subject to high standard errors;

- some respondents may be reluctant to report some conditions and differences in response may influence data consistency; and

- institutionalised people, including hospital admitted patients and residents of nursing homes, were excluded from the survey.

Drug Utilization Sub-Committee Database

The Drug Utilization Sub-Committee (DUSC) was formed by the Pharmaceutical Benefits Advisory Committee in 1988 (Commonwealth Department of Human Services and Health 1996).

The DUSC maintains a database which monitors the community (i.e. non-public hospital) use of prescription medicines in Australia. This database combines information on prescriptions subsidised by the Pharmaceutical Benefits Scheme and the Repatriation Pharmaceutical Benefits Scheme with an estimate, from the Pharmacy Guild Survey, of those prescriptions that are not subsidised (Edmonds et al. 1993).

The DUSC analyses data from the combined database and disseminates the information in special reports and in its annual publication *Australian Statistics on Medicines*, the most recent of which contains data for the 1995 calendar year (Commonwealth Department of Health and Family Services 1997a).

The Pharmaceutical Benefits Scheme

The Pharmaceutical Benefits Scheme (PBS) is a national scheme that subsidises the cost of a wide range of pharmaceuticals for the general community (Box 2). The Repatriation Pharmaceutical Benefits Scheme (RPBS) is a similar scheme for returned service men and women. These schemes aim to ensure that individuals have access to necessary pharmaceuticals at affordable prices. In 1995, approximately 74% of all community (i.e. non-public hospital) prescriptions in Australia were dispensed under the PBS or the RPBS (Drug Utilization Sub-Committee, personal communication).

The Health Insurance Commission processes all prescriptions submitted for payment of a subsidy under the PBS or RPBS and maintains a computerised database of information relating to these prescriptions. This database does not include any information on:

- medications for general beneficiaries where the PBS dispensed price[*] is lower than the general patient copayment. In 1995, 20% of all community prescribing was for under copayment prescriptions (Drug Utilization Sub-Committee, personal communication);

- prescriptions for drugs that are only available on private prescription with the patient paying the full cost. In 1995, private prescriptions accounted for 6% of community prescriptions (Drug Utilization Sub-Committee, personal communication);

- over the counter drugs, except for S3 Recordable. S3 Recordable medications are drugs that do not require a prescription but are available only from pharmacies. These drugs must be stored out of public reach and are processed through the pharmacy computer and receive a label. Drugs listed as S3 recordable vary by State and Territory;

- public hospital drug usage; and

- supply of highly specialised drugs to outpatients under section 100 of the National Health Act (Commonwealth Department of Human Services and Health 1996).

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[*] The PBS dispensed price is the price to the pharmacist for the maximum quantity plus the pharmacist's mark up (10%) plus the dispensing fee.

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Box 2: The Pharmaceutical Benefits Scheme

The PBS groups patients into two classes¾ general beneficiaries and concessional beneficiaries. Concessional beneficiaries include holders of Pensioner Health Benefits Cards and certain other entitlement cards issued by the Departments of Social Security and Veterans' Affairs. All other people are general beneficiaries.

From 1 January 1997, concessional beneficiaries pay $3.20 per prescription for pharmaceuticals listed on the PBS. General beneficiaries currently pay up to $20.00 (to be indexed annually) per prescription.

If a general beneficiary, or anyone in their immediate family, incurs $612.60 worth of PBS expenditure in any calendar year, then prescriptions for every member of the immediate family cost $3.20 for the remainder of that year.

The safety net threshold for concessional beneficiaries is currently $166.40. Once PBS expenditure for concessional beneficiaries reaches this threshold, they are entitled to receive Pharmaceutical Benefits items free for the rest of the calendar year.

The Commonwealth Government subsidises all PBS prescriptions for which $3.20 is paid. This includes all prescriptions dispensed to concessional beneficiaries as well as prescriptions dispensed to general beneficiaries after they have reached the safety net limit for the year. PBS prescriptions costing more than the general patient copayment of $20.00 are also subsidised.

The RPBS is generally similar to the PBS for concessional beneficiaries.

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The PBS database can provide data on prescription numbers, quantity dispensed, benefits paid (i.e. cost to Government), and total cost of prescriptions (i.e. cost to Government plus patients' contributions). These data can be summarised by variables such as:

- generic drug name and formulation;
- category of recipient—general, concessional, repatriation, safety net or doctor's bag (emergency supplies used by doctors and provided through community pharmacists);
- date of dispensing; and
- postcode of dispensing pharmacy.

The data can also be linked to type of drug based on the Anatomical Therapeutic Chemical (ATC) code.

The PBS database does not include information on the medical condition for which the prescription was written. Further, the database does not include information on patient demographic characteristics for general beneficiaries. For concessional beneficiaries, information on sex and age can be obtained by linking to Department of Social Security data. However, the reliability of this information is limited as prescription use of dependants is also recorded against the concessional beneficiary's identification number once the safety net limit has been reached.

The Pharmacy Guild Survey

The Pharmacy Guild Survey began in 1989. Each month, all dispensing information is collected from a random sample of approximately 300 pharmacies belonging to the Pharmacy Guild of Australia[*] (Commonwealth Department of Human Services and Health 1996). The pharmacies are stratified into three equal ranges by prescription volume (Edmonds et al. 1993). The survey is administered by Chemdata, a major pharmacy computer software supplier. Each month, participating pharmacies send their dispensing

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[*] Approximately 80% of pharmacies in Australia are members of the Pharmacy Guild of Australia (Commonwealth Department of Human Services and Health 1996).

records to Chemdata in Canberra where the data are summarised by drug code and category.

Although the Pharmacy Guild Survey collects information on all drugs dispensed, the Department of Health and Family Services only uses the data to calculate estimates of prescription volumes for drugs in the non-subsidised categories, that is private prescriptions and prescriptions priced under the general patient copayment.

Chemdata only provides the Department of Health and Family Services with prescription count data aggregated at national level. No patient identifying or sociodemographic data are available, nor are data available on the cost of prescriptions or the medical condition for which a drug is prescribed.

The Drug Utilization Sub-Committee Database

The Drug Utilization Sub-Committee Database combines the estimates of prescription counts for under copayment and private prescriptions from the Pharmacy Guild Survey with the actual counts of prescriptions submitted to the Health Insurance Commission for payment of a subsidy under the PBS/RPBS.

The DUSC combined database provides complete coverage of the community use of prescription drugs at the national level. The database includes the following data items for both PBS and Pharmacy Guild Survey items:

- Anatomical Therapeutic Chemical (ATC) code. The ATC code has five levels— anatomical main group, therapeutic main group, therapeutic subgroup, chemical/therapeutic subgroup, generic drug name;
- quantity dispensed;
- number of prescriptions; and
- defined daily dose.

The DUSC database also includes the following data items for PBS/RPBS subsidised prescriptions only:

- pay category of recipient (i.e. general, concessional, repatriation, safety net, doctor's bag, etc.);
- benefits paid (i.e. cost to Government);
- patients' contributions;
- total cost (i.e. cost to Government plus patients' contributions); and
- postcode of dispensing pharmacy.

The following data items can be derived for PBS/RPBS subsidised prescriptions:

- State and Territory of dispensing pharmacy; and
- Statistical Local Area (SLA) of dispensing pharmacy.

Uses for monitoring cardiovascular drug use

Drugs used in the management of cardiovascular disease are classified by the Anatomical Therapeutic Chemical code under the Cardiovascular system group (ATC code 'C'). These include inotropic drugs, antiarrhythmics, nitrates, diuretics, beta blockers, calcium channel blockers, ACE inhibitors, other antihypertensives, and peripheral vasodilators. Also of interest are anticoagulants, antiplatelet drugs, thrombolytic drugs and serum lipid lowering drugs which are classified as drugs for Blood and blood forming organs (ATC code 'B'). A detailed list of drugs by generic drug name is provided in **Appendix C**.

The DUSC database can be used to monitor trends and patterns in cardiovascular drug use in the community. It can also be used to monitor the impact of interventions and PBS/RPBS policy decisions (Edmonds et al. 1993). For example, Henry et al. (1991) found that between 1987 and 1989 there had been an unusually large increase in prescribing the serum lipid lowering drug clofibrate. The increase was much greater than that observed for cholestyramine and colestipol which were generally recommended by experts as the treatment for hypercholesterolaemia.[*] As a result of this study a policy decision was made to restrict the availability of clofibrate on the PBS.

The community use of cardiovascular drugs can be estimated from the DUSC database using prescription counts or the defined daily dose (DDD) methodology (Box 3) (Commonwealth Department of Human Services and Health 1996; Hurley et al. 1988).

The DUSC database can be used to monitor trends in the costs of cardiovascular drugs where all, or the majority, of prescriptions are subsidised by the PBS/RPBS. Table 1 indicates the distribution of subsidised and non-subsidised prescriptions for cardiovascular drugs in 1995. However the proportion of subsidised drugs in a particular class can vary from year to year because of changes in the Pharmaceutical Benefits Schedule, the general patient copayment level and price.

Box 3: The defined daily dose (DDD) methodology

The DDD is based on an assumed average dose per day for a drug when used for its main indication in adults. It can be adjusted for population and quantity dispensed, and expressed as the DDD per 1,000 population per day. Expressed this way, it provides an estimate of the prevalence of use of a drug in the population. However, the DDD methodology has a number of limitations including the following:

- *DDD is based on overseas experience and may not adequately reflect the prescribed adult dose in Australia;*

- *not all drugs dispensed are necessarily consumed;*

- *the DDD per 1,000 population per day methodology assumes that every patient takes the defined daily dose continuously throughout the year; and*

- *the DDD per 1,000 population per day is calculated for a whole population and so does not take account of drug use that is concentrated in certain age groups or a particular sex.*

The DDD/1,000/day is calculated from prescription data as

$$N \ x \ M \ x \ Q \ x \ 1,000 \ / \ DDD \ x \ P \ x \ D$$

where   N = number of prescriptions dispensed in the year

M = mass of each dose

Q = average dispensed quantity per prescription

P = mid-year Australian population

D = number of days in a year

Similarly, comparisons of drug use at regional levels can be made for cardiovascular drugs where the majority of prescriptions are subsidised by the PBS/RPBS. However, estimates for non-subsidised prescriptions are only available at national level. This means that for the

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[*]   It should be noted that, for most of the study period, written authority from the Health Insurance Commission was not required for prescribing clofibrate and so it was more readily available than cholestyramine and colestipol.

management of some conditions, such as hypertension, estimates of community drug use at regional and State and Territory levels would not be complete for older medications such as diuretics and beta blockers which are usually priced below the general copayment. Where regional comparisons can be made, they should be adjusted for factors such as the number of safety net cards issued and the number of people entitled to concessional status (Harvey 1991). Further, the interpretation of regional comparisons may be heavily biased by different prescribing patterns of doctors.

The usefulness of the DUSC database for monitoring cardiovascular disease would be enhanced if prescription use and costs for subsidised and non-subsidised drugs were recorded and available at the patient level and included patient demographic characteristics, indication for drug use, and geographic location of both prescribing doctor and dispensing pharmacy. The collection of data items that facilitate record linkage may be of use as well.

Limitations

The DUSC combined database does not include any patient identifying or sociodemographic data. Therefore it is not possible to estimate the number of people receiving treatment with any type of drug, nor is it possible to monitor drug use by sex, age or population subgroups.

The database does not include any information on the condition for which the drug has been prescribed. This makes it difficult to use the database to monitor drug use for specific conditions, particularly for those drugs that can be used for multiple indications.

The combined database does not include any information on over the counter drugs (except for S3 Recordable), public hospital drug usage or supply of highly specialised drugs to outpatients under section 100 of the National Health Act (Commonwealth Department of Human Services and Health 1996).

Information on costs is only available for prescriptions subsidised by the PBS/RPBS. Similarly, information at regional and State and Territory levels is only available for subsidised drugs. This has limitations for older drugs with generic competition as they are usually priced below the general copayment and therefore their cost and level of use can only be estimated at national level.

Table 1: Percentage distribution of subsidised[a] and non-subsidised[b] prescriptions for drugs used for the management of cardiovascular disease in 1995

Type of drug (ATC code)	Subsidised community use	Non-subsidised community use
Beta blockers (C07)	72.2	27.8
Calcium channel blockers (C08)	98.0	2.0
ACE inhibitors (C02E)	99.9	0.1
Diuretics (C03)	85.1	14.9
Low ceiling diuretics, thiazides (C03A)	73.9	26.1
Low ceiling diuretics excluding thiazides (C03B)	94.4	5.6
High ceiling diuretics (C03C)	89.5	10.5
Potassium sparing agents (C03D)	84.9	15.1
Diuretics and potassium sparing agents in combination (C03E)	74.1	25.9
Other antihypertensive drugs (C02A, C02C, C02D)	88.9	11.1
Centrally acting antiadrenergic agents (C02A)	88.5	11.5
Peripherally acting antiadrenergic agents (C02C)	89.5	10.5
Agents acting on arteriolar smooth muscle (C02D)	84.2	15.8
Antiarrhythmics (C01B)	99.6	0.4
Anticoagulants (B01AA, B01AB)	78.2	21.8
Antiplatelet drugs (B01AC)	8.9	91.1
Thrombolytic drugs (B01AD)	97.4	2.6
Inotropic drugs (C01A, C01C)	88.5	11.5
Cardiac glycosides (C01A)	88.6	11.4
Cardiac stimulants excluding glycosides (C01C)	0.0	100.0
Nitrates (C01D)	98.7	1.3
Peripheral vasodilators (C04)	28.8	71.2
Lipid lowering drugs (B04)	99.8	0.2

(a)   Subsidised by the PBS/RPBS.

(b)   Estimated from the Pharmacy Guild Survey.

Source: Drug Utilization Sub-Committee of the Pharmaceutical Benefits Advisory Committee.

Medicare and Department of Veterans' Affairs medical benefits data

Medicare data

Medicare is Australia's national health insurance scheme (Box 4). The scheme is administered by the Health Insurance Commission (HIC) and has been in operation since 1 February 1984 (Health Insurance Commission 1995).

The Health Insurance Commission processes all claims relating to private medical services provided out of hospital and medical services for private patients in public and private hospitals. It is from this claims database that Medicare statistics are derived.

Box 4: Medicare

Under Medicare, all Australian residents, except foreign diplomats and their dependants, are entitled to free treatment in public hospitals as public patients or outpatients. Medicare also provides rebates for a range of other medical, optometrical and dental services. The benefits paid are based on the schedule of fees set by the Government. Limited benefits are available to short-term visitors from countries that have reciprocal health care arrangements for Australian citizens.

For out-of-hospital services, Medicare pays a benefit of up to 85% of the schedule fee (providing the benefit does not exceed the charge for the service), with a maximum gap between the schedule fee and benefit of $50.00 (indexed annually). If a practitioner directly bills the Health Insurance Commission for any service then the amount payable to the practitioner is the Medicare benefit and the patient must not pay any additional amount (Australian Institute of Health and Welfare 1996a). Otherwise the patient pays the difference between the schedule fee and the Medicare benefit. For services provided to private patients in private or public hospitals, the Medicare benefit is 75% of the schedule fee.

Under Medicare, benefits are payable for most privately provided medical services (for example, benefits are not payable for cosmetic surgery). Since 1995, changes to the National Health Act known as the private health insurance reform, have enabled individual private health funds to pay over the schedule fee for in hospital services if the fund has a Medical Purchaser Provider Agreement with the doctor concerned. For privately rendered medical services not covered by private health insurance reform contracts, private funds are able to offer insurance to cover the gap between the Medical Benefits Schedule fee and the benefit for medical services provided to private patients in hospital (i.e. 75% of the schedule fee). For non admitted patient services, and for admitted patient services not covered by private health insurance, amounts charged by the doctor above the Medical Benefits Schedule fee are not covered by insurance.

Medicare has a safety net scheme to protect patients whose accumulated 'gap' payments (i.e. the difference between the schedule fee and the Medicare benefit) in any one calendar year exceed a specified amount (indexed annually). Individuals and registered families who qualify for the safety net scheme are entitled to receive up to 100% of the schedule fee for the remainder of the calendar year.

The Medicare Estimates and Statistics Section of the Department of Health and Family Services maintains a number of summary files containing Medicare claims data. The main fields available in these files include:

- service provider number
- date of service
- date of processing
- Medicare item number
- bill type (i.e. direct billing or patient billing)
- fee charged
- benefit paid
- sex of patient
- age of patient
- postcode of patient
- State and Territory of patient.

Uses for monitoring medical care of cardiovascular disease

The Medicare Benefits Schedule covers a range of medical services specifically for cardiovascular disease. These include cardiovascular diagnostic procedures and investigations; vascular, cardiothoracic and cerebrovascular operations; cardiac and vascular

ultrasound; angiography; and cardiac nuclear imaging procedures. Although there is no indicator to separately identify which procedures and investigations occur in hospital, it is reasonable to assume that most are admitted patient related. Therefore Medicare data may be a useful source of data for examining trends and variations in cardiovascular service use among private hospital patients. However, this information can also be obtained from hospital admitted patient databases, where coverage is more complete than that of the Medicare database.

Medicare data can also be used to examine the costs to Government (i.e. benefits paid) of cardiovascular medical services.

Medicare statistics can be disaggregated by sociodemographic characteristics of patients such as sex, age, State and Territory, and region. The data have also been linked to other databases such as the Australian Bureau of Statistics socioeconomic indexes by area to enable examination of variations by factors such as socioeconomic disadvantage (McClelland 1991).

The usefulness of Medicare data for monitoring medical care of cardiovascular disease would be enhanced if data facilitating linkage to other databases were collected.

Limitations

General limitations

The major limitation of Medicare data is its coverage of services. It has been estimated that the Medicare claims database only provides information for about 75% of medical services in Australia (Deeble 1991). Services not covered by the Medicare data, since they do not qualify for Medicare benefits, include:

- admitted patient services provided to public patients in public hospitals;
- outpatient services provided by public hospitals;
- services given to eligible military service veterans and their dependants;
- services covered by workers' compensation schemes and third party motor vehicle insurance (however, these services can attract an interim benefit pending settlement of a court case);
- services given by public authorities and most government funded community health services; and
- services not necessary for patient care such as health screening services and health examinations for life insurance or employment purposes.

Services to public patients in public hospitals together with outpatient services provided by public hospitals account for approximately 17% of all medical services (Deeble 1991). The remainder of services not covered by Medicare account for 6 to 7% of all services.

Another limitation is that it is not possible to determine from Medicare data the nature of medical consultations provided by general practitioners and specialists. Even for specific procedures, there is no information on the underlying medical condition.

Care should be exercised in interpreting trends based on Medicare statistics. Changes in use of services over time can be due to many factors. These include changes to the Medicare Benefits Schedule; changes to the coverage of Medicare as a result of Government policy; changes in the mix of services provided in public and private hospitals; population growth and net migration; ageing of the population; the proportion of the population with private health insurance; and cost shifting (i.e. services previously provided free of charge by States

and Territories, that are now only available under Medicare) (Commonwealth Department of Health and Family Services 1996a).

State and Territory comparisons can be affected by differences in the mix of public and private patients in hospitals as well as differences in age structures between States and Territories. These factors may need to be considered when undertaking State and Territory comparisons.

Limitations for monitoring cardiovascular medical care

The major limitation of the database for monitoring cardiovascular medical care is that services provided to public patients in public hospitals are not covered. This means that where Medicare data suggest that use of a particular cardiovascular procedure is low, this may be because the procedure is routinely undertaken in public hospitals and so is under counted in the Medicare database.

The use of cardiovascular medical services among the elderly may also be underestimated in the Medicare claims database because it does not include data relating to services given to eligible military veterans and their dependants. To minimise the effect of this in the analysis presented in this report, Medicare data have been supplemented by medical benefits data from the Department of Veterans' Affairs.

Department of Veterans' Affairs medical benefits database

The Health Program of the Department of Veterans' Affairs (DVA) provides eligible military veterans and their dependants access to medical services, allied health services, pharmaceuticals, community nursing, respite care and hospital treatment (Australian Institute of Health and Welfare 1994; Repatriation Commission and the Department of Veterans' Affairs 1995).

The DVA maintains a database of information relating to medical services for eligible persons. This database codes services using the same item numbers used in the Medicare Benefits Schedule.

DVA medical benefits data have been combined with Medicare data in this report to account for the fact that eligible military service veterans and their dependants tend to use both Medicare and DVA services.

National Hospital Morbidity Database

Hospital morbidity data collections are maintained by all State and Territory health authorities. The collections are based on admitted patient episodes and include demographic, diagnostic, procedural and duration of stay information. The data items supplied to the Australian Institute of Health and Welfare by all the States and Territories are those which make up the national minimum data set for institutional health care (National Health Data Committee 1995). The database held at the Institute is called the National Hospital Morbidity Database. The latest year for which data are available and have been published is 1996–97 (Australian Institute of Health and Welfare 1998).

Diagnostic information and procedures performed in Australian hospitals are classified according to the Australian version of the International Classification of Diseases, Version 9, Clinical Modification (ICD-9-CM).

Statistics on hospital use are referred to as hospital separation statistics as most of the data are based on information recorded at the end of patients' hospital stays rather than at the

beginning (Australian Institute of Health and Welfare 1996a). This is because the length of stay and the procedures carried out are then known, and the diagnostic information is more accurate.

The National Hospital Morbidity Database includes the following items:

- data set year;
- establishment identifier;
- sector, that is, public or private;
- sex;
- date of birth (or age or age group, where date of birth not supplied);
- country of birth;
- Aboriginality;
- State and Territory and area of usual residence;
- patient accommodation status;
- compensable status;
- insurance status;
- episode type;
- admission and discharge dates;
- total number of leave days;
- length of stay;
- source of referral;
- separation mode;
- external cause and place of occurrence of external cause;
- diagnosis related group (AN-DRG);
- major diagnostic category;
- diagnoses (principal and up to 20 additional diagnoses in 1995–96); and
- procedures (principal and up to 28 additional procedures in 1995–96).

Uses for monitoring medical care of cardiovascular disease

Hospital admitted patient data are useful for monitoring the use of surgical and medical procedures performed in hospital. The data are also useful for monitoring use of hospital resources.

The data cannot be directly used to monitor disease incidence. However, Boyle and Dobson (1995a) estimated rates and numbers of heart attacks in Australia from hospital morbidity data after adjusting by a factor determined from validation studies from the Newcastle MONICA Project.

The usefulness of hospital morbidity data would be enhanced by including unique patient identifiers to distinguish between first admissions, readmissions and transfers. Data items enabling record linkage to other databases would also be desirable. Record linkage has proved valuable in Western Australia (WA linked database) and New South Wales (part of HOIST data warehousing facility), where service level morbidity data were linked to several data sets (including mortality, cancer and midwives) to create data sets at the person level which can be used in health research. With this type of data development, it may be possible

to use hospital morbidity data to monitor the incidence of hospital-treated cardiovascular diseases at reasonable cost.

Limitations

General limitations

Hospital separations data have limitations as indicators of community morbidity (Australian Institute of Health and Welfare 1996a). Sick people who do not use hospitals are not counted, nor are people with undetected conditions. Hospital use is influenced by factors other than morbidity, such as availability of beds, admission policies and social factors (Bennett et al. 1995). Further, it is not possible to count patients individually. This is because people who are admitted more than once, or to more than one institution, are counted on each occasion and data that distinguish first admissions from readmissions or transfers are not collected.

Although diagnosis and procedure information is recorded using the national standard ICD-9-CM, there may have been some minor variation in its use among the States and Territories and over time.

Although all States and Territories provide for the identification of Aboriginal status in their hospital morbidity databases, the information is of variable reliability (Australian Institute of Health and Welfare 1996b).

The lack of a unique national patient identifier means that it is not possible to monitor long-term outcomes or undertake survival analysis of patients admitted to hospital.

Limitations for monitoring cardiovascular medical care

The accuracy of diagnostic coding is a major issue for monitoring cardiovascular medical care. Several Australian studies have examined the accuracy of recording acute myocardial infarction (ICD-9-CM 410) in hospital admitted patient records. The latest such study by Boyle and Dobson (1995b) found that only about two thirds of cases with a hospital discharge diagnosis code of ICD-9-CM 410 actually had a definite acute myocardial infarction by an internationally set epidemiological standard. This highlights the difference, in this study, between the clinical and epidemiological definitions of acute myocardial infarction. The accuracy of hospital separations data for cardiovascular conditions other than acute myocardial infarction has not been assessed.

Survey of Morbidity and Treatment in General Practice in Australia 1990–91

The Survey of Morbidity and Treatment in General Practice in Australia was conducted by the Family Medicine Research Unit at the University of Sydney from October 1990 to October 1991. The survey was the third national survey of morbidity in general practice undertaken in Australia. Previous surveys were conducted in 1962–63 and 1969–74 (Bridges-Webb et al. 1992).

The survey design involved a random sample of general practitioners, stratified by State. The final sample included 495 general practitioners, representing 50.4% of those contacted and eligible to participate. Each participating general practitioner recorded details of all surgery and home doctor-patient encounters for two periods of one week, six months apart. The total sample was spread evenly throughout the year. Weighting factors were applied to records at the State and Territory level to produce balanced national estimates.

Data items collected include:

- age of patient;
- sex of patient;
- patient's reasons for encounter (up to 3 per encounter);
- diagnoses or problems managed (up to 4 per encounter);
- types of pathology, other tests, and X-ray investigations ordered or undertaken;
- information regarding referrals to specialists or health professionals (up to 2 per encounter);
- admissions to a hospital or nursing home; and
- planned follow-up within three months of the encounter.

For each problem managed, further information was collected on prescriptions written or other treatments provided (up to 4 per problem managed) as well as whether the problem was a new or old problem.

The unit record data set provided to the Australian Institute of Health and Welfare includes non-identifiable information relating to 98,789 patient encounters at which 145,645 problems were managed. Problems managed were coded to the International Classification of Primary Care (ICPC). A brief description of the ICPC and its classification of cardiovascular disease is provided in **Appendix D**. The list of treatments and generic cardiovascular drugs used in the survey are presented in **Appendix E** and **Appendix F**, respectively.

Detailed information about the survey methodology can be found in Bridges-Webb et al. (1992).

Uses for monitoring medical care of cardiovascular disease

Data from the Survey of Morbidity and Treatment in General Practice in Australia can be used to give a picture of cardiovascular morbidity and its treatment in general practice in Australia. The data are particularly useful for giving a snapshot of the general practice management of chronic cardiovascular conditions such as hypertension. However, the data are less useful for acute conditions such as heart attack, where a patient would normally go straight to hospital rather than consult a general practitioner.

Data relating to cardiovascular disease can be analysed by sex, age group and State and Territory. However, as noted above, the results of such analyses for specific cardiovascular conditions must be interpreted with care.

The survey data are very useful for linking drug and other treatments to specific diagnoses. Information on prescriptions written is available at the generic drug level as well as major drug group and drug subgroup levels. Information on other treatments for problems managed is also available at a detailed level.

As well as providing information on the management of cardiovascular conditions, the survey can provide information on patterns of prescribing cardiovascular drugs in general practice.

Data from the 1990–91 survey have been compared to data from the 1969–74 morbidity and prescribing survey (Bridges-Webb et al. 1992).

A comparable continuous survey on morbidity in general practice, run by the General Practice Statistics and Classification Unit (a collaborating unit of the University of Sydney and the Australian Institute of Health and Welfare) commenced in April 1998. Its usefulness for cardiovascular monitoring has been enhanced by the capacity to link information on all aspects of treatment to problems managed and by collecting more patient sociodemographic information, such as identification of non-English-speaking background and Indigenous status.

Limitations

Bridges-Webb et al. (1992) have described several limitations of the 1990–91 survey:

- the survey only included general practitioners working in private practice on a fee for service system, i.e. no salaried practitioners from the public or private sectors were included;

- the survey does not give a picture of the incidence or prevalence of disease in the community, rather it describes what is happening in general practice consultations;

- the survey provides a snap shot of how illness is managed in general practice but the results cannot be extended to conclusions about disease episodes or the long term treatment of patients with chronic disease;

- the survey only captures information about the problems managed during the recorded encounters and does not include information about any other problems not treated at the encounter;

- similarly, the survey only includes information about the prescriptions issued and treatments recorded for problems managed at the recorded encounter, i.e. prescriptions and treatments at previous encounters, even for the same problem, are not included; and

- tests and investigations ordered or undertaken, referrals to specialists and health professionals, admissions to a hospital or nursing home, and planned follow-up cannot be directly linked to a specific problem unless only one problem was managed at the recorded encounter.

The Family Medicine Research Unit has conducted several studies to examine the reliability and validity of the data recorded by general practitioners in this survey. In a collaborative study with the University of Queensland, it was found that general practice data obtained from encounter forms, such as those used in the Survey of Morbidity and Treatment in General Practice in Australia, were more comprehensive and coded more reliably than data drawn from medical records (Britt et al. 1996). In another collaborative project with Monash

University, the Family Medicine Research Unit examined the reliability and validity of the data collected by general practitioners in active data collections (H Britt, personal communication). It was found that the data collection method used in the Survey of Morbidity and Treatment in General Practice in Australia 1990–91 provides a reliable overview of the morbidity managed in general practice. It was also found that morbidity data recorded at a patient encounter are reliable and valid at International Classification of Primary Care chapter level. However, at the individual rubric level (ICPC 3-digit code), the validity and reliability of the data are less certain because of the considerable variance between individual practitioners in the selection of the label to describe the problem managed (H Britt, personal communication). This has implications for the data presented in this report, as results are presented for specific cardiovascular conditions as well as the cardiovascular chapter. These results must be interpreted with care, particularly as they have been further broken down by sex, age, prescriptions written and other treatments provided.