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Report of the National Health Information Management Group Working Party on Health Outcomes Activities and Priorities, September 1996

Introduction

Background

The objectives of the National Health Information Development Plan (NHIDP) include the development of:

- clinically specific measures of health outcomes in relation to major health problems, for incorporation in clinical information systems;
- generic measures of health outcomes; and
- indicators of the performance of the health system in achieving health gain.

At its October 1995 meeting, the Australian Health Ministers' Advisory Council (AHMAC) noted that much work was being done in Australia towards these objectives, and asked the National Health Information Management Group (NHIMG) to 'coordinate an assessment of current activities relating to health outcomes and bring back a consolidated report, including budget implications, to the February 1996 AHMAC meeting'.

In response to this, the NHIMG engaged the consultant Halcyon Solutions to:

- review and report on current work in Australia on the development of generic and clinically specific measures and indicators of health outcomes;
- identify areas of priority, if any, for the development of information relating to health outcomes where there is, at present, little or no activity; and
- advise on how the highest priority areas should be addressed over the next three years.

Halcyon Solutions subsequently carried out a national survey of health outcomes activities, with the support of the Australian Health Outcomes Clearing House. The survey showed that numerous developmental projects on health-related measures were being labelled as 'health outcomes' projects, but in many instances the measures being developed were process or output measures rather than outcome measures (Harvey 1996). From the survey report, the NHIMG concluded that confusion in health outcomes nomenclature was a major barrier to progress in fulfilling the objectives of the NHIDP. The NHIMG thus recommended to the February 1996 AHMAC meeting that there was '... an urgent need to develop an agreed framework, classification and terminology for the range of health outcomes activities currently being undertaken'.

The Working Party on Health Outcomes Activities and Priorities was therefore set up to use the findings of the Halcyon Solutions' report to make recommendations on a consistent national approach to the classification of health outcomes information.

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A parallel issue was the need for AHMAC to decide whether or not to support the Australian Health Outcomes Clearing House, which had been established at the Australian Institute of Health and Welfare. In the context of its deliberations on a consistent national approach to the classification of health outcomes information, the Working Party was also asked to recommend whether or not there was a need for the Clearing House, and if there was, what its role should be.

Terms of reference

The Working Party addressed the following terms of reference:

- to develop a framework for reporting on current work, and work done to date, on the development and standardisation of health outcome indicators. This framework should be applicable to generic and clinically specific measures and indicators of health outcomes, including outcomes pertaining to the national goals and targets;
- based on this framework, to identify priority areas for the development and/or standardisation of information on health outcomes;
- to prepare standard definitions of the terms relating to health outcomes, measures and indicators of health outcomes, and related concepts, and to recommend the uniform adoption of this terminology; and
- to provide advice on the need for and, if necessary, the role of, the Australian Health Outcomes Clearing House.

The Working Party was asked to report to the NHIMG by July 1996. Members anticipated that the party would dissolve when it had reported to the NHIMG, unless the NHIMG requested otherwise.

Membership

The final membership of the Working Party was as follows:

Dr Michael Frommer (chair), NSW Health Department

Dr Michael Ackland, Victorian Department of Human Services

Dr John Donovan, Australian Institute of Health & Welfare

Ms Lesley Paton, Commonwealth Department of Health & Family Services

Dr Ian Ring, Queensland Department of Health (NHIMG member)

Mr Peter Williams, NSW Health Department (NHIMG member)

The Australian Institute of Health & Welfare provided the secretariat (successively through Ms Tanya Wordsworth and Mr Ian Lester).

Members of the Working Party gratefully acknowledge input from the following people, who attended some of the Working Party's meetings:

Ms Jenny Booth, Commonwealth Department of Health & Family Services (representing Ms Paton)

Mr Greg Curry, NSW Health Department (representing Mr Williams)

Mr Richard Eccles, Commonwealth Department of Health & Family Services

Mr Tony Greville, Australian Institute of Health & Welfare

Mr Roy Harvey, Halcyon Solutions

Dr Richard Madden, Australian Institute of Health & Welfare

Ms Jan Sansoni, Australian Institute of Health & Welfare (who gave a presentation on the Australian Health Outcomes Clearing House)

Mr Geoff Sims, Australian Institute of Health & Welfare.

A framework for health outcome indicators

Objectives

The Working Party agreed that a nationally consistent framework for health outcome indicators should fulfil three purposes or objectives. It should:

- facilitate systematic identification of indicators (including information on the level of development of existing indicators, and areas where indicators are lacking);
- help set priorities for developing mechanisms of monitoring outcomes and progress towards targets (i.e. priorities for information development); and
- facilitate comparisons of indicator data (by promoting standardisation of indicators and analyses).

Specifications

Members also agreed on desirable characteristics of a framework. In addition to meeting the objectives listed above, the framework should:

- be easy to understand, implement and use;
- be compatible with existing health information models and frameworks, especially the National Health Information Model;
- have the capacity to contribute to the development of existing models and frameworks;
- accommodate indicators reflecting different perspectives on the health system (e.g. indicators of the outcomes of medical interventions for individual patients versus the outcomes of population-based health promotion programs); and
- accommodate a variety of ‘indicator taxonomies’.

In relation to the last point, members listed indicator taxonomies. Indicators can be classified according to the:

- type of outcome (e.g. risk level, morbidity, mortality, or quality of life);
- type of intervention (prevention, treatment, maintenance etc., or clinical intervention with an outcome for an individual vs population-based intervention with an outcome for a community);
- stage of indicator development (with a spectrum from concept through validation to standardisation);
- types of data source (routine data collection, special purpose data collection, repeated surveys, or ad hoc surveys);
- availability of data (data available now, soon, later, or data unavailable pending research);
- types of measures (generic vs clinically specific);
- manner in which the indicator is used or reported on; and
- statistical characteristics of outcome information (measures vs indicators, or observation vs estimation).

Scope

This report concentrates on the development of a framework for information on health outcome indicators. Consideration of other types of indicators, such as performance indicators and indicators of quality, was beyond the scope of the Working Party’s terms of reference.

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Moreover, members agreed that no single framework could cover information on outcome indicators for all types of health-related phenomena. The Working Party therefore focused on indicators of the outcomes of interventions for specific health conditions, acknowledging that a separate approach would be needed for institutional or system-wide indicators.

Options

With the objectives and specifications of the NHIDP in mind, the Working Party reviewed a selection of existing approaches to the classification of health outcome indicators. These included the framework described in the technical appendix to the Halcyon Solutions report (Harvey 1996); a framework for classifying outcomes relating to Australia's National Health Goals and Targets outlined in the January 1996 NHIMG paper, 'Data requirements for National Health Goals and Targets'; and the National Health Information Model itself.

Members agreed that the framework proposed by the NHIMG for measuring goals and targets had major strengths. It clearly had the potential to fulfil the required objectives, had a simple structure and was easy to understand, could accommodate a variety of perspectives on health outcomes, was indicator-focused rather than attempting to cover all aspects of health outcomes, and could be applied to a variety of types of interventions and outcomes. A further strength of this framework was its applicability to particular health problems, especially specific diseases.

In view of the strengths of the framework proposed by the NHIMG for measuring goals and targets, the Working Party resolved to recommend that the national framework should be based on it. The suggested framework, described in the following text, is an extension of the NHIMG framework, incorporating modifications based on an existing mental health outcome classification (Mrazek & Haggert 1994). In particular, it was seen as desirable to divide preventive interventions into three components—universal, selective, and indicated preventive interventions.

Description of the framework

Framework structure and its relationship to the National Health Information Model

The proposed framework consists of a simple two-dimensional grid with three major columns and three major rows (Table A1.1). The grid as a whole refers to a specified health condition or problem and is applied to a specified population or subgroup; a separate grid must be drawn up for each combination of health problem and population or subgroup.

For example, a grid would be drawn up for outcome indicators referring to ischaemic heart disease in the general population; a separate grid would refer to diabetes in Aboriginal and Torres Strait Islander peoples.

Thus in National Health Information Model terminology:

- The grid refers to a state of wellbeing (the specified health problem) in a party or party group (the specified population or subgroup).
- The columns refer to types of interventions (or, in National Health Information Model terms, to health and welfare service events).
- The rows refer to types of indicators.

Table A1.1: Proposed outcome indicator framework

‘STATE OF WELLBEING’ FOR ‘PARTY (IN A ROLE)’					
Indicators	Prevention			Management	Maintenance
	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes					
Risk					
Process and quality					
System					

Columns

The three major columns are headed:

- Prevention
- Management
- Maintenance.

Column 1: Prevention

The term ‘prevention’ is reserved for interventions that occur before the diagnosis of an event is made.

Prevention aims to reduce the occurrence of new cases, decrease risk and/or increase protective factors that can be documented, delay the onset of illness, reduce the length of time that early symptoms continue, and/or halt a progression of severity. The scope of prevention may include, for example, interventions designed to alleviate symptoms of mental distress which do not constitute a diagnosable mental illness, and interventions designed to control abnormal glucose tolerance in pregnancy, which is of insufficient severity to constitute a diagnosis of gestational diabetes. There are three types of preventive interventions:

1. **Universal**—interventions targeted at the general public or a whole population group that has not been identified on the basis of individual risk for the specified health problem. The intervention is desirable for everyone in that group. Examples are:
 - antenatal care aimed at all pregnant women;
 - mass media programs on protection from sunlight;
 - immunisation;
 - screening of all neonates to detect phenylketonuria and cretinism; and
 - a program designed to prevent distress and divorce in couples who are planning a spouse relationship and who are not experiencing difficulties in their current relationship.

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2. **Selective**—interventions targeted at individuals or a subgroup of the population whose risk of developing the health problem is significantly higher than average. The risk may be imminent or it may be a lifetime risk. Risk groups may be identified on the basis of biological, psychological or social risk factors that are known to be associated with specific health problems. Examples are:
 - specific components of antenatal care for women who have previously had a high birthweight baby;
 - special care programs for low-birthweight infants;
 - support groups for elderly widows; and
 - cardiovascular disease risk-factor reduction programs for people with a family history of heart attacks.

3. **Indicated**—interventions targeted at high-risk individuals who are identified as having minimal but detectable signs or symptoms foreshadowing the specified health condition, or biological markers indicating predisposition to it, but who do not currently fulfil diagnostic criteria. These interventions can be applied to asymptomatic individuals with markers as well as to symptomatic individuals whose symptoms are insufficiently severe to warrant a diagnosis of a disorder. Examples are:
 - specific antenatal care programs for women with abnormal glucose tolerance in pregnancy;
 - a parent-child interaction training program delivering an intervention for children who have been identified by their parents as having behavioural problems;
 - administration of prophylactic antibiotics to people with valvular heart disease who undergo invasive dental procedures;
 - prescription of anti-hypertensive medications to people with elevated blood pressure who do not have diagnosed cardiovascular disease;
 - HIV testing of people who consider that they may have been exposed to HIV (note that the prevention outcomes may not apply to the person tested, but to his/her potential contacts); and
 - regular haematology testing of people taking immunosuppressive medication for inflammatory bowel disease, to detect early manifestations of bone marrow depression.

Column 2: Management

Management (treatment) interventions are therapeutic in nature, and are provided for individuals who meet diagnostic criteria (e.g. for mental illness, individuals who meet or are close to meeting diagnostic levels specified in the *Diagnostic and Statistical Manual of Mental Disorders* [American Psychiatric Association 1994]). Management involves case identification and standard treatment for the known disorder, which includes interventions to reduce the likelihood of future associated disorders.

Management aims to reduce the length of time the disorder exists, halt a progression of severity, prevent the recurrence of the original disorder, and prevent co-morbidity. Its coverage includes the patient's compliance with long-term treatment to reduce relapse and recurrence. Examples are:

- timely administration of thrombolytic agents to people diagnosed with acute myocardial infarction;

- breast-conserving surgery and radiotherapy and/or adjuvant chemotherapy for people diagnosed with breast cancer;
- programs to promote compliance with long-term medication regimens for the control of heart failure; and
- the use of asthma management plans for people with asthma.

Column 3: Maintenance

Maintenance interventions are supportive, educational, and/or pharmacological in nature, and are provided on a long-term basis to individuals with continuing impairment.

Maintenance interventions involve the provision of support and after-care services to the patient, including rehabilitation. Examples are:

- cardiac rehabilitation programs for people recovering from acute myocardial infarction; and
- programs to encourage appropriate physical activity for people who have prosthetic joints.

Rows

The three major rows are headed:

- Primary outcome indicators
- Risk indicators
- Process and quality indicators.

In addition, there is a fourth row headed System indicators.

Row 1: Primary outcome indicators

These cover disease incidence, prevalence and sequelae, ranging from mortality to quality of life. Examples are:

- the incidence of coronary heart disease among males aged 50–59 years in Western Australia;
- perinatal mortality rates in South Australia;
- the prevalence of non-insulin-dependent diabetes in the Aboriginal and Torres Strait Islander population of the Far West Area of NSW;
- the case fatality rate for acute myocardial infarction among patients admitted to hospitals in Victoria; and
- changes in quality of life scores before and after hip replacement surgery.

Row 2: Risk indicators

Risk indicators provide information about characteristics, variables or hazards which, if present for a given individual, make it more (or less) likely that this individual, rather than someone else selected from the general population, will develop a health problem. For example, a risk indicator for coronary heart disease (CHD) is age- and sex-specific smoking rates.

- In the context of prevention of CHD in the general population, this indicator could be placed in the universal prevention column.
- For the prevention of CHD in a high-risk population subgroup (e.g. people with a strong family history of CHD), it could be placed in the selective prevention column.

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- For the prevention of CHD in a subgroup of people who had previously had heart attacks, it could be placed in the indicated prevention column. If the population subgroup is unspecified, the indicator could straddle all three prevention columns.

A risk indicator for adverse sequelae of head injury comprises physiological measurements of blood oxygenation in the injured individual in the acute phase. This could be placed in the management column.

Row 3: Process and quality indicators

These refer to indicators of the provision of appropriate, high-quality interventions. It must be understood that process and quality indicators refer to the performance of interventions (as distinct from the effects of interventions on health or risk). Examples are:

- an indicator of adequate vaccine storage and cold-chain temperature control—where the vaccines are to be used for population-wide immunisation services, this indicator could be placed in the universal prevention column; where the vaccines are to be used in a population subgroup experiencing an epidemic of the vaccine-preventable disease, the indicator could be placed in the indicated prevention column.
- the proportion of Pap smears that yield adequate material for cervical cytology. This could straddle all three prevention columns.
- the proportion of acute myocardial infarction patients who receive thrombolytic therapy within a set time period, among those for whom it is indicated. This could be placed in the management column.
- the proportion of post-infarct patients who enter a cardiac rehabilitation program, among those for whom such a program is indicated. This could be placed in the maintenance column.

Row 4: System indicators

This category includes indicators that reflect system-wide action separate from the person- or population-focused action covered in the other three categories.

The system indicators row may straddle all or some of the columns. For example, the establishment of a national cardiovascular disease monitoring system covers, and contributes to, prevention, management and maintenance.

Limitations of the framework

The proposed framework concentrates on specific health problems and their prevention, including the enhancement of protective factors to reduce risk.

It does not capture the elements of health promotion that are driven by a focus on the enhancement of wellbeing (rather than an emphasis on illness). These health promotion interventions are provided for individuals, groups or large populations to enhance competence, self-esteem, and a sense of wellbeing.

Furthermore, the framework forces indicators of preventive interventions to be classified in relation to specific conditions. For example, smoking rates appear repeatedly and separately in relation to coronary heart disease prevention obstructive pulmonary disease prevention, and lung cancer prevention. The framework does not allow for a summation of the impact of preventive activity on morbidity from multiple causes, e.g. the impact of smoking cessation on numerous conditions in which smoking is a causative factor.

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As noted previously, the Working Party found it impossible to design a single framework that covered all outcome contingencies. A separate framework could be developed to accommodate outcomes of health enhancement initiatives.

Relationship with the terms ‘primary’, ‘secondary’ and ‘tertiary’ prevention

In the evolution of the proposed framework, members of the Working Party discussed parallels between the column headings ‘prevention’, ‘management’, and ‘maintenance’ on the one hand, and the terms ‘primary’, ‘secondary’, and ‘tertiary prevention’ on the other. There was a suggestion that these terms might be preferable to those proposed, because of their widespread established usage.

After some discussion, members agreed that the column headings ‘prevention’ (subdivided into ‘universal’, ‘selective’, and ‘indicated’), ‘management’ and ‘maintenance’ provided an indicator classification that reflected health service activity more explicitly and more comprehensively than the terms ‘primary’, ‘secondary’, and ‘tertiary prevention’. The key characteristic of the schema proposed for adoption is that management and maintenance interventions are applied exclusively to conditions which fulfil diagnostic criteria, while the prevention rubrics allow for the classification of indicators that reflect interventions for important health problems that do not fulfil specific diagnostic criteria.

Table A1.2: Relationships between proposed framework and primary, secondary and tertiary prevention

	Primary prevention			Secondary prevention	Tertiary prevention
	Prevention			Management	Maintenance
Indicators	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes					
Risk					
Process and quality					
System					

Table A1.2 shows the relationship between the two classifications. ‘Primary prevention’ clearly corresponds to ‘universal prevention’, and may also cover ‘selective’ and ‘indicated prevention’ for some conditions. ‘Secondary prevention’ corresponds to ‘management’, but ‘selective’ and ‘indicated prevention’ may constitute ‘secondary prevention’ in some circumstances, and ‘maintenance interventions’ represent ‘secondary prevention’ in other circumstances. ‘Tertiary prevention’ clearly

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corresponds to ‘maintenance’, but there may be circumstances in which ‘tertiary prevention’ encompasses ‘management’ and even ‘indicated prevention’.

Worked examples

Table A1.3 shows how the framework can be applied to foot disorders associated with diabetes. Further examples covering indicators relating to coronary heart disease, developmental delay in children and bipolar (manic-depressive) disorder are being developed and will be provided separately to the NHIMG.

Table A1.3: Foot problems in people with diabetes (PWD) in Australia

Indicators	Prevention			Management	Maintenance
	Universal (Pop=PWD)	Selective (e.g. Pop=Aboriginal PWD)	Indicated (e.g. Pop=PWD with high risk foot/feet)		
Primary outcomes	<ul style="list-style-type: none"> % of PWD with active foot problems % of PWD requiring amputations 	<ul style="list-style-type: none"> % of <i>Aboriginal PWD with active foot problems</i> % of <i>Aboriginal PWD requiring amputations</i> 	<ul style="list-style-type: none"> % of PWD with active foot problems % of PWD requiring amputations due to diabetes <i>Health-related QOL of PWD with foot problems</i> 		<ul style="list-style-type: none"> <i>Health-related QOL^(a) of PWD after amputation</i> <i>2-year survival rates of PWD after amputation</i>
Risk	<ul style="list-style-type: none"> % of PWD who currently smoke % of PWD having an HbA_{1c} within 1%, 2%, or 3% of normal range 	<ul style="list-style-type: none"> % of <i>Aboriginal PWD who currently smoke</i> % of <i>Aboriginal PWD having an HbA_{1c} within 1%, 2%, or 3% of normal range</i> 	<ul style="list-style-type: none"> % of PWD with <i>high risk foot/feet who currently smoke</i> % of PWD with <i>high risk foot/feet having an HbA_{1c} within 1%, 2%, or 3% of normal range</i> 		
Process and quality	<ul style="list-style-type: none"> % of PWD having an HbA_{1c} measured every 6/12 months % of PWD having foot examinations every 6 months % of PWD appropriately referred to a podiatrist for foot care & treatment % of PWD who receive foot education % PWD who are satisfied with treatment 	<ul style="list-style-type: none"> % of <i>Aboriginal PWD having an HbA_{1c} measured every 6/12 months</i> % of <i>Aboriginal PWD having foot examinations every 6 months</i> % of <i>Aboriginal PWD appropriately referred to a podiatrist for foot care & treatment</i> % of <i>Aboriginal PWD who receive foot education</i> % of <i>Aboriginal PWD who are satisfied with treatment</i> 	<ul style="list-style-type: none"> % of PWD with <i>high risk foot/feet having an HbA_{1c} measured every 6/12 months</i> % of PWD with <i>high risk foot/feet having foot examinations every 6 months</i> % of PWD with <i>high risk foot/feet appropriately referred to a podiatrist for foot care & treatment</i> % of PWD with <i>high risk foot/feet who receive foot education</i> % of PWD with <i>high risk foot/feet who are satisfied with treatment</i> 	<ul style="list-style-type: none"> % of PWD with foot problems appropriately referred for foot care & treatment % of PWD with <i>active foot problems who are satisfied with treatment</i> 	<ul style="list-style-type: none"> % of PWD who <i>receive rehabilitation after amputation</i>
System	<ul style="list-style-type: none"> Guidelines developed and implemented for the clinical management of diabetes in NSW (blood glucose control, diabetic foot problems) Guidelines developed and implemented for the management of foot/leg ulcers (currently under development) 				

(a) QOL: Quality of life

Note: Indicators in italics have been identified in the process of completing this framework. There is currently no consensus about whether they should be collected. They should, however, be considered where interventions aimed at preventing foot problems in Aboriginal and Torres Strait Islander people or people with high-risk feet are being assessed.

Priority areas for development and/or standardisation of information on health outcomes

In the medium term, priority areas for the development and/or standardisation of information on health outcomes will emerge when the framework described previously is applied to existing information and current Australian health outcomes initiatives.

However, for the short term, the Working Party identified some obvious priorities which warrant immediate attention.

Accordingly, the following action steps were recommended.

- Standard definitions should be developed for all the existing indicators (recently endorsed by the Australian Health Ministers) listed in the 1996 NHIMG report to the Better Health Outcomes Overseeing Committee, *Priority Indicators for Reporting Progress Towards National Health Goals and Targets*. These definitions should be included in the *National Health Data Dictionary* (National Health Data Committee 1995).
- An expanded range of indicators of the outcomes of mental health services and related process, quality and system issues should be developed.
- Definitions of indicators relating particularly to treatment and maintenance outcomes in the other existing national priority areas of cardiovascular disease, cancer, and injury should be developed, standardised, and included in the *National Health Data Dictionary*.
- Because diabetes has recently been nominated as the fifth national priority area by the Australian health ministers, attention should be given to the development of definitions of indicators relating to outcomes of the prevention and treatment of diabetes and the complications of diabetes, and the maintenance of people with diabetes. Agreed standard definitions should be included in the *National Health Data Dictionary*.
- In view of national concern about the prevalence and management of asthma, definitions of asthma outcome indicators should be developed, standardised, and included in the *National Health Data Dictionary*.
- Standard definitions should be developed for terms describing, and indicators of, inequalities in health. These definitions should be included in the *National Health Data Dictionary*. They should encompass the following variables relevant to information on health inequalities—socioeconomic status, location (rural, remote, urban etc.), ethnicity, Indigenous status, and sex.

The Working Party further recommended that the NHIMG appoint a group to ensure that the aforementioned priorities are addressed promptly.

Standard definitions of terms relating to health outcomes

Principles

The Working Party agreed on the following principles for definitions relating to health outcomes indicators and concepts.

- Definitions should help people to understand the meaning of concepts and the situations in which specific indicators can be applied.
- Definitions should correspond to the general usage of the terms to which they refer. It is confusing for a term to have one meaning in general usage, and a different meaning in technical contexts of health outcomes measurement.

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- Furthermore, where a standard epidemiological definition of a health outcomes term exists, that definition should be retained.
- Definitions should be compatible with the National Health Information Model.
- Agreed standard definitions of health outcomes concepts and terms should be written into the *National Health Data Dictionary*.

Scope of definitions and consultation

Because of the limited time available, the Working Party concentrated on a relatively small number of health outcomes terms of universal importance. Specific recommendations for definitions of these terms are provided in the following text.

Dissemination of definitions and consultation process

The Working Party recommended that the NHIMG determine a process for the dissemination and endorsement of these definitions, and other standard definitions that might be put forward in the future. Definitions should be introduced in short published discussion papers distributed via the Australian Health Outcomes Clearing House mailing list. These discussion papers could invite feedback within a limited time period. Such consultation is important in gaining a wider acceptance of definitions.

Terms for definition

Health outcome

The definition of 'health outcome' used by AHMAC in 1993 is:

A change in the health of an individual, or a group of people or a population, which is attributable to an intervention or a series of interventions.

This definition emphasises that:

- an outcome is a change in a health state, rather than a final health state;
- the term 'health outcome' applies to an individual, groups or populations, so it can be used in a clinical setting, a community setting or a population setting; and
- the change in health is attributable to one or more intervention(s).

Members of the Working Party were unhappy with this definition because it seemed to imply that health outcomes were entirely attributable to health system intervention(s), and did not appear to recognise the multiplicity of determinants of health.

They therefore recommended that 'health outcome' be re-defined as:

A change in the health of an individual, or a group of people or a population, which is **wholly or partially** attributable to an intervention or a series of interventions.

The Working Party also recommended that the NHIMG should review the National Health Information Model definition of an 'outcome'. The present definition is as follows:

A recorded change in the wellbeing of a party which is expected or presumed to be, or to have been, caused by a health and welfare service event ...

And the supporting text emphasises a somewhat implausible one-to-one relationship:

Each outcome must be ... produced by one and only one health and welfare service event.

The Working Party recommended that a re-definition of 'outcome' in the National Health Information Model should take account of the concept of total or partial attributability incorporated in the proposed new definition of 'health outcome'.

Health outcome indicator

The Working Party proposed the following definition of a 'health outcome indicator', based on the definition of an outcome-related (performance) indicator in the health and welfare field proposed by Armstrong (1994):

A health outcome indicator is a statistic or other unit of information which reflects, directly or indirectly, the effect of an intervention, facility, service or system on the health of its target population, or the health of an individual.

This definition emphasises that a health outcome indicator:

- reflects the effect of actions, systems etc. on health;
- can apply to the outcomes of discrete interventions as well as elements of health service organisation; and
- can be applied to individuals, groups or populations, so it can be used in a clinical setting, a community setting or a population setting; and can reflect an outcome either directly or indirectly.

In relation to the last point, Harvey (1996) makes the distinction between the term 'measure' and a specific usage of the term 'indicator':

- a measure provides direct measurement of a variable or a change in it, while
- an indicator provides indirect information about some phenomenon.

Harvey (1996) points out that the same measurement may be a measure of one phenomenon and an indicator of a different phenomenon. For example, an age-standardised death rate may be a measure of mortality as well as an indicator of population health.

Working Party members agreed that in general usage the term 'indicator' has both meanings. The proposed definition of 'health outcome indicator' (which can reflect an outcome either directly or indirectly), together with the context, obviates the need for separate definitions of measure and indicator.

Generic and condition-specific indicators

The Working Party recommended retaining Harvey's distinction between generic measures and clinically specific measures (Harvey 1996), but suggested that they be renamed 'generic indicators' and 'condition-specific indicators'. The term 'condition-specific' covers a wider range of situations than the term 'clinically specific'.

- A generic indicator provides information on health, perceived health or a specific dimension of health using measurement methods that can be applied to people in any health condition. Examples are functional status profiles and multi-dimensional profiles of health-related quality of life.
- A condition-specific indicator provides information on specific clinical conditions or health problems, or aspects of physiological function pertaining to specific conditions or problems. Examples are the incidence of invasive carcinoma of the cervix and the prevalence of diastolic blood pressure >100 mmHg.

Association and attribution

In view of the question of attributability built into the AHMAC definition of health outcome, the Working Party felt the need to reiterate standard epidemiological

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definitions of association and attribution, and recommended their inclusion in the *National Health Data Dictionary*:

- An association exists between two phenomena (such as an intervention and a health outcome) if the occurrence or quantitative characteristics of one of the phenomena varies with the occurrence or quantitative characteristics of the other.
- One phenomenon is attributable to another if there is a causal link between the phenomena. Attribution depends upon the weight of evidence for causality.

Association is necessary (but not sufficient) for attribution—associations may be fortuitous or causal. The term ‘relationship’ is synonymous with association.

Definitions of terms in the proposed framework for health outcome indicators

The following terms are defined in previous text:

Interventions:

- universal prevention
- selective prevention
- indicated prevention
- management
- maintenance.

Indicators:

- primary outcome indicator
- risk indicator
- process and quality indicator
- system indicator.

NHPA priority indicators mapped to the NHIMG health outcomes framework

To facilitate systematic identification of indicators, help set priorities for developing mechanisms of monitoring outcomes and progress towards targets, and to facilitate comparisons of indicator data, the priority indicators for four of the National Health Priority Areas are mapped to the NHIMG framework.

Cardiovascular health

Indicators	Prevention			Management	Maintenance
	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes	2.1.2 (new cases)			2.1.2 (recurrent cases) 2.12.2 2.13.5	2.12.2
Risk factors	2.6.1	2.3.1 2.3.2 2.5.1 2.6.3 2.7.2 2.8.2 2.9.3			
Process and quality	2.10.2 2.11.2 (community) 2.11.4	2.11.2 (priority population)	2.11.1	2.11.6	2.13.3 2.13.4
System					

Note: Priority indicators that could not be mapped to the framework are: 2.1.1, 2.2.1, 2.2.2, 2.2.3, 2.2.4. Those in italics denote that either assignment is feasible.

Cancer control

Indicators	Prevention			Management	Maintenance
	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes	3.1.1, 3.1.3, 3.1.5, 3.1.9, 3.1.11, 3.1.13, 3.3.2, 3.3.3, 3.3.4, 3.3.5, 3.3.6	3.1.7 3.2.1 3.2.2		3.3.15, 3.3.16, 3.3.18	
Risk factors		2.3.1, 2.3.2 (see CVD chapter)			
Process and quality					3.4.1
System	3.8.1				

Note: Priority indicators that could not be mapped to the framework are: 3.1.2, 3.1.4, 3.1.6, 3.1.8, 3.1.10, 3.1.12 and 3.1.14.

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Injury prevention and control

Indicators	Prevention			Management	Maintenance
	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes	4.6.2, 4.8.2, 4.14, 4.15			4.1.2, 4.3.3, 4.3.4, 4.5.2, 4.5.5, 4.6.1, 4.9.2, 4.10.1, 4.11.2, 4.12.1	4.13.1
Risk	4.9.3	4.11.4			
Process and quality	4.11.5	4.11.3			
System					

Note: Priority indicators that could not be mapped to the framework are: 4.1.1, 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6, 4.3.1, 4.3.2, 4.4, 4.5.1, 4.7.1, 4.7.2, 4.9.1, 4.11.1.

Mental health

Indicators	Prevention			Management	Maintenance
	<i>Universal</i>	<i>Selective</i>	<i>Indicated</i>		
Primary outcomes	5.1.1 (new cases)			5.1.1 (recurrent cases) 5.1.2	
Risk					
Process and quality	5.2.1				5.2.5
System					

Note: Priority indicators that could not be mapped to the framework are: 5.3.1, 5.3.2.

Appendix 2

Prioritisation of indicators for health outcomes reporting in the National Health Priority Areas

Background

The Better Health Outcomes Overseeing Committee (BHOOC), at its meeting in January 1996, requested the National Health Information Management Group (NHIMG) to provide it with a concise list of priority indicators for reporting progress on the National Health Goals and Targets (NHGT). A maximum of 15 to 20 indicators were envisaged for each of the four focus areas, namely cardiovascular health, cancer control, injury prevention and control and mental health.

The request was made in view of a large number of indicators required for reporting progress in the four focus areas—a total of 132 indicators excluding those relating to health inequalities—a number too large for efficient and objective reporting. The indicators were designed and developed by the NHGT implementation working groups, established by a joint Australian Health Ministers' Advisory Council (AHMAC)/National Health and Medical Research Council (NHMRC) Working Group in 1993. The report *Better Health Outcomes for Australians*, referred to as the BHO report, catalogues these indicators and the year 2000 targets, and documents the rationale for designing the indicators and setting targets (Commonwealth Department of Human Services and Health 1994).

The NHIMG asked the Australian Institute of Health and Welfare (AIHW) to provide it with a select list in each focus area. The number of indicators recommended by the Institute for reporting on cardiovascular health (19) falls within the 15–20 specified by BHOOC; however, a slightly larger number of indicators were selected to adequately monitor cancer control (26) and injury prevention and control (26). Only six indicators could be identified for reporting on mental health from the BHO list, reflecting the current paucity of data covering this focus area. In addition, several sub-indicators were also selected for priority reporting. However, for the purpose of this report all these have been considered as separate indicators.

Two indicators were also identified for healthy lifestyles. These indicators, which relate to alcohol consumption, have relevance to more than one focus area.

The framework

The prioritisation of indicators was guided by a health outcomes oriented NHGT framework, developed to inform the indicator selection process. The framework provided a means of achieving a balance among indicators for monitoring and reporting, while avoiding reliance on data availability. The elements of this particular framework included three different types of outcomes—namely overall, intermediate and process outcomes—in a population health context (National Health Information Management Group 1996).

Assumptions that form the basis of an indicator's relationship to health goals need to be clearly spelled out; where possible, the causal mechanism to identified actions/interventions also needs to be stated. It is also important to put in a proper perspective the strategies used to reach the target, as well as the assumptions underpinning these strategies. Besides, absence of current activities should not influence the choice of an

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indicator. The NHGT framework helped put all these issues in proper perspective in prioritising indicators.

This framework has since been superseded by the NHIMG Health Outcomes Framework set out in Appendix 1.

Prioritisation of indicators

In developing the priority set, a balance was sought among indicators in the context of the NHGT framework. Indicators relating to all three types of outcomes—namely overall, intermediate and process outcomes—and reflecting as far as possible the current and planned health strategies, were selected. Since mortality, morbidity or quality of life indicators do not fully reflect the impact of strategies and interventions in short term, a well-balanced representation of intermediate and process outcome indicators, along with some overall outcome indicators, was attempted.

The relative proportion in which different types of outcome indicators were selected was specific to a focus area. Mortality and morbidity currently dominate the list of indicators for cancer control and injury prevention and control, and therefore have a higher relative representation than is the case for cardiovascular health. Indicators to monitor the impact of various screening and prevention strategies are generally lacking in all the focus areas. To monitor progress towards the national goals, intermediate and process outcome indicators need to be further developed in all priority areas.

The Institute was guided by the following criteria in selecting indicators.

Data constraints

Current availability of data was not the principal determinant for prioritising an indicator, although it was important that the selected indicator does not require the collection of a whole new set of data. In the event, data constraint did not prove to be a strong consideration, because national data are currently not available for a large number of priority indicators (Table A2.1). Quasi-national information is obtainable for some of the indicators from States and Territories, and should be a useful source of information until such time as the national data are developed.

Table A2.1: Summary of data availability for the priority list of NHGT indicators

Focus area	Data available now	Data available in 1997–98	Data not available in 1997–98	Total
Cardiovascular health	7	8	4	19
Cancer control	15	10	1	26
Injury prevention and control	13	7	6	26
Mental health	1	2	3	6
Total	36	27	14	77

Design considerations

It is important that priority indicators are well-designed, clear and comprehensible to policy makers and service providers, with assumptions underlying their use clearly spelled out. The simplest indicators do not necessarily constitute the best measures.

Statistical sufficiency

Statistical sufficiency was an important consideration in selecting an indicator. Indicators providing summary statistics often do not fully utilise available information. It was therefore considered important that the selected indicator extracts the best possible information from the available datasets.

Overlap

Indicators included in the set should show limited overlap with each other. However, the elements of a goals and targets monitoring framework, though indicator-centred, cannot be viewed in isolation from each other. The predication of an indicator upon another in the set sometimes limits its usefulness, but a continuity of processes and interventions was retained in the priority list in view of the chronological dependence of health outcomes.

Priority groups

The majority of indicators selected address issues of greatest priority within a focus area as applicable to the total population. However, if the issue in question was limited to a particular age bracket or a population group, an indicator reflecting that priority was included in the set. Generic indicators, their statistical sufficiency notwithstanding, sometimes do not permit a clear insight into the core of an issue.

Thematic areas

Several different thematic areas exist under each focus area, particularly cancer control and injury prevention and control. For example, 22 goals under 12 thematic areas, with each thematic area represented by zero to five indicators, were proposed for reporting progress on injury prevention and control. No attempt was made to prioritise the thematic areas. However, the selection of NHPA indicators with respect to each thematic area was based on the following considerations:

- whether any current or potential interventions were likely to influence the indicator in the foreseeable future;
- whether an alternative indicator provided a more meaningful grasp on the issues related to a particular thematic area;
- whether the current or planned data systems would be able to monitor the impact of interventions through the indicators, and whether the indicators would be sufficiently sensitive to change; and
- whether the exclusion of one or more thematic areas may undermine the existing or developing inter-sectoral collaborative efforts.

Appendix 3

Data and statistical issues

Data issues concerning individual indicators have been discussed in relevant sections of the report. However, there are several issues involved in the monitoring of goals and targets that are common to one or more of the priority areas. These include not only the demographic and statistical techniques used for determining trends, but also those that pertain to age-standardisation, and establishment of baselines. Comparability of data sources, data availability and use of common terminology are other relevant issues. This Appendix provides information to assist in the interpretation of data and statistical techniques used in the report.

Sources of national data

Major databases accessed for preparing this report were:

Mortality database

Registration of deaths in Australia is the responsibility of the State and Territory Registrars of Births, Deaths and Marriages. Information on the cause of death is supplied by the medical practitioner certifying the death or by a coroner. Other information about the deceased is supplied by a relative or other person acquainted with the deceased, or by an official institution where the death occurred. Registration of death is a legal requirement in Australia, and compliance is virtually complete.

Information on deaths is provided by the Registrars to the Australian Bureau of Statistics (ABS) for coding of information and compilation into national statistics. AIHW maintains these data without unique identifiers in a national database.

Hospital morbidity database

Hospitals collect information about the patients they treat—both administrative and clinical data, including sociodemographic, diagnostic and duration of stay data—and the procedures performed.

This information is aggregated, on an inpatient basis, by the various State and Territory health authorities, and by the Department of Veterans' Affairs. The AIHW receives the collections from various agencies, and maintains these without unique identifiers in a national hospital morbidity database.

Hospital separations relating to injury do not currently include data from the Northern Territory, as appropriate ICD-9-CM E-code data to four digits were not available at the time the information was collated. The coverage of public and private hospitals also varies. Information on separations from private hospitals in Victoria, Western Australia, the Australian Capital Territory and the Northern Territory is not included in the national collection.

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National Cancer Statistics Clearing House database

The registration of cancer is required by law in each of the States and Territories, where the data are collected by cancer registries. The registries collect clinical and demographic information about people with newly diagnosed cancer. This information is collected from hospitals, pathologists, radiation oncologists, cancer treatment centres and nursing homes. Information related to deaths is collected by Registrars of Births, Deaths and Marriages.

By combining information from these sources, the National Cancer Statistics Clearing House at the Australian Institute of Health and Welfare, in conjunction with the State and Territory cancer registries, produces statistics on cancer incidence and mortality.

National Health Survey

This series of five-yearly surveys, conducted by the Australian Bureau of Statistics (ABS), provides national benchmark information on a range of health issues. The surveys collect information about illness and injury experience, episodes of hospitalisation, medical consultations, risk factors (including immunisation levels) and a variety of women's health issues.

Data from the 1989–90 National Health Survey have been used in this report. The results of the 1995 National Health Survey are still being processed and were not available for inclusion in this report.

Population Survey Monitor

The Population Survey Monitor (PSM) is a household survey conducted every three months by the Australian Bureau of Statistics (ABS). The PSM collects information from more than 3,000 households throughout Australia, and is a timely and effective means of obtaining data specific to emerging issues.

Baseline and monitoring information for some of the risk factor indicators included in this report was obtained through PSM. Further use of PSM in monitoring the NHPA goals and targets is planned.

Risk Factor Prevalence Survey

This population-based series of sample surveys, conducted by the National Heart Foundation, is an important source of information on health-related risk factors. Three surveys have been conducted—in 1980, 1983 and 1989—which provide measurements on blood pressure, blood lipids, height and weight, and information provided by respondents on smoking, alcohol consumption, exercise, dietary behaviour and use of oral contraceptives.

Other published surveys

Information on several indicators was derived from other published sources, appropriate references for which have been provided. Prominent among these sources are the ABS Apparent Consumption of Foodstuffs and Nutrients series and the Department of Community Services and Health's National Dietary Survey of Adults, 1983.

Data deficiencies

In the course of the preparation of this report, several deficiencies in the available data were noted. These range from incomplete coverage to poor quality, out-of-date information. Lack of sufficient data points was a major problem in determining trends for several indicators. Some of the problems encountered in the development and monitoring of priority indicators are described below. For a general discussion of gaps and deficiencies in Australian health statistics, see *Australia's Health 1996* (AIHW 1996a).

Mortality data remain the most comprehensively collected national data pertaining to health. However, problems relating to coding of all conditions listed on death certificates, inadequate coding of factors relating to fatal injury (such as type of injury, place of injury) and poor identification of priority populations remain. Proposed changes to death registration, and the introduction of automatic coding, will allow study of all conditions on death certificates. Inadequate coding of factors relating to fatal injury will be addressed with the introduction of ICD-10 coding in 1998.

A major difficulty encountered in using the mortality datasets was the poor identification of Indigenous people in New South Wales and Victoria, and no information on Indigenous people in Queensland. Trends analysis for indicators of Indigenous mortality were therefore limited to the Northern Territory, Western Australia and South Australia following Anderson et al. (1996).

Hospital separations data are limited in that they do not identify multiple admissions for the same illness episode. This problem is being addressed through the introduction of unique patient identifiers and record linkage.

There are also differences in procedures which affect the classification of cases and the way in which external causes codes (E codes) are assigned. Aggregations produced from different States therefore are not necessarily comparable. One particular area where there are significant differences involves the coding practices for intentional and accidental poisoning. This appears to be due to varying interpretations of the notion of 'intent', particularly in Queensland and Western Australia.

Table A3.1: Coverage of injury hospital separation data, all States and Territories (excluding Northern Territory)

State/Territory	Coverage
NSW	Public hospitals only
VIC	Public hospitals only
QLD	Public and private hospitals
WA	Public and private hospitals
SA	Public and private hospitals
TAS	Public and private hospitals
ACT	Public and most private hospitals.

There are currently no national data on the incidence, prevalence and consequences of mental illness and outcomes of care. The proposed National Survey of Mental Health and Wellbeing will provide baseline figures on incidence and prevalence of mental illness. However, the survey is not longitudinal and will provide little information on outcomes of care.

Appendix 3

National cancer incidence data are currently available for the period 1983–1990 only. It is expected that national data to 1993 will become available by 1997. Data are currently available for Queensland to 1990; New South Wales, Victoria and the Northern Territory to 1993; Western Australia, Tasmania and the Australian Capital Territory to 1994; and South Australia to 1995.

Although information on NHPA indicators for risk factors is available from several sources, ongoing national collections do not cover all the relevant risk factors. Moreover, few collections are representative of the whole population, include sufficient numbers of people from priority populations, use nationally agreed data-collection instruments, include routine validation of subjects' self reports, or include biological measurements where these are the most accurate and cost-effective measures (AIHW 1996a). For example, blood pressure and blood cholesterol levels are not measured in the National Health Surveys. Similarly, it is impracticable to obtain information on nutrient intake; hence the reliance upon apparent consumption data for monitoring some of the NHPA indicators.

Revised baselines and targets

For a number of priority indicators, baselines and targets have been revised from those originally published in the Better Health Outcomes for Australians (DHS 1994) report. These revisions were necessitated by several factors, the most prominent of which is the use of 1991 population data for age-standardisation. National data have also become available for many other indicators, the baselines and targets for which were previously based on semi-national information.

Statistical methods

Modelling of trends

A major aim of this report was to determine any underlying trends. This was done using a Poisson regression model, with a Poisson error distribution, a log link function and the natural log of population count treated as an 'offset' (Breslow & Day 1987, Brillinger 1986, Valkonen 1989).

For a particular disease or cause of death, the model may be expressed as:

$$\log_e(D_t) = \log_e(N_t) + \text{constant} + \alpha t$$

where t is the year of registration of death or incidence, D_t is the expected number of new cases or deaths registered in year t , N_t is the mid-year population in year t , and α is the estimated annual rate of increase or decrease. An annual rate of change based on α was derived as follows:

$$\text{Per cent change} = [e^\alpha - 1] \times 100$$

This model uses the assumption that the annual rate of change is the same across all of the years used in this estimation. More complex models could be applied, but were not justified due to the small number of data points available for estimating the model.

The model was used to estimate trends in age-standardised death rates, using mortality data for the period 1986–1994, and trends in age-standardised incidence rates, using incidence data for the period 1983–1990.

Fitted trend lines are represented on the graphs by an ochre line. These lines, however, have not been extrapolated beyond the latest available data point.

State and Territory data

Unlike the national data, the data presented for each State and Territory are averaged annual rates over three-year periods. By presenting data in this manner, natural statistical variation due to small numbers of cases within each State and Territory are averaged across the period, providing a more stable representation of the annual rates. Mortality data were averaged for the years 1986–88 and 1992–94, whereas the cancer incidence rates are based on data for the years 1983–85 and 1988–90.

Where average age-adjusted rates for two time periods were available for State and Territory data, the per cent change between these two points was calculated. The following formula was used:

$$\text{Per cent change} = (R_1 - R_2) / R_1 * 100$$

where R_1 = the average age-adjusted rate for the first time period, and

R_2 = the average age-adjusted rate for the second time period.

Per cent changes for the States and Territories (in the absence of trends analysis) provide an indication of change over the time period in question. No attempt was made to determine the significance of this change, nor was the statistical significance of differences in rates and proportions between the States and Territories tested.

Age-standardisation

To control for any effects of differing age structures, direct age-standardisation was applied to death rates, incidence rates, prevalence rates and hospital separation rates. The standard population used in age-adjustment was the total estimated resident population of Australia at 30 June 1991 (Table A3.2).

Table A3.2: Age composition of the Australian population by sex, 30 June 1991

Age group	Males	Females	Total
0–4	652,302	619,401	1,271,703
5–9	652,418	619,790	1,272,208
10–14	638,311	603,308	1,241,619
15–19	698,773	665,301	1,364,074
20–24	707,124	689,640	1,396,764
25–29	702,728	696,935	1,399,663
30–34	713,784	711,951	1,425,735
35–39	664,228	664,159	1,328,387
40–44	655,138	639,133	1,294,271
45–49	526,498	502,647	1,029,145
50–54	433,762	413,172	846,934
55–59	367,302	358,648	725,950
60–64	366,779	370,089	736,868
65–69	320,142	351,248	671,390
70–74	228,494	282,261	510,755
75–79	158,993	225,502	384,495
80–84	84,413	145,415	229,828
85 and over	44,220	110,027	154,247
Total	8,615,409	8,668,627	17,284,036

Source: Australian Bureau of Statistics.

Appendix 3

The usual convention of using age-specific rates for five-year age groups, as shown in Table A3.2, was followed using the following formula:

$$SR = \frac{\sum \{R_i \times P_i\}}{\sum P_i}$$

where SR = the age-standardised rate

R_i = the age-specific rate for age group i , and

P_i = the standard population in age group i .

It should be noted that trends in age-standardised rates estimated using this standard population may differ from those obtained using another standard population.

Indirect age-standardisation was used for computing the standardised mortality ratios (SMR) between Indigenous and non-Indigenous populations. For further details, see Anderson et al. (1996).

Abbreviations

ABS	Australian Bureau of Statistics
ACCV	Anti-Cancer Council of Victoria
ACHS	Australian Council of Healthcare Standards
AGPS	Australian Government Publishing Service
AHMAC	Australian Health Ministers' Advisory Council
AIH	Australian Institute of Health
AIHW	Australian Institute of Health and Welfare
BHO	Better Health Outcomes for Australians
BHOOC	Better Health Outcomes Overseeing Committee
BMI	Body mass index
CHD	Coronary heart disease
CVD	Cardiovascular disease
DALY	Disability adjusted life years
DCSH	Department of Community Services and Health (Commonwealth)
DHFS	Department of Health and Family Services (Commonwealth)
DHSH	Department of Human Services and Health (Commonwealth)
FAP	Familial adenomatous polyposis
GP	General practitioner
HIV/AIDS	Human immunodeficiency virus/Acquired immune deficiency syndrome
HNPPC	Hereditary non-polyposis colorectal cancer
ICD-9	International Classification of Diseases, 9th revision
IDDM	Insulin-dependent diabetes mellitus
ITDM	Insulin-treated diabetes mellitus
MACOD	Ministerial Advisory Committee on Diabetes
NCADA	National Campaign Against Drug Abuse
NCCI	National Cancer Control Initiative
NHF	National Heart Foundation of Australia
NHGT	National Health Goals and Targets
NHIMG	National Health Information Management Group
NHMRC	National Health and Medical Research Council
NHIDP	National Health Information Development Plan
NHPA	National Health Priority Area
NHPC	National Health Priority Committee
NIDDM	Non-insulin-dependent diabetes mellitus
NISU	National Injury Surveillance Unit
NMSC	Non-melanocytic skin cancer
NPEDBC	National Program for the Early Detection of Breast Cancer
NPHP	National Public Health Partnership
Pap	Papanicolaou

Abbreviations

PSM	Population Survey Monitor
RFPS	Risk Factor Prevalence Survey
SAFE	The Safe Accident Free Environment Program
SMR	Standardised mortality ratio
SLA	Statistical local area

The States and Territories of Australia have been abbreviated as follows:

NSW	New South Wales
Vic	Victoria
SA	South Australia
WA	Western Australia
Qld	Queensland
Tas	Tasmania
NT	Northern Territory
ACT	Australian Capital Territory

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