

National Report on Health Sector Performance Indicators

2001

by the National Health Performance
Committee

A report to the Australian
Health Ministers' Conference
April 2002

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<http://www.health.gov.au/publicat.htm> (Commonwealth Department of Health and Ageing)
<http://www.health.qld.gov.au/nathlthrpt/index.htm> (Queensland Health)

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EXECUTIVE SUMMARY

This fifth National Report on Health Sector Performance Indicators has been prepared by the National Health Performance Committee (NHPC). It follows on from earlier reports authored originally by the National Health Ministers' Benchmarking Working Group, the NHPC's predecessor, and later by the NHPC.

Previous reports on 'performance' have focused on health and health service indicators, with many of the indicators relating to institutional care and acute care settings. As part of its Terms of Reference, the NHPC agreed to develop a broad national health performance framework that could be used as the basis for its annual report to Ministers. Results of this work were reflected in the publication in August 2001 of the *National Health Performance Framework Report*, which outlined the new framework.

This 2001 Report is the first report to Ministers on health sector performance based on the new framework. It is a significant milestone as it includes not only indicators relating to health sector performance but also health status and health determinants.

One of the challenges of providing Ministers with a report based on this newly developed framework is the need to select a limited number of indicators that provide an overall picture of health sector performance. Despite these limitations, some higher level outcomes (comprising Tier 1 of the framework) are immediately transparent.

Australia, in line with several other developed countries, has good health status with one of the highest life expectancies in the world. The death rates from heart disease and stroke have both decreased together with the death rate from cancer. Thus the burden of disease in relation to falling death rates has improved but there has been growing recognition of the impact on the population of non-communicable, chronic diseases, especially musculoskeletal and neuro-degenerative diseases, asthma, diabetes and mental health problems (particularly depression). This burden of disease has an impact on the quality of life of people with these diseases.

While there have been downward trends in death rates, the burden of heart, stroke and vascular disease continues to impose the largest burden on Australia in terms of illness, disability and death and the associated direct health care costs exceed those of any other disease. These issues are expected to become more acute over the coming years due to the growing number of elderly Australians among whom cardiovascular disease is most common.

Diabetes mellitus is one of the most common chronic diseases of the Western world. Most developed countries have recorded increases in male diabetes mortality since the postwar period, with the Australian death rate for males increasing by 13% since the 1950s. Age, obesity and physical activity are the main risk factors for Type 2 diabetes and incidence of diabetes in Australia is rising.

Mental health, especially depression, is projected to emerge as a major contributor to disease burden worldwide. Depression is the largest single risk factor for suicide and suicidal behaviour.

The prevalence of asthma in Australia is one of the highest in the world, with more than two million Australians estimated to be affected by the disease. Australia also has the highest death rate for asthma among its young people in comparison to other developed countries.

However, review of the data at high levels disguises the information about disadvantaged groups in our community with the mortality burden 41% higher for males and 26% higher for females from the bottom socioeconomic quintiles. Indigenous Australians suffered three times as many deaths as non-Indigenous Australians with high rates of diabetes mellitus, disease of the circulatory system and injury.

In addressing the broad questions for the determinants of health (Tier 2 of the framework), it is clear that there remain significant challenges for the health system. Where there are multifaceted programs, such as for tobacco control, there appears to be greater success in reducing harmful exposure and modifying health behaviours. However, other important health determinants such as physical activity and healthy weight have deteriorated. Given the impact these have on physical and mental health, effective and supported strategies may be needed. The health system is also relatively successful in addressing physiological determinants where there are effective medications and industry and public support (such as treating high blood pressure and reducing salt intake).

There are significant and increasing disparities in health status between high and low socioeconomic groups and especially between Indigenous and non-Indigenous Australians. This reflects the impact that the broader determinants of health have on health outcomes. Joint approaches to addressing community and family capacity and environmental health are likely to be more successful than health system approaches alone.

While all the dimensions of health determinants influence health status and outcomes, the magnitude of those influences and the causal pathways are not always clear. The understanding of these influences is developing as evidence from research and evaluation continues to emerge. Developing indicators for and measuring some of these elements will develop as more information becomes available. For example, indicators for 'community capacity' and 'socioeconomic factors' still need to be further developed.

An overview of the performance of the Australian health system (Tier 3 of the framework) is multifaceted. One view that emerges is one of a system that can demonstrate important improvements in performance, but for which there remains considerable scope for further activity. Perhaps more evident is the need for further work in the area of performance measurement, including an understanding of the extent to which measures indicate the potential for improvement.

A number of measures presented suggest improvements in health system performance over time, particularly across the effectiveness and appropriateness categories: hospital admissions for ambulatory care sensitive conditions such as asthma and diabetes are falling, five year survival rates for people with cancer have improved, screening programs for cervical and breast cancers have increased participation rates, childhood immunisation rates continue to improve, accompanied by falls in notifications of vaccine preventable diseases for children, and prescription of antibiotics for upper respiratory tract infections is falling. While these trends are in the right direction, there are undoubtedly opportunities for further improvement. For several of these measures, consideration needs to be given to identifying targets the health system could aim for.

For a few measures, the trends are less encouraging. Caesarean section rates in Australia are increasing. Over the last four years, hospital separation rates for myringotomy have only fallen slightly, while hospital separation rates for tonsillectomy have stayed much the same. There is also considerable variation across States and Territories in these rates. These indicators suggest there remains scope for improving the appropriateness of services provided by hospitals.

For a number of other measures it is difficult to draw firm conclusions on trends or the broader health system performance. Measures of the efficiency of the health system remain somewhat problematic. While the cost per casemix weighted separation for selected public acute hospitals has been used in Australia for many years as an indicator of efficiency, there still remain a number of problems in comparing these measures across States and over time. The broad measure of average length of stay shows a continuing trend downwards, suggesting improved efficiency in the use of acute services. However, the measure is sensitive to changes in the mix of cases being treated by acute hospitals, and the increasing proportion of same day procedures being performed. When same day separations are excluded, average length of stay has not reduced markedly. Data on per capita fee-for-service expenditures on primary and secondary services generated by non-specialist attendances show a significant increase over the period from 1994–95 to 1998–99. Most of the increases occurred in relation to ordered services such as pathology, diagnostic imaging and pharmaceuticals. These increases could suggest a relative strengthening of the primary health care sector, or they could be interpreted as a relatively high and perhaps uncontrolled growth in at least some ordered services.

In some instances the basic data and construction of the indicator are problematic. Data on emergency department waiting times is affected by different approaches the States and Territories have taken to measuring waiting times. Some measure the time a patient waits before being seen by a doctor. Other States and Territories measure the time a patient waits before being seen by a doctor *or* nurse.

For some dimensions the performance measures available are relatively weak or not yet developed, in particular measures of safety, continuity, capability and sustainability. While the report offers measures for some of these categories, the measures will need supplementation and enhancement in future versions of this report.

The focus for the Committee during its first two years has been the development of an indicator framework and the commencement of national reporting. The NHPC is pleased to see that the framework is being used by a number of jurisdictions in their own performance reporting. The framework can be used to support benchmarking for health system improvement and facilitate use of data at the health service unit level for benchmarking purposes.

With respect to its future direction, the Committee has also developed preliminary ideas on how it might promote benchmarking across the health system. The intention is to refine these ideas through holding a national workshop on benchmarking during 2002 in collaboration with relevant agencies and organisations. The workshop will focus on developing strategies that reflect the most appropriate contributions the NHPC could make to the promotion of benchmarking across the system. In the relatively short time since its establishment, the NHPC has made a good deal of progress in

promoting performance indicator development, and related performance reporting and benchmarking, within the wider health system.

The Committee remains focused on developing and refining national health performance tools that will continue to be of a practical nature within the parameters of the performance framework. Due to time constraints, the committee confined itself to considering indicators that are readily available from the national reports or data collections, rather than considering a broader range of possibilities for indicators that might be more appropriate to the various dimensions of performance.

CHAPTER 1 INTRODUCTION

Preamble

This fifth National Report on Health Sector Performance Indicators has been prepared by the National Health Performance Committee (NHPC). It follows on from earlier reports authored originally by the National Health Ministers' Benchmarking Working Group, the NHPC's predecessor, and later by the NHPC.

The first three national reports on health sector performance indicators were released by the National Health Ministers' Benchmarking Working Group in February 1996, June 1998 and June 1999 respectively. *The Fourth National Report on Health Sector Performance Indicators* and the *National Health Performance Framework Report* have subsequently been prepared by the NHPC and were released in July 2000 and August 2001 respectively.¹

The National Health Performance Committee

The Australian Health Ministers' Conference established the NHPC in August 1999. It is charged with the responsibility to develop and maintain a national health performance framework, to support benchmarking for health system improvement and to provide information on national health system performance.

Membership of the Committee includes representatives from each State and Territory and the Commonwealth. Membership is also drawn from national bodies such as the Australian Institute of Health and Welfare, the Australian Private Hospitals' Association, the Australian Health Insurance Association and the National Public Health Partnership. See Appendix for further details.

The vision, mission, goals and terms of reference of the Committee are set out in Box 1.1.

The Committee has developed a workplan for 2001–02. This includes:

- release of the National Health Performance Framework Report;
- compilation and release of this National Report on Health Sector Performance Indicators, 2001;
- organisation of a workshop with other interested parties discussing characteristics of effective benchmarking. Discussion will include the factors that give rise to good benchmarking and the barriers; and
- receive, compile and discuss comments on the framework and incorporate any relevant changes into further revisions.

¹ The complete collection of the reports previously released by the NHMBWG and the NHPC is available on the Australian Institute of Health and Welfare's web site. The web site address is <http://www.aihw.gov.au/indicators/index.html>.

Box 1.1**National Health Performance Committee****Vision:**

The vision of the National Health Performance Committee is for a health system that searches for, compares, learns from the best and improves performance through the adoption of benchmarking practices across all levels of the system.

Mission:

The National Health Performance Committee will work to foster the use of benchmarking based on national performance measures and indicators to improve the quality of care of health services.

Goals:

- To extend the national performance indicator framework for services other than acute inpatient services. This would include not only indicators of the overall health system's performance, but also for services such as community health, general practice and public health.
- To establish good links with, and take advantage of, the vast range of work being undertaken on performance indicator development across the nation.
- To improve the timeliness of reporting of performance information.

Terms of reference:

- 1 Develop and maintain a national performance measurement framework for the health system, primarily to support benchmarking for health system improvement and to provide information on national health system performance.
- 2 Establish and maintain appropriate national performance indicators within the national performance measurement framework.
- 3 Receive and consider input to the national performance measurement framework and on existing and potential performance indicators.
- 4 Facilitate the use of data at the health service unit level for benchmarking purposes.
- 5 Encourage the health industry to work within the national performance measurement framework and use the agreed performance indicators in benchmarking to improve performance.
- 6 Encourage the development of expertise in the use of benchmarking for performance improvement.
- 7 Provide the Australian Health Ministers' Conference and other national authorities with a comparative analysis and information of national health system performance.
- 8 Develop and maintain linkages with other relevant national committees.
- 9 Report progress to the Australian Health Ministers' Conference and other national authorities on achieving its mission.

National Health Performance Framework

Previous reports on 'performance' have focused on health and health service indicators, with many of the indicators relating to institutional care and acute care settings. As part of its Terms of Reference, the NHPC agreed to develop a broad national health performance framework that could be used as the basis for its annual report to Ministers. Results of this work were reflected in the publication in August 2001 of the *National Health Performance Framework Report*, which outlined the new framework.

The framework is shown in Box 1.2. It consists of three tiers: Health Status and Outcomes, Determinants of Health and Health System Performance. The inclusion of the three tiers reflects the fact that health status and health outcomes are influenced by the impacts of health determinants and health system performance. In developing the framework, equity is considered to be integral to each of the three tiers.

The August 2001 Framework Report outlined selection criteria for indicators associated with the framework, including selection criteria specific to the NHPC. Some examples of indicators against the various components of the framework were also provided. Key extracts from the report showing selection criteria for indicators have been reproduced in Box 1.3.

This 2001 Report is the first report to Ministers on health sector performance based on the new framework. It is a significant milestone as it includes not only indicators relating to health sector performance but also health status and health determinants. It ensures that while the traditional areas of effectiveness, efficiency and quality are included, areas such as the capability and sustainability of health sector performance are not overlooked.

One of the challenges of providing Ministers with a report based on this newly developed framework is the need to select a limited number of indicators that provide an overall picture of health sector performance. In order to address this, Chapters 3 to 5 present indicators relevant to the respective tier of the framework. However, each section on the indicators has been prefaced by a brief overview that seeks to summarise how the Australian health system is performing in relation to that component of the framework. Indicators shown in Chapter 3 illustrate outcomes for a whole range of changes in determinants and reflect the end result of efforts both within and outside the traditional areas of health service provision.

The success of the NHPC in pursuing its endeavours hinges to a large extent on its ability to encourage the various jurisdictions and/or sectors of the health industry to work within the parameters of the framework. In this regard, the NHPC is pleased to see that the framework is being used by a number of jurisdictions in their own performance reporting. Some examples of this effort are as follows:

- Queensland Health is investigating potential for use of the framework. Initial activities are focusing on child health, women's cancer and a framework for measuring quality in Queensland public hospitals.
- The Victorian Department of Human Services has implemented a Quality Framework for public hospitals that is consistent with Tier 3 of the national framework to assist it in evaluating health service performance with respect to quality. Performance indicators previously in use or currently in development are now being placed under the various dimensions within the framework.
- As part of its service agreements with its two public hospitals, the ACT Department of Health and Community Care has implemented a reporting framework which incorporates a range of performance indicators. The reports and indicators, specified in the reporting schedule of the agreements, closely match the third tier of the NHPC performance framework.
- The National Health Priority Performance Advisory Group (NHPPAG) will also be using the NHPC Framework to inform its work. The NHPPAG is a recently established sub-committee of the National Health Priority Action Council.

The framework can be used to support benchmarking for health system improvement and facilitate use of data at the health service unit level for benchmarking purposes.

Box 1.2

National Health Performance Framework

Health status and outcomes (Tier 1) How healthy are Australians? Is it the same for everyone? Where is the most opportunity for improvement?				
Health conditions	Human function	Life expectancy and wellbeing	Deaths	
Prevalence of disease, disorder, injury or trauma or other health-related states	Alterations to body, structure or function (impairment), activities (activity limitation) and participation (restrictions in participation).	Broad measures of physical, mental, and social wellbeing of individuals and other derived indicators such as Disability Adjusted Life Expectancy (DALE).	Age and/or condition specific mortality rates.	
Determinants of health (Tier 2) Are the factors that determine good health changing for the better? Is it the same for everyone? Where and for whom are these factors changing?				
Environmental factors	Socioeconomic factors	Community capacity	Health behaviours	Person-related factors
Physical, chemical and biological factors such as air, water, food and soil quality resulting from chemical pollution and waste disposal.	Socioeconomic factors such as education, employment, per capita expenditure on health, and average weekly earnings.	Characteristics of communities and families such as population density, age distribution, health literacy, housing, community support services and transport.	Attitudes, beliefs knowledge and behaviours e.g. patterns of eating, physical activity, excess alcohol consumption and smoking.	Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.
Health system performance (Tier 3) How well is the health system performing in delivering quality health actions to improve the health of all Australians? Is it the same for everyone?				
Effective	Appropriate		Efficient	
Care, intervention or action achieves desired outcome.	Care/intervention/action provided is relevant to the client's needs and based on established standards.		Achieving desired results with most cost effective use of resources.	
Responsive	Accessible		Safe	
Service provides respect for persons and is client orientated. It includes respect for dignity, confidentiality, participation in choices, promptness, quality of amenities, access to social support networks, and choice of provider.	Ability of people to obtain health care at the right place and right time irrespective of income, physical location and cultural background.		The avoidance or reduction to acceptable limits of actual or potential harm from health care management or the environment in which health care is delivered.	
Continuous	Capable		Sustainable	
Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.	An individual's or service's capacity to provide a health service based on skills and knowledge.		System's or organisation's capacity to provide infrastructure such as workforce, facilities and equipment, and be innovative and respond to emerging needs (research, monitoring).	

Source: National Health Performance Committee (2001), National Health Performance Framework Report.

Selection Criteria for Health Performance Indicators

Generic indicators when used at a program level to whole of system level should have all or some of the following qualities. They should:

1. Be worth measuring.

The indicators represent an important and salient aspect of the public's health or the performance of the health system.

2. Be measurable for diverse populations.

The indicators are valid and reliable for the general population and diverse populations (i.e. Indigenous populations, sex, rural/urban, socioeconomic etc).

3. Be understood by people who need to act.

People who need to act on their own behalf or that of others should be able to readily comprehend the indicators and what can be done to improve health.

4. Galvanise action.

The indicators are of such a nature that action can be taken at the national, state, local or community level by individuals, organised groups and public and private agencies.

5. Be relevant to policy and practice.

Actions that can lead to improvement are anticipated and feasible – they are plausible actions that can alter the course of an indicator when widely applied.

6. Reflect results of actions when measured over time.

If action is taken, tangible results will be seen indicating improvements in various aspects of the nation's health.

7. Be feasible to collect and report.

The information required for the indicator can be obtained at reasonable cost in relation to its value and can be collected, analysed and reported on in an appropriate time frame.

8. Comply with national processes of data definitions.

Selection Criteria for Sets of Performance Indicators

Criteria related to sets of indicators or composite indices should:

1. Cover the spectrum of the health issue.
2. Reflect a balance of indicators for all appropriate parts of the framework.
3. Identify and respond to new and emerging issues.
4. Be capable of leading change.
5. Provide feedback on where the system is working well, as well as areas for improvement.

Additional Selection Criteria Specific to NHPC Reporting

In addition to the general criteria for health performance indicators outlined above, NHPC selection criteria should:

- Facilitate the use of data at the health industry service unit level for benchmarking purposes.
- Be consistent and use established and existing indicators where possible.

In considering the selection or development of relevant health system performance indicators it is important to keep in mind that indicators are just that: an indication of organisational achievement. They are not an exact measure and individual indicators should not be taken to provide a conclusive picture on an agency's or system's achievements. A suite of relevant indicators is usually required and then an interpretation of their results is needed to make sense of the indicators. Performance information does not exist in isolation and is not an end in itself, rather it provides a tool that allows opinions to be formed and decisions made.

Some indicators should be ratios of output/input, outcome/output and outcome/input. There should also be a focus on measures of outcomes where there is a link between health system actions and health outcomes.

Given that overall health outcome is a product of social, environmental and health system factors, there are difficulties in linking the efforts of the health sector with observable health outcomes. There is a continuum of outcomes from those that are directly influenced by the health system to those that are not and are affected by a range of external factors. A distinction can be made between 'intermediate' outcomes attributable to the actions of the health sector and higher level outcomes that cannot be attributed to the efforts of the health sector alone. The outcomes selected to measure performance of the health sector should be based on such intermediate outcomes, e.g. survival rates after transplant, functionality after hip replacement and absence of preventable disease in the community.

In the short term, as appropriate health system performance indicators are being refined and developed, it may be necessary to use process measures as an interim measure to represent the performance of the system. Once appropriate measures (and information sources) are taken over the longer term, it will be possible to build up meaningful measures of the efficiency and effectiveness of health outputs and the impact on health outcomes.

However, the *National Health Performance Framework Report* was only released in August 2001 and many indicators that are meaningful are under development or yet to be developed. The NHPC is auspicing a collaborative work program between the Commonwealth, States and Territories. This project is assessing the current coverage of national performance indicators in the area of primary health and community care against the National Health Performance Committee's Framework and will recommend a process for establishing future priorities. The National Public Health Partnership has commenced a Public Health Performance Project, which will develop public health performance indicators to further populate the health system performance tier of the framework. These indicators will represent critical areas of public health practice, illustrate a range of the core functions of public health practice, and align as far as possible with indicator sets used by jurisdictions.

The NHPC is also involved in discussions aimed at developing a Health Performance Framework that can be used for international comparison purposes. The Australian framework was derived from the Canadian Health Information Roadmap Initiative Indicators Framework 2000² developed by the Canadian Institute for Health Information (CIHI) and Statistics Canada. However, many of the refinements in the Australian version are likely to be picked up in the International Standards Organisation (ISO) version. Please refer to chapter 6 for further information on the ISO Health Indicators Conceptual Framework.

Future Directions of the NHPC

In the relatively short time since its establishment, the NHPC has made a good deal of progress in promoting performance indicator development, and related performance reporting and benchmarking, within the wider health system. Nevertheless, the Committee remains focused in developing and refining national health performance tools that will continue to be of a practical nature within the parameters of the performance framework. The success of the NHPC to these ends is contingent on its ability to secure the cooperation of the various jurisdictions and sectors within the health industry so as to more fully populate the framework and report progress to Health Ministers and the broader service delivery agencies each year.

A significant amount of progress has been made in performance indicator development and measurement in, for example, the areas of primary and community care, general practice, home and community care, public health, and Aboriginal and Torres Strait Islander health, etc. However, every effort needs to be exercised to ensure that this and other potential work is undertaken within the scope of the NHPC performance framework. This will lead to consistencies in reporting by the various jurisdictions and organisations (e.g. the Steering Committee for the Review of Commonwealth/State Service Provision).

A potential approach to promote the development of performance indicators within the NHPC framework would be the encouragement of 'self-assessment' and consequent benchmarking through collaborative mechanisms that allow parties to recognise what is happening within and among peer groups. This is already happening to a limited degree. For example, The Health Roundtable undertakes benchmarking by participating public hospitals through the production of cost comparisons. Similarly, Women's Hospitals Australasia, together with its sister organisation, Children's Hospitals Australasia, have embarked on collaborative efforts to share data to support benchmarking and clinical forums aimed at enhancing patient care.

There is capacity for further development of processes similar to the above within the broader health industry. The Committee will be looking to pursue these avenues in the interests of promoting benchmarking and deriving resultant efficiencies.

Structure of the Report

The overall structure of the rest of the report is as follows:

Chapter 2 provides a brief overview of the Australian Health System in order to provide a contextual background for the discussion of indicators.

Chapter 3 presents indicators relating to Tier 1 of the framework – Health Status and Outcomes categorised under the four dimensions of Health conditions, Human function, Life expectancy and wellbeing, and Deaths.

Chapter 4 presents indicators relating to Tier 2 of the framework – Determinants of Health categorised under the five dimensions of Environmental factors, Socioeconomic factors, Community capacity, Health behaviours, and Person-related factors.

²The relevant web site address is <http://www.cihi.ca/>.

Chapter 5 presents indicators relating to Tier 3 of the framework – Health System Performance categorised under nine dimensions of Effective, Appropriate, Efficient, Responsive, Accessible, Safe, Continuous, Capable, and Sustainable.

Chapter 6 provides a discussion on international developments in health performance measurement.

Chapter 7 presents a brief discussion on benchmarking activities and the role of the NHPC and the national health performance framework in encouraging benchmarking in the Australian health system for health system improvement. Please refer to the 2000 *Fourth National Report on Health Sector Performance Indicators* by the NHPC for a detailed review of benchmarking activities.³

In some cases more than one indicator was selected to cover a dimension. Indicators were selected where data was available. However, data availability and the enhancement thereof are ongoing challenges for the Committee. The timeliness of information presented in this Report may also vary. Consistency is difficult to achieve at present in view of variation in data availability. Due to time constraints, the committee confined itself to considering indicators that are readily available from the national reports or data collections, rather than considering a broader range of possibilities for indicators that might be more appropriate to the various dimensions of performance.

The NHPC would appreciate any comments on:

- measures that could be used in Annual Reports to Health Ministers, both current and still to be developed measures; and
- the framework e.g. its utility and application.

Please direct these comments to the Executive Officer, National Health Performance Committee. Contact details are shown on page ii.

³ The web site address is <http://www.aihw.gov.au/indicators/index.html>.

CHAPTER 2: THE AUSTRALIAN HEALTH SYSTEM

The Australian health system is a complex system, characterised by differing roles and responsibilities of different levels of government, along with a mixture of service providers and types of services, and with a unique balance between public and private sector involvement. The public sector plays a larger role than in the United States ensuring it maintains universal access to health services under Medicare, with the private sector playing a larger role than in the United Kingdom allowing greater responsiveness to individual choice of services and providers.

Funding arrangements for the different components of the health system are similarly involved. For example, the Commonwealth Government allocates funding to the States and Territories, non-government service providers and private health insurers in the form of:

- grants to the States and Territories, including substantial Health Care Funding Grants to support the provision of public hospital services free of charge, and other specific purpose payments, under the Australian Health Care Agreements;
- subsidies for the delivery of medical services under the Medicare Benefits Schedule;
- subsidies for pharmaceuticals under the Pharmaceutical Benefits Scheme;
- direct grants to non-government organisations for the provision of health care;
- Public Health Outcome Funding Agreements to States and Territories to undertake particular public health activities;
- rebates to help offset the cost of purchasing private health insurance; and
- financing of a number of nationally coordinated public health programs (e.g. Coordinated Care Trials).

For their part, the States and Territories have primary responsibility for the delivery and management of public hospital services, and a wide range of community and public health services (including school health, dental health, maternal and child health and environmental health programs). The States and Territories fund these services through income raised from taxes, specific purpose grants from the Commonwealth, and charges applied to users of services. Under current arrangements, the States and Territories largely determine the following:

- total amount of funds available to the public hospital system;
- budgets for individual hospitals and the arrangements under which they are paid (e.g. casemix), including specialist medical services (e.g. salaried, sessional and/or fee-for-service payment models);
- number and location of hospitals and community health services;
- nature and extent of services available at each hospital; and
- public health priorities according to their respective perspectives.

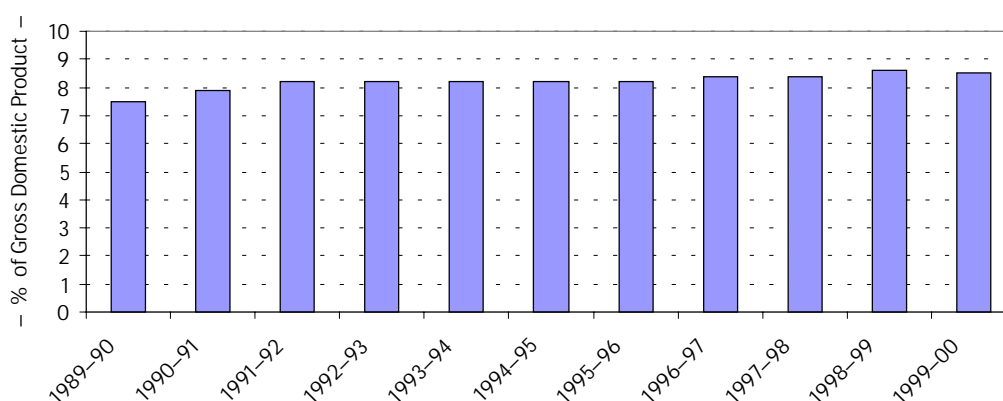
The States and Territories are also primarily responsible for the regulation of medical practitioners and other health care professionals, and for the licensing of private hospitals.

In 1999–2000 total expenditure (recurrent and capital) for health care services in Australia was \$53.7 billion. Over the 1990s per capita expenditure on health services in Australia has grown considerably, by 32% in real terms. (see Table 2.1). During the 1990s health expenditure accounted for approximately 8% of Gross Domestic Product (Figure 2.1). The 1999–2000 figure of 8.5% is close to the median of expenditures for OECD countries.

Table 2.1: Total health services expenditure, per capita, Australia, 1989–1990, 1994–95 and 1999–2000

	1989–90	1994–95	1999–00
		- \$ -	
Current prices	1,700	2,170	2,817
Constant (1998–99) prices	2,087	2,356	2,758

Source: Australian Institute of Health and Welfare (2001), Health Expenditure Bulletin No. 17.

Figure 2.1: Ratio of health services expenditure to GDP (%) 1989–90 to 1999–00

Source: Australian Institute of Health and Welfare (2001), *Health Expenditure Bulletin No. 17*.

Within the overall increase in health expenditures, there have been changes in the sources of funding. By 1999–2000, the Commonwealth Government's funding of health services was estimated at \$25.8 billion or 48.0% of total expenditure on health services from all funding sources (Table 2.2). State/Territory and local government sources provided \$12.5 billion or 23.2% of all health services funding. The remaining \$15.4 billion or 28.8% was provided by non-government funding sources (e.g. individual out-of-pocket expenditure, private health insurance funds and workers' compensation and compulsory motor vehicle third party insurance funds). Of the non-government funding sources for 1999–2000, individuals accounted for 56.4%, private health insurance funds provided 24.7% and the remaining 19.0% came mainly from motor vehicle third party and workers' compensation insurance.

Table 2.2: Health services expenditure by broad source of funds, Australia, 1989–90, 1994–95 and 1999–2000

	1989–90	1994–95	1999–00
Commonwealth	42.2	45.0	48.0
States, Territories and Local Government	26.1	21.7	23.2
Non-government sources	31.7	33.3	28.8
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Source: Australian Institute of Health and Welfare (2001), *Health Expenditure Bulletin No. 17*.

Government policies, both Commonwealth and State/Territory, have impacts on the levels and distribution of funding for health services. For example, the Commonwealth Government's subsidies to private health insurance members contributed to a reduction in the proportion of total funding derived from non-government sources after 1996–97. Total expenditure on the rebate in 1999–2000 was \$1.6 billion.

Over the 1990s expenditure on health services by governments in Australia grew at a higher average annual real rate (4.7%) than did total expenditure on health by all sources, which averaged 4.0% per year. As a consequence, the contribution of governments to the funding of total expenditure on health services increased from 68.3% in 1989–90 to 71.2% in 1999–2000.

Over the last decade there have been some changes to the distribution of funding across the major categories of expenditure (Table 2.3). Between 1989–90 and 1998–99, there was a slight reduction in the proportion of expenditure on hospitals from 40.6% to 38.0%, and an increase in the proportion of expenditure on pharmaceuticals, from 9.3% to 12.3%.

Table 2.3: Proportion of recurrent health services expenditure by area of expenditure, Australia, 1989–90, 1994–95 and 1998–99

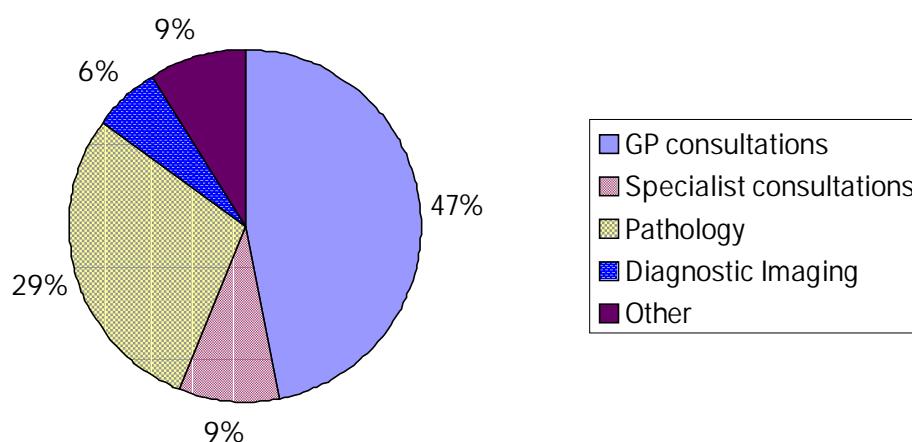
Area of expenditure	1989–90	1994–95	1998–99
		– % –	
Hospitals	40.6	37.6	38.0
High care residential aged care	8.3	7.5	8.6
Medical services	18.4	20.2	19.0
Pharmaceuticals	9.3	11.6	12.3
Other	23.4	23.1	22.1
<i>Total</i>	<i>100.0</i>	<i>100.0</i>	<i>100.0</i>

Source: Australian Institute of Health and Welfare (2001), *Health Expenditure Bulletin No. 17*.

Almost all reported expenditure on medical services in Australia relates to services that are provided by practitioners on a 'fee-for-service' basis. This is reflected in the distribution of funding for medical services. Of the \$9 billion spent on medical services in 1998–99, some 81.9% was funded by the Commonwealth Government. This was made up almost exclusively of medical benefits paid under Medicare.

Over the period from 1989–90 to 1998–99, expenditure on medical services increased, in real terms, at an average of 4.6% per annum. However, that annual rate of growth has slowed each year from 1991–92. The growth in medical services expenditure reflects an increase in the number of services delivered, from 145 million services (8.5 services per capita) in 1989–90 to 214 million services (11.0 services per capita) in 2000–01. In 2000–01, GP consultations accounted for nearly half (47%) and diagnostic imaging and pathology just over a third (35%) of the number of Medicare services provided (Figure 2.2).

Figure 2.2: Number of Medicare Services by broad type of service, Australia, 2000–01



Source: Department of Health and Aged Care (2001), *Medicare Statistics, June Quarter 2001*.

While total expenditure on pharmaceuticals experienced consistent growth between 1989–90 and 1998–99, expenditure on benefit paid items and non-benefit items fluctuated greatly from year to year. Expenditure on benefit paid pharmaceuticals grew at an average of 8.8% per year from 1989–90 to 1999–2000.

Public hospitals account for slightly less than a third of recurrent expenditure on health services in Australia. In 1999–2000, there were 724 public hospitals and 24 public psychiatric hospitals in Australia (AIHW, 2001, *Australian Hospital Statistics*). Table 2.4 presents broad statistics on hospital utilisation from 1993–94 to 1999–2000. Over this period, the rate of separations from public hospitals increased, although rates for private hospitals increased at a greater rate. Rates of patient days per 1,000 population and average length of stay fell for public hospitals, reflecting the increase

in the proportion of hospital services delivered on a same day basis and improvements in health care treatments and technology. Available public hospital beds per 1,000 population have also decreased markedly in recent years. In 1999–2000, there were 52,947 public hospital beds or 2.8 beds per 1,000 population, compared with 59,720 and 3.3 respectively in 1995–96.

Table 2.4: Hospital use by admitted patients, Australia, 1993–94 to 1999–2000

	1993–94	1994–95	1995–96	1996–97	1997–98	1998–99	1999–00
Separations per 1,000 population							
Public hospitals	185.6	190.5	193.2	193.1	197.0	198.7	196.5
Private hospitals	74.7	82.1	85.1	89.2	93.2	95.5	101.4
Public and private hospitals	259.5	271.9	277.7	281.6	289.4	293.5	297.1
Same day separations as a % of total							
Public hospitals	34.2	37.7	39.8	42.0	43.3	44.7	45.8
Private hospitals	43.3	46.1	48.9	51.0	53.1	54.8	56.2
Public and private hospitals	36.8	40.2	42.6	44.8	46.5	48.0	49.3
Patient days per 1,000 population							
Public hospitals	895.6	867.2	827.1	789.4	774.1	751.3	740.2
Private hospitals	291.0	304.1	311.6	302.0	303.8	299.4	307.7
Public and private hospitals	1,183.8	1,168.4	1,136.7	1,089.4	1,075.9	1,048.7	1,046.0
Average length of stay							
Public hospitals	4.8	4.6	4.4	4.2	4.0	3.9	3.9
Private hospitals	3.9	3.7	3.7	3.5	3.3	3.2	3.1
Public and private hospitals	4.8	4.3	4.2	4.0	3.8	3.7	3.6

Source: Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics 1999–00*.

In 1999–2000 nurses made up 45.1% of the public hospital workforce, representing 79,006 full time equivalent staff. Salaried medical officers comprised a further 9.5% of the workforce. Additional medical services are provided by visiting medical officers, who are contracted to public hospitals to provide services to public patients on a sessional or fee-for-service basis. However, comparable data on the numbers of visiting medical officers is not readily available. The balance of public hospital staffing comprised diagnostic and allied health professionals, administrative and clerical staff, domestic and other staff.

In addition to the funding and provision of health care services, covering the primary, community and acute care sectors, Australia has a robust health research and information management infrastructure through national agencies such as the National Health and Medical Research Council, Health Insurance Commission, and the Australian Institute of Health and Welfare (AIHW). Expenditure on research as reported by the AIHW includes research undertaken at tertiary institutions, in private non-profit organisations and in government facilities. It does not include commercially orientated research undertaken or commissioned by private business. In 1999–2000, total expenditure on health research was \$745 million, of which the Commonwealth Government funded 71.4%. State/Territory and local governments contributed 12.8% of research funding with the balance (15.8%) coming from non-government sources (AIHW, 2001, *Australia's Health Services Expenditure to 1999-00*).

For further information see:

Commonwealth Department of Health and Aged Care (2000), *The Australian Health Care System - An Outline*.

Australian Institute of Health and Welfare (2000), *Australia's Health 2000*.

Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics 1999–00*.

Australian Institute of Health and Welfare (2001), *Australia's Health Services Expenditure to 1999-00*, Health Expenditure Bulletin No. 17.

CHAPTER 3: HEALTH STATUS AND OUTCOMES

The state of health of a population is the object of ultimate interest when evaluating health performance. A view of health status serves as a starting point for observations and also, with changes over time, becomes a measure of success or failure of efforts to improve the population's health. Thus, in a performance framework, health status is examined along with identified health determinants (Chapter 4) and individual and population level health system interventions (Chapter 5). Health outcomes, the changes that are wholly or partially attributable to a health service intervention, are measured by observing health status over the relevant period, which may be lagged from the intervention. Thus identical statistical constructs may be described sometimes as health status indicators and sometimes as indicators of health outcome. This explains the dual label 'health status and outcomes' for this first tier of the health performance framework.

Tier 1 of the framework (Table 3.1) selects four component views or 'dimensions' that bring together the traditional study of mortality and morbidity with a more recently developed focus on functioning and disability and summary measures of population health:

- Health conditions are measured through incidence and prevalence of disease.
- Human function focuses on disability evident in impairment of body function or structure, in activity restriction and participation (taking account of environmental factors).
- Deaths by age and by causes of death provide the longest-standing indicators of health outcomes. Death rates have shown significant improvement over the long term and provide important indicators of health inequality and of opportunity to reduce premature death.
- Life expectancy and wellbeing encapsulate elements of mortality and disability in summary statistics, including life expectancy and adjusted life expectancy measures that incorporate disease and injury-related disability during life.

Table 3.2 shows how the indicators described in this chapter relate to the dimensions within the Tier.

Interest in health system performance does not stop at population averages, which mask differences within a population. A focus on equity and distribution of health at all levels of the framework is encapsulated in the recurring question 'Is it the same for everyone?' This is intended to emphasise that an overlaying dimension of performance appraisal is the extent of health inequality. For this tier, the question must be asked not only in respect of health status but of differences between population groups and of changes over time (including outcomes).

Table 3.1 Dimensions of Health Status and Outcomes (Tier 1)

Health status and outcomes (Tier 1)			
How healthy are Australians? Is it the same for everyone? Where is the most opportunity for improvement?			
Health conditions	Human function	Life expectancy and wellbeing	Deaths
Prevalence of disease, disorder, injury or trauma or other health-related states	Alterations to body, structure or function (impairment), activities (activity limitation) and participation (restrictions in participation).	Broad measures of physical, mental, and social wellbeing of individuals and other derived indicators such as Disability Adjusted Life Expectancy (DALE).	Age and/or condition specific mortality rates.
Determinants of health (Tier 2)			
Health system performance (Tier 3)			

Table 3.2 Health Status and Outcomes indicators

Indicator	Dimension
Non-fatal burden of disease	
(Years of life lived with disability) for major disease groups	Health conditions
Severe or profound core activity restriction by age and sex	Human function
Proportion of disease in targeted National Health Priority Areas of the total burden of disease and injury	Life expectancy and wellbeing
Standardised mortality ratios (SMR) for male and female Indigenous Australians	Life expectancy and wellbeing
International comparison of life expectancy at birth by sex	Life expectancy and wellbeing
Mortality burden (Years of life lost) per 1,000 population by quintile of socioeconomic disadvantage and major causes	Deaths
Cause-specific death rates	Deaths
Deaths from suicide and self-inflicted injury by sex	Deaths

Australia, in line with several other developed countries, has good health status with one of the highest life expectancies in the world. The death rates from heart disease and stroke have both decreased together with the death rate from cancer. Thus the burden of disease in relation to falling death rates has improved but there has been growing recognition of the impact on the population of non-communicable, chronic diseases, especially musculoskeletal and neuro-degenerative diseases, asthma, diabetes and mental health problems (particularly depression). This burden of disease has an impact on the quality of life of people with these diseases.

While there have been downward trends in death rates, the burden of heart, stroke and vascular disease continues to impose the largest burden on Australia in terms of illness, disability and death and the associated direct health care costs exceed those of any other disease. These issues are expected to become more acute over the coming years due to the growing number of elderly Australians among whom cardiovascular disease is most common (AIHW, 2001, *Heart, Stroke and Vascular Disease*).

Diabetes mellitus is one of the most common chronic diseases of the Western world. Most developed countries have recorded increases in male diabetes mortality in the postwar period, with the Australian death rate for males increasing by 13% since the 1950s. Age, obesity and physical activity are the main risk factors for Type 2 diabetes and incidence of diabetes in Australia is rising (AIHW, 1999, by de Looper and Bhatia, p. 83).

Mental health, especially depression, is projected to emerge as a major contributor to disease burden worldwide (Murray and Lopez, 1996). Depression is the largest single risk factor for suicide and suicidal behaviour (DHAC and AIHW, 1999, p. 37.)

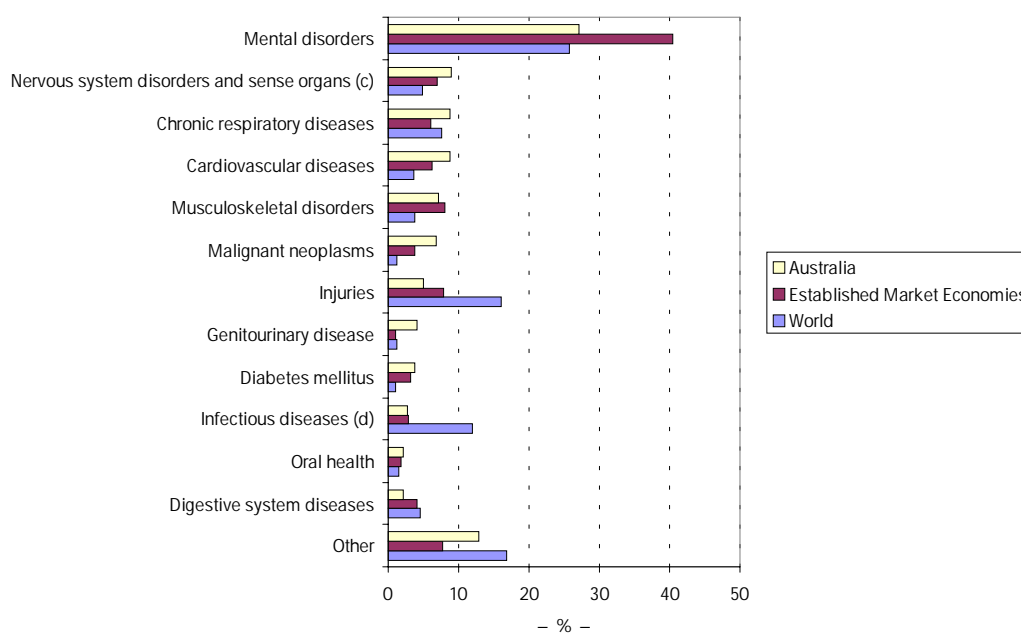
The prevalence of asthma in Australia is one of the highest in the world, with more than 2 million Australians estimated to be affected by the disease. Australian also has the highest death rate for asthma among its young people in comparison to other developed countries (AIHW, 2000, *Australia's Health*, p. 90).

Review of the data at high levels disguises the information about disadvantaged groups in our community with the mortality burden 41% higher for males and 26% higher for females from the bottom socioeconomic quintiles. Indigenous Australians experienced three times as many deaths as non-indigenous Australians with high rates of diabetes mellitus, disease of the circulatory system and injury (AIHW, 2000, *Australia's Health*, p. 221).

While the Committee believes that the burden of disease methodology provides a useful perspective for the measurement of health status, it acknowledges that its use raises issues which need further discussion in the Australian environment (see the entries for Disability-adjusted life years and Disability weights in the Glossary to this report). The Committee would welcome comments on these issues as part of the consultation process outlined at the end of Chapter 1.

Health conditions – Indicator 3.1 Non-fatal burden of disease (Years of life lived with disability) for major disease groups

Non-fatal burden of disease (Years of life lived with disability) (a) for major disease groups, Australia, and selected international comparisons (b)



(a) The term Years of life lived with disability (YLD) is the term used by the World Health Organization. The term that is more commonly used in Australia is 'Years of life lost due to disability'. See Glossary for further details on terms e.g. Disability-adjusted life years (DALYs), Years of life lived with disability (YLD).

(b) Figures for Australia relate to 1996; other figures presented relate to 1990.

(c) Excludes age-related vision disorders and adult-onset hearing loss for the purposes of international comparability. The figure in the Australian Burden of Disease study for diseases of the nervous system and sense organs including age-related vision disorders and adult-onset hearing loss is 187,179. However, these codes are excluded in the Global Burden of Disease study.

(d) Includes acute respiratory infections.

Source: Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra; Murray C.J. and Lopez A.D. (eds.) (1996), *The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*, Harvard School of Public Health (on behalf of the World Health Organization and the World Bank), Harvard University, Cambridge, MA.

- Notwithstanding the synthetic nature of some of the data, the data highlights the relative size of morbidity burden for major disease groups, and hence a first step to understanding priority issues for medical and health services research.
- The non-fatal burden of disease shows a different picture compared with that portrayed by mortality statistics. Mental disorder is by far the greatest contributor to Years of life lived with disability, accounting for a quarter of all non-fatal burden of disease in the world (25.8%). Mental disorders account for a higher proportion of the burden in the Established Market Economies (40.4%). The Australian figure of 27.2% is well below this and only slightly higher than the world average. Despite being a major contributor to the non-fatal burden of disease, mental illness in Australia only accounted for 1.4% of all Years of life lost.
- The contribution of diseases of the nervous system and sense organs (8.9%) to the Australian non-fatal burden of disease was higher, and that of injury (5.0%) substantially lower, compared with the world figures of 4.8% and 16.1% respectively.
- For both Australia and the Established Market Economies, cardiovascular disease and cancer together accounted for only 10–15% of the non-fatal burden of disease. This contrasted with the fatal burden of disease where over half of Years of life lost could be attributed to these two major disease groups.

For further information see:

Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

Murray C.J. and Lopez A.D. (eds.) (1996), *The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*, Harvard School of Public Health (on behalf of the World Health Organization and the World Bank), Harvard University, Cambridge, MA.

The Glossary of this report for further details on terms e.g. Disability-adjusted life years (DALYs), Years of life lived with disability (YLD).

Human function – Indicator 3.2 Severe or profound core activity restriction by age and sex

People aged 5–64 years with profound or severe core activity restriction: age-standardised prevalence rates as a percentage of the Australian population, 1981, 1988, 1993 and 1998 (a)

Year	5–14 year old males	15–64 year old males	5–14 year old females	15–64 year old females
	– % of Australian population –			
1981	2.0	2.1	1.2	2.2
1988	2.5	2.1	1.9	2.5
1993	2.7	2.3	1.8	2.4
1998	4.9	3.3	2.4	3.4

(a) Figures are adjusted for differences between surveys. Only criteria common to the four collections have been used. Rates are age-standardised to the estimated resident population for March 1998.

Source: Australian Bureau of Statistics, 1998 Survey of Disability Ageing and Carers, in AIHW, *Australia's Welfare*, 1999, p. 221.

- The results of a time series analysis of the ABS 1998 Survey of Disability, Ageing and Carers and those of previous surveys should be interpreted with caution. Improved survey methods in the 1998 survey included modification of screening questions (in effect criteria for defining disability) that resulted in an increase in the base disability population. The new survey method also had the possible effect of heightening respondents' awareness of the concept of disability, resulting in an increase in the number of people who identified themselves as having a disability.
- For the purposes of an Australian time series analysis, data on the level of prevalence of severe or profound core activity restrictions is relatively robust. The prevalence of severe or profound core activity restrictions had been relatively stable for the period 1981 to 1993. However, while figures from the 1998 disability survey suggested an increase, available evidence suggests that this is mainly the result of improved survey methods and may *not* reflect a substantial increase in the underlying prevalence of disability and need for support (AIHW, 2000, *Disability and Ageing*, p. 54). For instance, the most striking increase is for boys aged 5 to 14 years from 2.7% in 1993 to 4.9% in 1998 for those with a profound or severe core activity restriction. However, this may be a result of increased labelling and recognition of particular disabilities for this group (AIHW, 1999, *Australia's Welfare*, p. 222).
- Changes in the prevalence of disability could also be influenced by factors such as encounters with causes of injury and the occurrence of congenital malformations. There is little national information available on the trends in the disabling effects of injury, and data on congenital malformations requires careful interpretation.
- Other data suggest that there has been a significant increase in the proportion of people with a disability who are in the age groups 45–54 years reflecting the bulge of the baby-boom generation who are now entering age groups associated with high risk of disability (AIHW, 2000, *Disability and Ageing*, pp. 87 and 91).

For further information see:

Australian Institute of Health and Welfare (2000), *Disability and Ageing, Australian Population Patterns and Implications*, AIHW Cat. no. DIS 19, Disability Series, AIHW, Canberra.
 Australian Institute of Health and Welfare (2000), *Australia's Health 2000, The Seventh Biennial Health Report*, AIHW, Canberra.
 Australian Bureau of Statistics (2001), *Accounting for change in disability and severe restriction 1981–1998*, Working Papers in Social and Labour Statistics no. 2001/1, ABS, Canberra.

Life expectancy and wellbeing – Indicator 3.3 Proportion of disease in targeted National Health Priority Areas of the total burden of disease and injury

The burden of disease attributable to the National Health Priority Areas, Australia, 1996

National Health Priority Area	Years of life lost	Years lived with disability (a)	Disability adjusted life years
		– % –	
Cardiovascular disease	33.1	8.8	21.9
Cancer	29.7	6.8	19.1
Mental illness	1.4	27.2	13.3
Injury	11.3	5.0	8.4
Diabetes	2.3	3.8	3.0
Asthma	0.6	4.8	2.6
Other	21.6	43.8	31.9
Total	100.0	100.0	100.0
Total (number)	1,348,233	1,162,041	2,510,274

(a) The term Years of life lived with disability (YLD) shown above is the term used by the World Health Organization. The term that is more commonly used in Australia is 'Years of life lost due to disability'. See Glossary for further details on terms e.g. Disability-adjusted life years (DALYs), Years of life lived with disability (YLD).

Source: Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

- This indicator is useful to assess the overall impact of a disease. It is a summary health measure showing the relative contribution of National Health Priority Areas to total disease burden and to mortality and morbidity/disability components. Time series data are not available but periodic compilation is planned.
- Cardiovascular disease accounted for a third of all Years of life lost (YLL), followed by cancer (29.7%). While mental illness only accounted for 1.4% of all Years of life lost (YLL) it was a major contributor to non-fatal burden of disease (27.2%) (AIHW, 2000, *Australia's Health*, p. 72, p. 94).
- Injury is a principal cause of death in people under 45 years of age while 70% of the total burden of asthma is diagnosed in childhood (ages 0–14).
- The prevalence of diabetes is rising, with the estimated number of Australians with diagnosed or undiagnosed diabetes almost doubling since the early 1980s. It also contributes to the increased risk of ischaemic heart disease, stroke and peripheral vascular disease. In 1996 diabetes was responsible for 4.9% of all Disability adjusted life years (including attributable fraction of Cardiovascular Disease (CVD)) (AIHW, 1999, *The Burden of Disease*, p. 94).
- The profile of the proportion of disease in the National Health Priority Areas for Australia was similar to that of the established market economies of the world (with the possible exception of injury). In the case of injury, the proportion of the fatal burden of disease for Australia (11.3%) was lower than for the established market economies (15.9%).

For further information see:

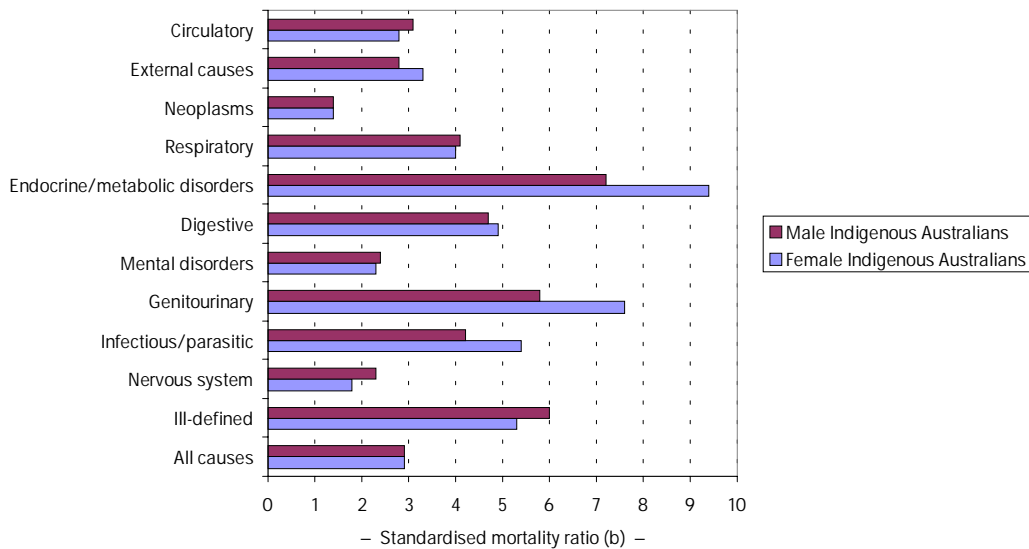
Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

Murray C.J. and Lopez A.D. (eds.) (1996), *The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*, Harvard School of Public Health (on behalf of the World Health Organization and the World Bank), Harvard University, Cambridge, MA.

The Glossary of this report.

Life expectancy and wellbeing – Indicator 3.4 Standardised mortality ratios for male and female Indigenous Australians

Standardised mortality ratios for male and female Indigenous Australians (a), 1997–1999



(a) Data from Queensland, South Australia, Western Australia and Northern Territory combined. Based on year of death registration.

(b) Standardised mortality ratio equals observed deaths divided by expected deaths, based on the all-Australian age, sex and cause-specific rates.

Source: Australian Bureau of Statistics and Australian Institute of Health and Welfare (2001), *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2001*, ABS Cat. no. 4704.0, AIHW Cat. no. IHW 6.

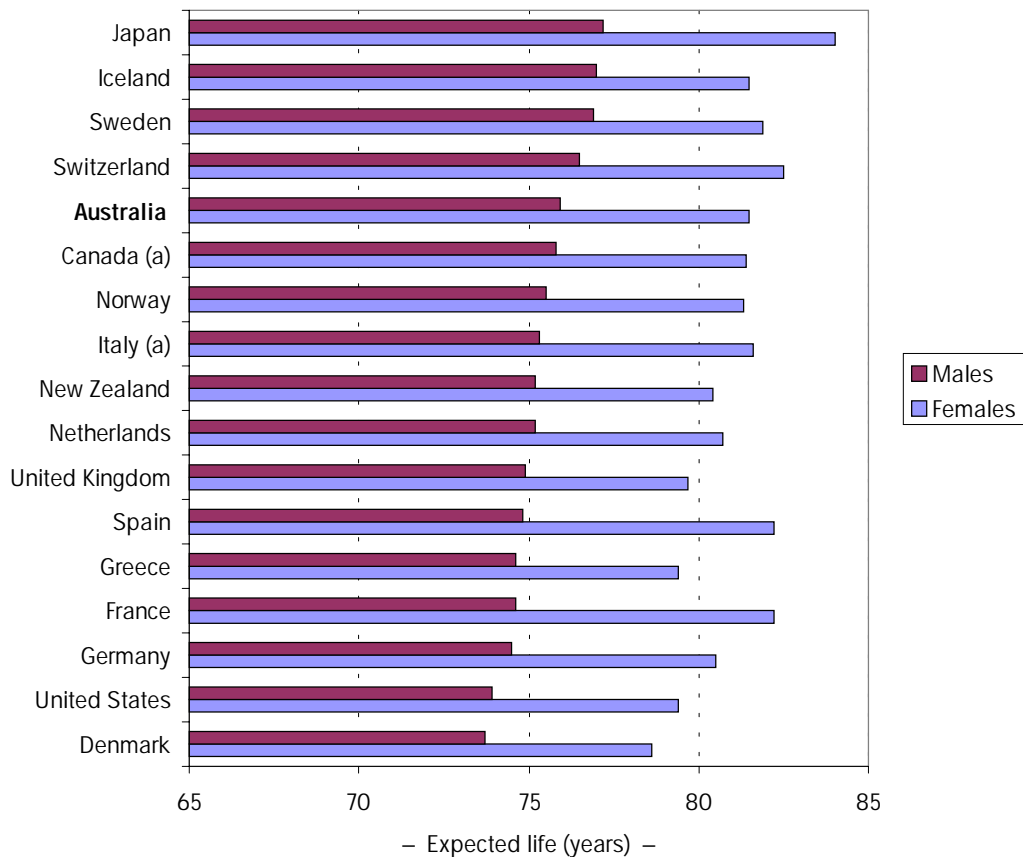
- Standardised mortality ratios are used to enable comparisons of death rates between populations with different age structures, such as the Indigenous and total Australian populations. The standardised mortality ratios express the actual number of deaths in the Indigenous population as a ratio of the expected deaths if Indigenous Australians experienced the same age-specific death rates as the total population.
- In 1997–1999, there were 2.9 times as many deaths among Indigenous Australians than would be expected, based on all-Australian rates. The highest ratio was due to endocrine/metabolic disorders, where the mortality rate for Indigenous males was more than 7 times that for all Australian males and more than 9 times for females. Diabetes is the cause of 88% of endocrine/metabolic disorders.
- For Aboriginal and Torres Strait Islander peoples, diseases of the circulatory system accounted for the highest proportion of excess deaths (30%). Of these, half were due to heart attack and a further 18% due to stroke. External causes (injury, accidents, self-harm), endocrine and metabolic disorders, and respiratory diseases are other major causes of excess deaths (ABS and AIHW, 2001, p. 116).

For further information see:

Australian Bureau of Statistics and Australian Institute of Health and Welfare (2001), *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2001*, ABS Cat. no. 4704.0, AIHW Cat. no. IHW 6.

Life expectancy and wellbeing – Indicator 3.5 International comparison of life expectancy at birth by sex

Life expectancy at birth by sex, Australia and selected countries, 1998



(a) 1997 data.

Source: OECD (2001), *Health at a Glance*, OECD, Paris, p. 13.

- Latest available data suggests that the Australian population continues to have one of the highest life expectancies in the world. The expected life span of persons born in Australia in 1998 was 75.9 years for males (5th highest) and 81.5 years for females (7th highest). These figures represented an increase from the 1990 figures of 73.9 years for males and 80.1 years for females respectively.
- In 1998, Japan had the highest life expectancy for both males (77.2 years) and females (84.0 years).
- Life expectancy is not uniform across population groups. Some groups in the population, such as those who are socioeconomically disadvantaged and Aboriginal and Torres Strait Islander peoples, have lower life expectancy than the national average. The most socioeconomically disadvantaged in Australia are expected to live about 3 years less than those most advantaged, while Indigenous Australians born in 1996–98 are expected to live about 20 years less than the rest of the Australian population (AIHW, 2000, *Australia's Health*).

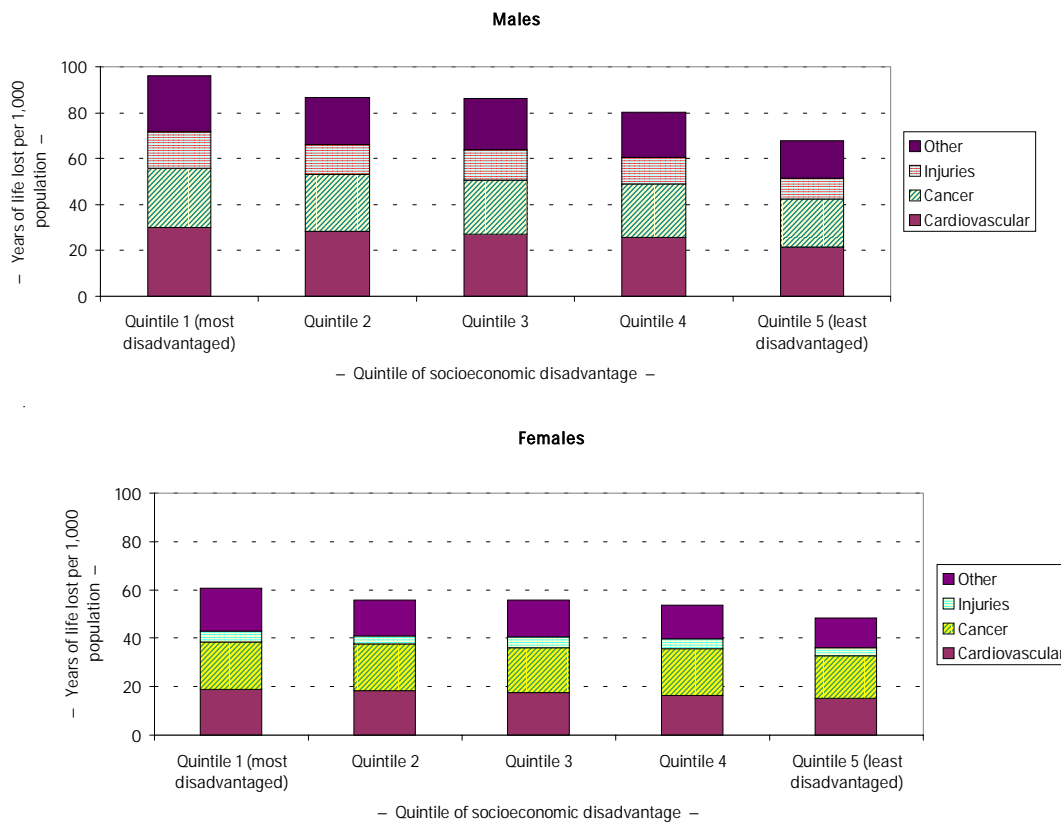
For further information see:

OECD (2001), *Health at a Glance*, OECD, Paris.

Australian Institute of Health and Welfare (2000), *Australia's Health 2000: The Seventh Biennial Report*, AIHW, Canberra.

Deaths – Indicator 3.6 Mortality burden per 1,000 population by quintile of socioeconomic disadvantage and major causes

Mortality burden (Years of life lost) per 1,000 population by quintile of socioeconomic disadvantage (a) and major causes by sex, Australia, 1995–1997



(a) The mortality burden is the ratio of the age-standardised Years of life lost rate per 1,000 population for the bottom and top quintiles of socioeconomic disadvantage. Socioeconomic disadvantage is defined by small area index of disadvantage at SLA level. Quintile 1 is the most disadvantaged group and Quintile 5 the least disadvantaged. Source: Adapted from Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers, C., Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

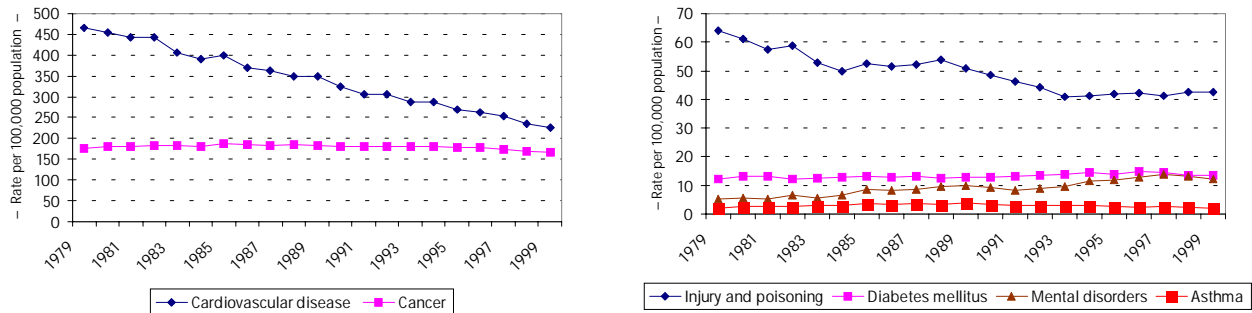
- Differences in the mortality burden borne by the most disadvantaged and the least disadvantaged populations in Australia are demonstrated by the ratio of the age-standardised Years of life lost rate per 1,000 population for bottom and top quintiles of socioeconomic disadvantage.
- For males the mortality burden in the most disadvantaged quintile is 41% higher than for males in the least socioeconomically disadvantaged quintile. For females the difference in the mortality burden between the first and fifth quintiles is 26%.
- If it were possible to reduce death rates in all groups to the level equivalent to that of the least disadvantaged quintile, the potential savings in years of life lost due to mortality would be 19% for males and 12% for females. These are larger than the attributable mortality burden for other risk factors such as tobacco smoking, physical disability or hypertension (although the effects of socioeconomic disadvantage are mediated by these risk factors).
- As the index of socioeconomic disadvantage relates to *average* disadvantage of small area populations, the resultant mortality inequalities are smaller than if the populations were classified using individual socioeconomic status.

For further information see:

Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

Deaths – Indicator 3.7 Cause-specific death rates

Death rates (a) for National Health Priority Areas (b), Australia, 1979–1999



Death rates (a) for National Health Priority Areas (b), by jurisdiction, Australia, 1999

National Health Priority Area	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
– Rate per 100,000 population –									
Asthma	2.3	2.0	1.7	1.4	2.2	2.3	1.4	0.5	2.0
Diabetes	10.7	17.4	13.3	13.3	13.3	12.7	10.9	39.1	13.5
Cancer	160.4	166.8	170.7	169.5	161.2	179.2	189.5	206.8	165.7
Cardiovascular disease	235.8	206.4	239.8	209.4	218.0	243.8	229.8	284.2	225.6
Mental disorders	13.5	12.0	10.0	12.7	14.1	9.5	13.2	16.4	12.4
Injury and poisoning	41.9	40.9	45.2	45.0	38.9	52.2	36.3	65.2	42.7
Other diseases	123.3	120.6	124.7	121.1	118.9	144.8	134.7	261.5	123.7
All causes	587.9	566.1	605.4	572.4	566.6	644.5	615.8	873.7	585.6

(a) Rates, age-standardised to the 1991 Australian population, are given as number per 100,000 population.

(b) The following ICD-10 codes apply to the respective National Health Priority Area: Asthma (J45-J46), Diabetes (E10-E14), Cancer (C00-C97), CVD (I00-I99, G45-G46), Mental disorders (F00-F99), Injury and poisoning (V01-Y98).

Source: Australian Institute of Health and Welfare National Mortality Database.

- Cardiovascular disease (mainly coronary heart disease and stroke) remains the leading cause of death for Australians, despite decreases of more than 65% in the death rates over the past 30 years. During the last decade death rates for cardiovascular disease decreased by 3.9% per year for males and 3.7% per year for females and this is faster than for all causes combined. Coronary heart disease death rates have been declining faster than death rates from stroke.
- Since 1994, mortality rates for all cancers have been decreasing by an average of 1.7% per year for men and 1.3% per year for women. The decrease in male lung cancer and prostate cancer are the main contributors to the decreasing mortality rate for males. For females there have been decreases in breast and cervical cancer, but these have been offset by continuing increases in mortality from lung cancer. The coordinated screening programs for breast and cervical cancer have, in all likelihood, contributed to the favourable mortality declines for these cancers.
- The data show declines in the death rates for injury and asthma over the last 20 and 10 years respectively. However, Australia also has the highest death rate for asthma among its young people in comparison to other developed countries (AIHW, 2000, *Australia's Health*, p. 90).
- Mortality trends for diabetes are difficult to interpret because it is inconsistently coded as a cause of death. Diabetes mainly leads to death through complications such as heart or kidney disease. There is little consistency about whether diabetes or one of its complications is listed on the death certificate as the underlying cause of death.

For further information see:

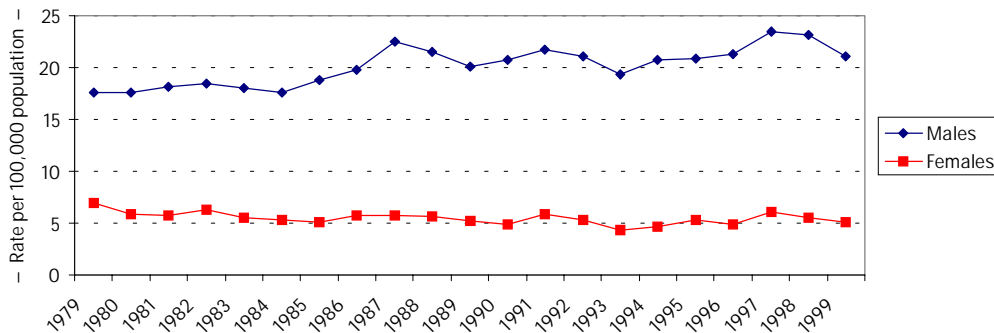
Australian Institute of Health and Welfare (2000), *Australia's Health 2000: The Seventh Biennial Report*, AIHW, Canberra.

Australian Institute of Health and Welfare and Australasian Association of Cancer Registries (2001), *Cancer in Australia 1998*, AIHW Cat. no. CAN12, Canberra.

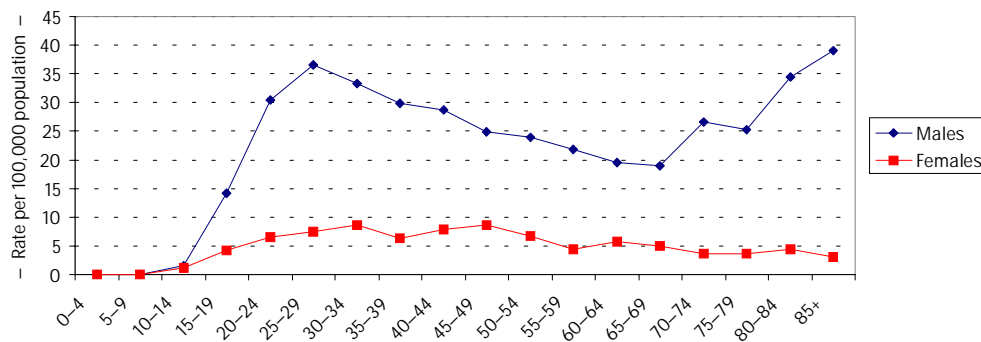
Mathur S. Gajanayake I. and Hodgson G. (2000), *Diabetes as a Cause of Death, Australia, 1997 and 1998*, AIHW Cat. no. CVD 12, Diabetes Series no. 1, Canberra.

Deaths – Indicator 3.8 Deaths from suicide and self-inflicted injuries by sex

Deaths from suicide and self-inflicted injuries (a) by sex, Australia, 1979–1999



Age-specific death rates for suicide and self-inflicted injuries (a) by sex, Australia, 1999



(a) Suicide and self-inflicted injury classified according to the ICD-10 codes X60–X84.
Source: Australian Institute of Health and Welfare Mortality database.

- While the cause of death for external causes other than suicide showed an overall decline during the twentieth century, rates of suicide have not shown a strong long-term trend. ('External causes' are factors that result in injury and poisoning.) Increasingly suicide has become relatively more important as a cause of death in the latter part of the century and a more common cause of death for males than road crashes since about 1990. This has prompted increasing public health attention to the issue (National Injury Surveillance Unit, *Australian Injury Prevention Bulletin*, Issue 23, 2000).
- During the 1980s the suicide rate for males increased while the female rate did not. The ratio for male to female suicides increased from 2:1 in the 1950s to about 4:1 in the 1990s (AIHW, *Australian Injury Prevention Bulletin*, Issue 23, 2000).
- The rise in male suicide rates from the mid 1980s onwards has been due to an increase in the rates for males aged in the third and fourth decades of life.
- Rates for teenagers and older persons have shown no visible trend (upwards or downwards).
- Young males from remote areas are almost twice as likely to commit suicide compared with young males from capital cities (AIHW, 2000, *Australia's Health*, p. 226).

For further information see:

Australian Institute of Health and Welfare (2000), *Australia's Health 2000: The Seventh Biennial Health Report of the Australian Institute of Health and Welfare*, Canberra.
National Injury Surveillance Unit (2000), *Suicide in Australia: Trends and Data for 1998*, by Harrison J.E. and Steenkamp M., Australian Injury Prevention Bulletin no. 23, AIHW Cat. no. INJ 25, AIHW National Injury Surveillance Unit, Flinders University of South Australia, Adelaide.
Australian Institute of Family Studies (2000), *Valuing Young Lives: Evaluation of the National Youth Suicide Prevention Strategy*, by Mitchell P., Melbourne.

Web sites:

<http://www.nisu.flinders.edu.au/>
<http://www.aihw.gov.au/>
<http://www.aifs.org.au/>

CHAPTER 4: DETERMINANTS OF HEALTH

The state of one's health is a result of the interactions between multiple factors. 'Determinants of health' is the term used for those factors that have either a positive or negative influence on health at the individual or population level. They can be broadly divided into 'upstream' determinants (education, employment, income, living and working conditions), 'midstream' (health behaviours and psychosocial factors) and 'downstream' (physiological and biological factors). Indicators for health determinants can:

- show us the factors contributing to the trends towards or away from health, for example the proportion of people undertaking sufficient physical activity;
- predict changes in overall health outcomes for populations, for example trends in obesity are indicators of subsequent trends in diabetes and heart disease;
- indicate where policies, interventions and actions are required across the whole health system; and
- highlight the interrelationships between health and the determinants of health to indicate possible intersectoral action, for example linking health and social support initiatives for mothers.

Table 4.1 shows the dimensions of health determinants in the framework. Many health determinants fall outside traditional health portfolio responsibilities. The impact of socioeconomic factors (education, income, housing) and environmental influences (water and air quality) on ultimate health outcomes are significant. The reporting of health determinants in relation to the performance of the health system can work to highlight areas where joint approaches and intersectoral action could be adopted to improve health outcomes.

Table 4.1 Dimensions of Health Determinants (Tier 2)

Health status and outcome (Tier 1)				
Determinants of health (Tier 2)				
Are the factors that determine good health changing for the better? Is it the same for everyone? Where and for whom are these factors changing?				
Environmental factors	Socioeconomic factors	Community capacity	Health behaviours	Person-related factors
Physical, chemical and biological factors such as air, water, food and soil quality resulting from chemical pollution and waste disposal.	Socioeconomic factors such as education, employment, per capita expenditure on health, and average weekly earnings.	Characteristics of communities and families such as population density, age distribution, health literacy, housing, community support services and transport.	Attitudes, beliefs knowledge and behaviours e.g. patterns of eating, physical activity, excess alcohol consumption and smoking.	Genetic-related susceptibility to disease and other factors such as blood pressure, cholesterol levels and body weight.
Health system performance (Tier 3)				

In addressing the broad questions for the determinants of health tier, it is clear that there remain significant challenges for the health system. Where there are multifaceted programs, such as for tobacco control, there appears to be greater success in reducing harmful exposure and modifying health behaviours. However, other important health determinants such as physical activity and healthy weight have deteriorated. Given the impact these have on physical and mental health, effective and supported strategies may be needed. The health system is also relatively successful in addressing physiological determinants where there are effective medications and industry and public support (such as treating high blood pressure and reducing salt intake).

It is also clear that the answer to the question 'Is it the same for everyone?' would have to be 'No'. There are significant and increasing disparities in health status between high and low socioeconomic groups and especially between Indigenous and non-Indigenous Australians. This reflects the impact that the broader determinants of health have on health outcomes. Joint approaches to addressing community and family capacity and environmental health are likely to be more successful than health system approaches alone.

Table 4.2 shows how the indicators described in this chapter relate to the dimensions within the Tier.

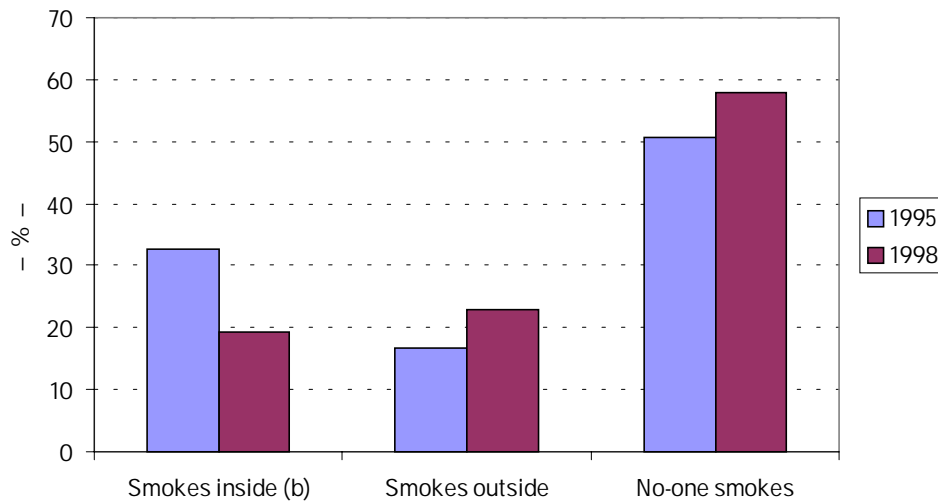
Table 4.2 Health Determinants Indicators

Indicator	Dimension
Environmental tobacco smoke: children under 15 years who live in a household with a smoker	Environmental factors
Environmental tobacco smoke: workplace smoking restrictions	Environmental factors
Notification rates of Ross River virus	Environmental factors
Differentials in death rates across socioeconomic quintiles	Socioeconomic factors
Carer activity	Community capacity
Voluntary work participation rates	Community capacity
Proportion of adults who are current smokers	Health behaviours
Proportion of adolescents who are current smokers	Health behaviours
Proportion of adults insufficiently physically active to obtain a health benefit	Health behaviours
Proportion of persons obese and overweight	Health behaviours
Proportion of persons with high blood pressure	Person-related factors
Low birthweight babies of Indigenous Australian mothers and non-Indigenous Australian mothers	Person-related factors

While all the dimensions of health determinants influence health status and outcomes, the magnitude of those influences and the causal pathways are not always clear. The understanding of these influences is developing as evidence from research and evaluation continues to emerge. Developing indicators for and measuring some of these elements will develop as more information becomes available. For example, indicators for 'community capacity' and 'socioeconomic factors' still need to be further developed.

Environmental factors – Indicator 4.1 Environmental tobacco smoke: Children under 15 years who live in a household with a smoker

Proportion of dependent children by smoking status of parents/guardians (a), Australia, 1995 and 1998



Source: Australian Institute of Health and Welfare, National Drug Strategy Household Survey, 1998 (unpublished) and Commonwealth Department of Health and Family Services, National Drug Strategy Household Survey report 1995 (unpublished).

Proportion of dependent children by smoking status of parents/guardians (a) and age group, Australia, 1998

Age group of children	Smokes inside (b)	Smokes outside	No-one smokes
		– % –	
0–5	17	26	57
6–14	22	18	60

(a) Base equals people aged 20–55 years with dependent children.

(b) Based on households who report any members regularly smoking tobacco inside the house.

Source: Australian Institute of Health and Welfare (2000), National Drug Strategy Household Survey, 1998 (unpublished).

- Environmental tobacco smoke is a significant contaminant of indoor air. There is strong and consistent evidence that passive smoking increases a non-smoker's risk of lung cancer and ischaemic heart disease. Passive smoking is also associated with increased risk of respiratory disease in adults (NHMRC, 1997).
- Children are particularly susceptible to the effects of environmental tobacco smoke. Children living with smokers have an increased risk of respiratory disease and are more likely to suffer the symptoms of asthma. (DHAC, 1988, *National Drug Strategic Framework 1988-99 to 2002-03*).
- Of the households with children under the age of 15 years, approximately 42% contain people who are smokers (AIHW, 2000, 1998 National Drug Strategy Household Survey). Nearly half of these households (45%) have smokers who smoke inside the house.
- The proportion of adults smoking inside the house has declined from 1995 to 1998. This trend matches the overall decline in adult smoking. However, people of lower socioeconomic status are more likely to smoke and less likely to be ex-smokers.
- The National Tobacco Strategy includes the development of a community education strategy to increase public awareness and understanding of health risks of exposure to environmental tobacco smoke especially to reduce the exposure of smoke by children.

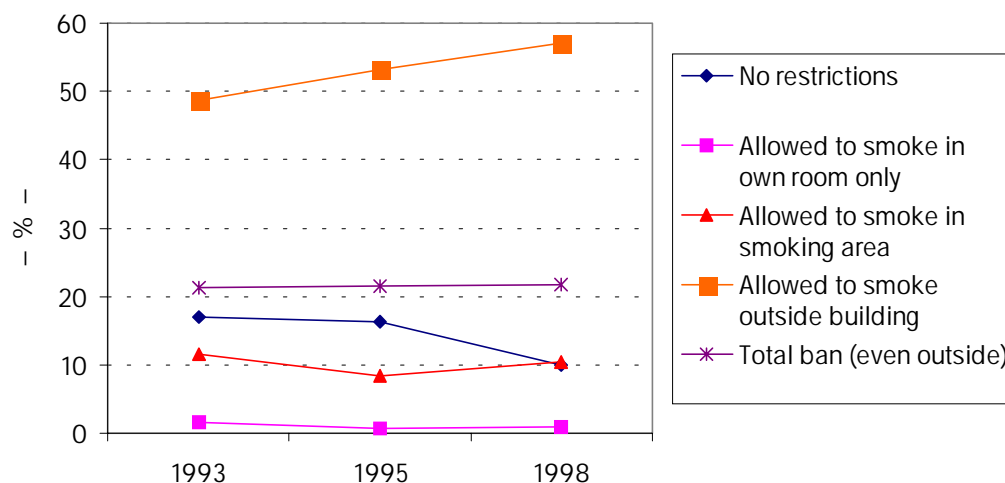
For further information see:

National Health and Medical Research Council (NHMRC) (1997), *The Health Effects of Passive Smoking*, Department of Health and Family Services, Canberra.

Hackshaw A.K. Law M.R. and Wald N.J. (1997), 'The Accumulated Evidence on Lung Cancer and Environmental Tobacco Smoke', *British Medical Journal*, vol. 315, pp. 980–988.

Environmental factors – Indicator 4.2 Environmental tobacco smoke: workplace smoking restrictions

Non-smoking policies or restrictions in place in workplace, school or college, Australia, 1993–1998



Non-smoking policies or restrictions in place in workplace, school or college, Australia, 1993–1998

Restriction	1993	1995	1998
– % of persons working or studying –			
No restrictions	17.1	16.2	9.9
Allowed to smoke in own room only	1.5	0.7	1.0
Allowed to smoke in smoking area	11.5	8.4	10.4
Allowed to smoke outside building	48.6	53.3	57.0
Total ban (even outside)	21.3	21.4	21.7

Sources: Australian Institute of Health and Welfare, *National Drug Strategy Household Survey, 1998* (unpublished); Commonwealth Department of Health and Family Services, *National Drug Strategy Household Survey report 1993 and 1995* (unpublished).

- Smoking in the workplace is associated with an increased risk of fires and exposure to environmental tobacco smoke. Environmental tobacco smoke increases the risk of lung cancer and heart attack (NHMRC, 1997).
- Restrictions on smoking at work are associated with reduced exposure to environmental tobacco smoke, reduced daily smoking rate and increased cessation. Smoking restrictions also contribute to smoking being regarded as more socially unacceptable and inconvenient (Chapman et al, 1999).
- Between 1993 and 1998, the proportion of respondents in the National Drug Strategy Household Survey who reported that their workplace had no restrictions on smoking declined (from 17.1% to 9.9%) and the proportion of respondents reporting that smoking was allowed only outside the work area increased (from 48.6% to 57.0%).

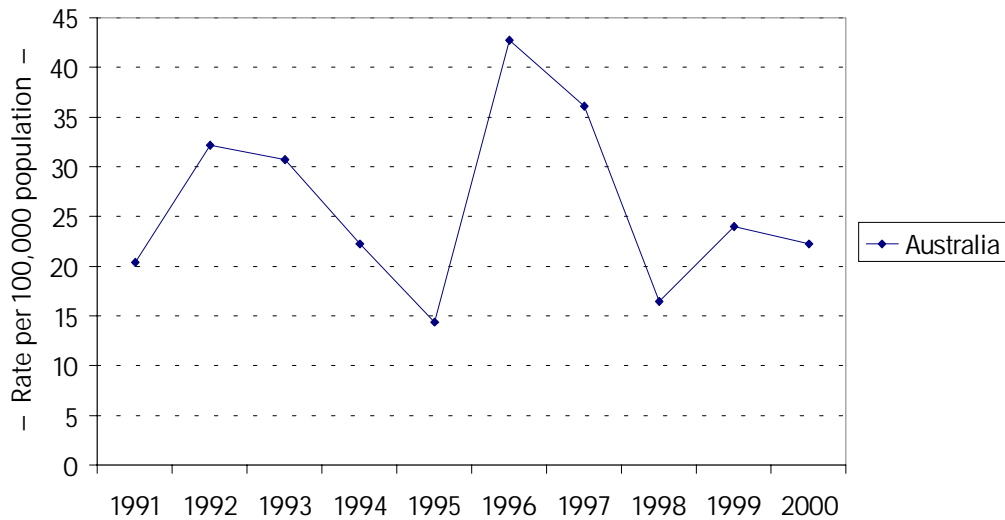
For further information see:

Chapman S. Borland R. Scollo M. Brownson R.C. Dominello A. and Woodward S. (1999), 'The impact of smoke-free workplaces on declining cigarette consumption in Australia and the United States', *American Journal of Public Health*, vol. 89 pp. 1018–1023.

National Health and Medical Research Council (NHMRC) (1997), *The Health Effects of Passive Smoking*, Australian Government Publishing Service, Canberra.

Environmental factors – Indicator 4.3 Notification rates of Ross River virus by State and Territory

Notification rate (a) of Ross River virus, Australia, 1991–2000



Notification rates (a) of Ross River virus by jurisdiction, Australia, 1991–2000

Year (b)	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
– Rate per 100,000 population –									
1991	6.8	8.8	71.6	8.3	–	–	–	293.7	20.4
1992	5.2	3.2	137.1	43.1	4.9	–	0.7	140.4	32.2
1993	9.9	27.3	76.8	10.3	55.2	–	1.3	144.7	30.7
1994	5.3	1.3	98.6	5.7	1.9	–	0.3	180.0	22.2
1995	3.8	0.7	51.7	12.1	1.6	5.9	0.7	218.0	14.4
1996	16.8	3.0	147.8	83.7	1.7	15.6	0.3	72.0	42.7
1997	26.2	23.0	70.1	38.9	44.6	3.0	2.9	119.3	36.1
1998	8.0	2.4	56.5	18.0	4.1	1.9	1.9	63.7	16.5
1999	16.7	5.6	64.9	36.1	3.2	14.2	2.2	73.6	24.0
2000	11.5	6.8	41.4	57.5	27.7	1.7	5.1	65.5	21.9

(a) Crude incidence rate per 100,000 population.

(b) Refers to year of reporting.

Source: National Notifiable Diseases Surveillance System, 2001 (unpublished).

- Ross River virus infection is a mosquito-borne virus, transmitted by a number of different mosquitos and is the most common vector-borne disease in Australia with 4,175 cases in 2000. It is a zoonosis (a disease of both human and animals), and infects a wide range of native animals, enabling ongoing transmission.
- As infection with Ross River virus can be asymptomatic or produce mild symptoms, notifications will never represent the true incidence of infection. The notification rate will depend on disease severity and testing patterns.
- Not surprisingly, the highest notification rate of Ross River virus infection occurs in the far north of Australia, where infection occurs year-round. In the southern part of Australia the disease is predominantly notified in the summer months.
- The annual notification rate will depend on factors that affect mosquito density, such as rainfall, tides and wind patterns.
- Among large urban areas, the local notification rate will be higher in areas near water courses, wetlands, salt marshes and reclaimed mangrove swamps, where mosquito density is higher.
- Prevention strategies include vector control (which will never be 100% effective), town planning (avoiding housing developments in high-risk areas) and public education.

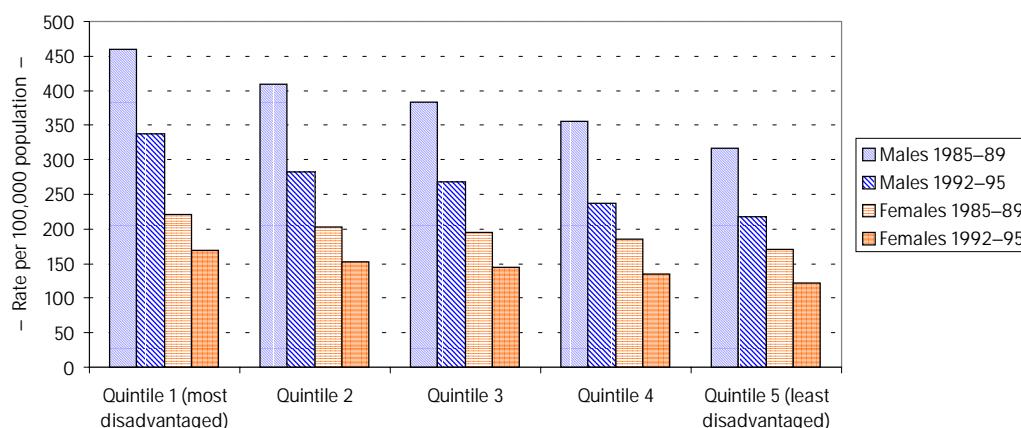
For further information see:

Harley D. Sleight A. Ritchie S. (2001), 'Ross River Virus Transmission, Infection and Disease: a cross-disciplinary review', *Clinical Microbiology Reviews*, vol. 14, pp. 929–932.

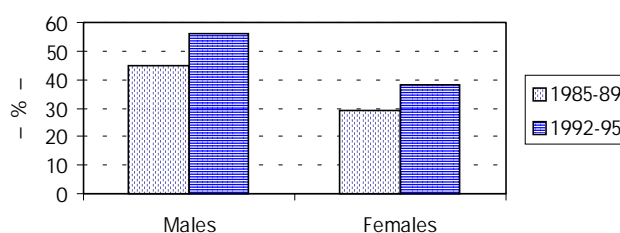
Tong S. Bi P. Hayes J. Donald K. Mackenzie J. (2001), 'Geographic variation of notified Ross River virus infections in Queensland, Australia, 1985–1996', *American Journal of Tropical Medicine and Hygiene*, vol. 65, no.3, pp. 171–176.

Socioeconomic factors – Indicator 4.4 Differentials in death rates across socioeconomic quintiles

Graph 1 Death rates for males and females aged 15 to 64 years by socioeconomic quintile (a), Australia, 1985–89 and 1992–95



Graph 2 Percentage difference in mortality between the 5th and 1st quintiles (a), Australia, 1985–89 and 1992–95



(a) Shows trends in mortality by quintile using the index of relative socioeconomic disadvantage. Quintile 1 represents the most disadvantaged area and quintile 5 the least disadvantaged area.

Source: Adapted from John Glover et al (1999), *Social Health Atlas of Australia*, vol. 1, Public Health Information Development Unit, Adelaide University.

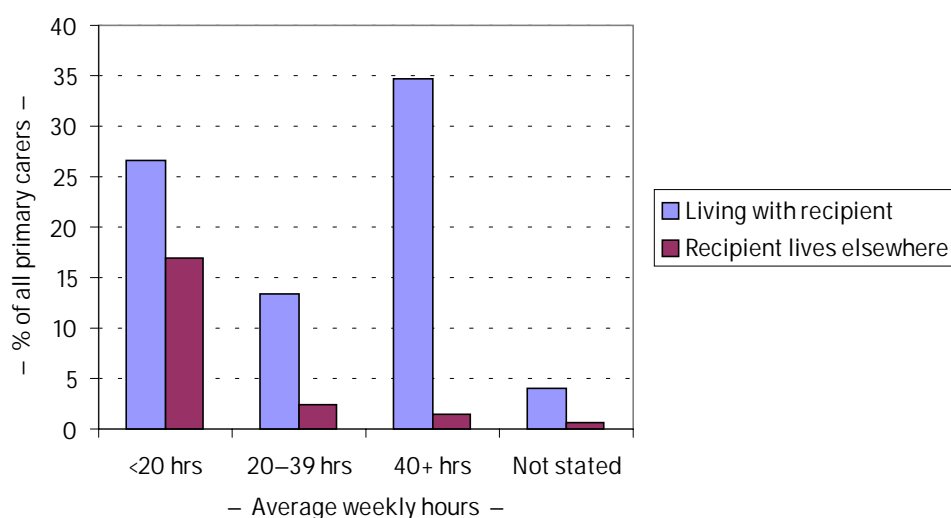
- Research has shown a clear link between socioeconomic position and health outcomes. Graph 1 demonstrates the gradient in all-cause mortality for males and females using the quintiles of relative socioeconomic disadvantage by area with people in the least advantaged area having higher mortality rates than people in the most advantaged areas. This gradient is present for most diseases and conditions.
- The gap in mortality rates between populations at each end of the socioeconomic spectrum is also widening. Although overall mortality declined between 1985–89 and 1992–95, Graph 2 shows that the percentage gap between quintile one and quintile five increased over this period. There also continue to be substantially higher mortality rates for Indigenous populations as compared with non-Indigenous populations.
- For women, the differential in death rates between the most advantaged and the most disadvantaged areas has increased from 1.3 times to 1.4 times higher between 1985–89 and 1992–95 and for men the gap is wider, increasing from 1.4 times to 1.5 times.
- Moderating these health inequalities is a challenge for the health system.

For further information see:

Glover et al. (1999), *A Social Health Atlas of Australia*, vol. 1, Public Health Information Development Unit, University of Adelaide, SA.

Community capacity – Indicator 4.5 Carer activity

Primary carers: Time spent caring by residency status, Australia, 1998



Proportion of people who were carers, by sex and age group, Australia, 1998

Carer status	Age group (years)							All ages
	18-24	25-34	35-44	45-54	55-64	65-74	75 +	
– % of population –								
Males								
Primary carer	0.4	0.4	1.6	2.8	3.4	2.9	5.4	1.5
Other carer	9.1	7.6	9.7	12.8	16.2	19.2	18.4	9.6
Total carers	9.5	8.1	11.3	15.6	19.5	22.1	23.4	11.1
Females								
Primary carer	0.7	2.9	5.1	6.6	6.6	6.8	3.1	3.4
Other carer	9.5	10.6	13.2	15.8	19.7	13.3	7.6	10.7
Total carers	10.3	13.5	18.3	22.4	26.4	20.1	10.7	14.1

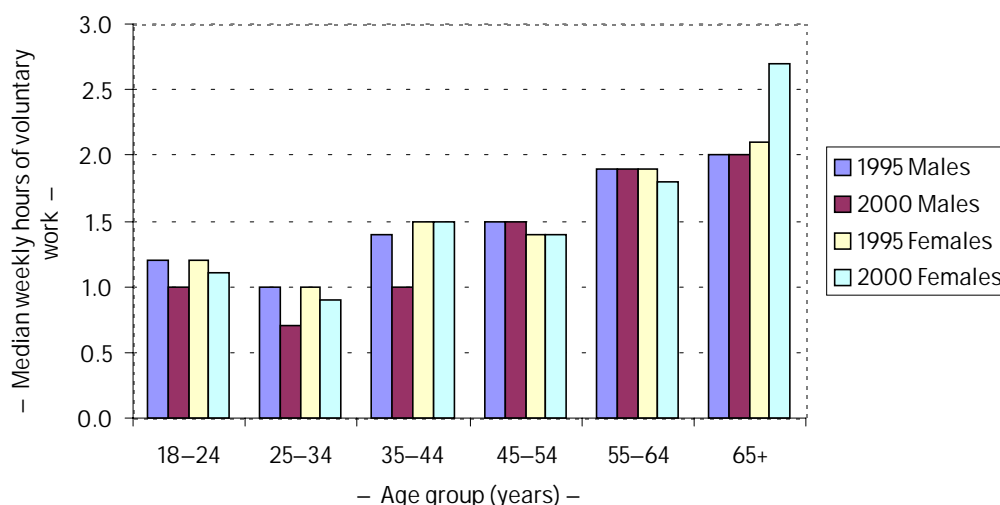
Source: Australian Bureau of Statistics (1999), *1998 Disability, Ageing and Carers: Summary of Findings*, ABS Cat. no. 4430.0.

- The growing population of older Australians with greater life expectancy, the increase in the underlying disability rate, and overall population trends towards smaller households and more people living alone have increased the pressure on both families and formal community support services to provide care at home.
- While women still form the overall majority of informal carers, the likelihood of becoming a carer differs widely between men and women by age group, with male carers in the 75 and over age group outnumbering females. This reflects the greater likelihood of male carers to be caring for a partner, and for older women to be widowed. The majority of male primary carers are most likely to be caring for someone who lives in the same household, with women more likely than men to provide care to someone living elsewhere, including non-relatives.
- In 1998, almost 40% of primary carers reported providing care for more than 40 hours per week, and the two most common effects of caring reported were 'interrupted sleep' (51%) and 'needs more support' (42%). These effects were highest among those caring for people with a psychological disorder (63% and 61% respectively). In addition 46% of primary carers reported that the caring role had adversely affected their financial situation, with the majority reporting it was primarily due to additional expenses. This data suggests that there may be significant unmet demand for Home and Community Care services, including respite care.

For further information see:

Australian Bureau of Statistics, *Australian Social Trends, 2001*, Cat. no. 4102.0, ABS, Canberra.
 McDonald, P. (1995), *Families in Australia: A Socio-demographic Perspective*, Australian Institute of Family Studies, Victoria.
 Australian Bureau of Statistics (1999), *Survey of Disability, Ageing and Carers, 1998*, ABS Cat. no. 4430.0, ABS, Canberra.

Median weekly hours of voluntary work, by age group and sex, Australia, 1995 and 2000



Number of people who volunteer (as a % of population), by age group for selected types of organisations (a), Australia, 2000

Selected type of organisation	Age group (years)					
	18-24	25-34	35-44	45-54	55-64	65+
	– % of population –					
Sport/recreation	40.0	37.5	42.5	36.1	22.0	15.3
Education/youth	16.8	32.7	46.4	27.5	13.7	6.7
Health	6.4	8.3	4.8	7.8	10.5	11.4
Community/welfare	21.3	23.7	27.7	34.5	52.9	64.3

(a) As people may volunteer for more than one organisation type, figures for individual categories may not add to 100%, and some over-reporting may occur. No significant changes were seen from 1995 survey. Source: Australian Bureau of Statistics (2001), *Voluntary Work, Australia, 2000*, Cat. no. 4441.0, ABS, Canberra.

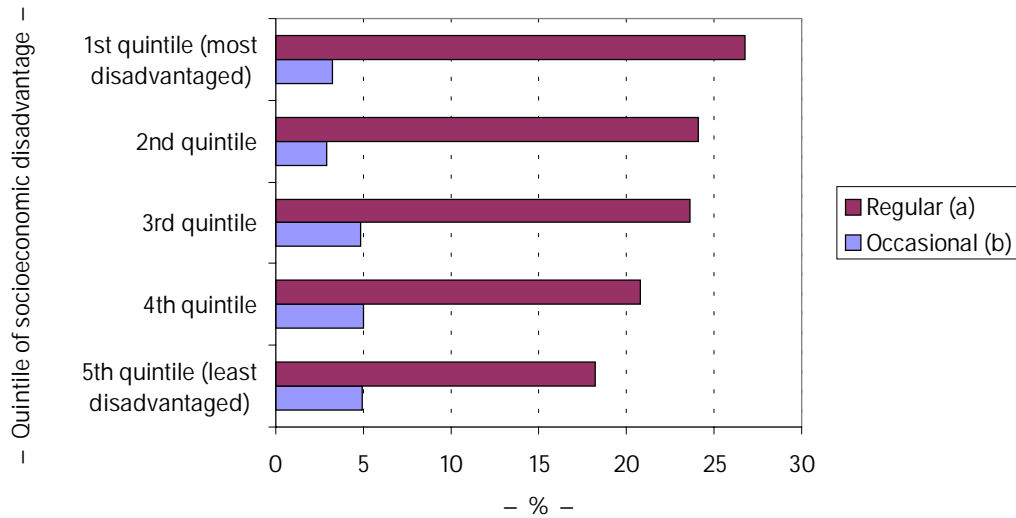
- Overall, volunteer rates are only slightly higher for women than for men (33% to 31%), but vary somewhat more markedly in fields of volunteer activity, type of work provided, and in median weekly hours. Sport/recreation organisations attracted the largest numbers of men, and community/welfare the largest numbers of women. Non-metropolitan areas reported higher volunteer rates than metropolitan across all jurisdictions. Time commitment to voluntary work increases as participation in labour force decreases, with the largest time commitment being made by women aged 65 and over.
- Between 1995 and 2000 there was growth in the numbers of people reporting having participated in volunteer work activity, for both sexes and across all age groups, but particularly the 18-24 age group (17% to 27%) and 55-64 age groups (24% to 33%). There was also a substantial increase in total volunteer hours provided. However, the median weekly hours of voluntary work remained stable. Incentives to increase participation rates, particularly for welfare, community and health organisations, may be warranted.

For further information see:

Australian Bureau of Statistics (2001), *Australian Social Trends, 2001*, Cat. no. 4102.0, ABS, Canberra.
 Australian Bureau of Statistics (2001 and 1995), *Surveys of Voluntary Work, Australia, 1995 and 2000*, ABS Cat. no. 4441.0, ABS, Canberra.

Health behaviours – Indicator 4.7 Proportion of adults who are current smokers

Tobacco use by socioeconomic area: proportion of the population aged 14 years and over, Australia, 1998



Tobacco use by socioeconomic area: proportion of the population aged 14 years and over, Australia, 1998

Quintile of socioeconomic disadvantage	Smoking status	
	Regular (a)	Occasional (b)
	– % –	
1st quintile (most disadvantaged)	26.8	3.2
2nd quintile	24.1	2.9
3rd quintile	23.6	4.8
4th quintile	20.8	5.0
5th quintile (least disadvantaged)	18.2	4.9

Note: Base equals recent smokers.

(a) Smokes daily/most days.

(b) Smokes less often than daily/most days.

Source: Australian Institute of Health and Welfare (2000), National Drug Strategy Household Survey, 1998 (unpublished).

- Of all the risk factors, smoking is responsible for the greatest burden on the health of Australians. In 1996 it was estimated that tobacco smoking was responsible for 12% of the total burden of disease in males and 7% in females (AIHW, 1999, by Mathers et al). Tobacco smoking increases the risk of coronary heart disease, stroke and peripheral vascular disease, as well as a range of cancers and other diseases and conditions.
- Smoking is more common among individuals from lower socioeconomic backgrounds, with around 26.8% of those from the lowest socioeconomic group reporting that they smoked daily. This compares with about 18.2% of people from the highest socioeconomic group who smoke daily.
- Among unemployed persons, 28% indicated they smoked daily, compared with 25% of people who were employed. However, smoking rates among people with tertiary education are under half the rates for people with no qualifications (12% compared with 26%).
- The rate of smoking in adults is declining. The National Tobacco Strategy (1999–2003) provides a comprehensive, cross-jurisdictional and multi-dimensional approach to improve the health of all Australians by eliminating or reducing their exposure to tobacco in all its forms.

For further information see:

Australian Institute of Health and Welfare (2001), *Heart, stroke and vascular diseases: Australian Facts 2001*, AIHW, National Heart Foundation and National Stroke Foundation of Australia, AIHW Cat. no. CVD 13.

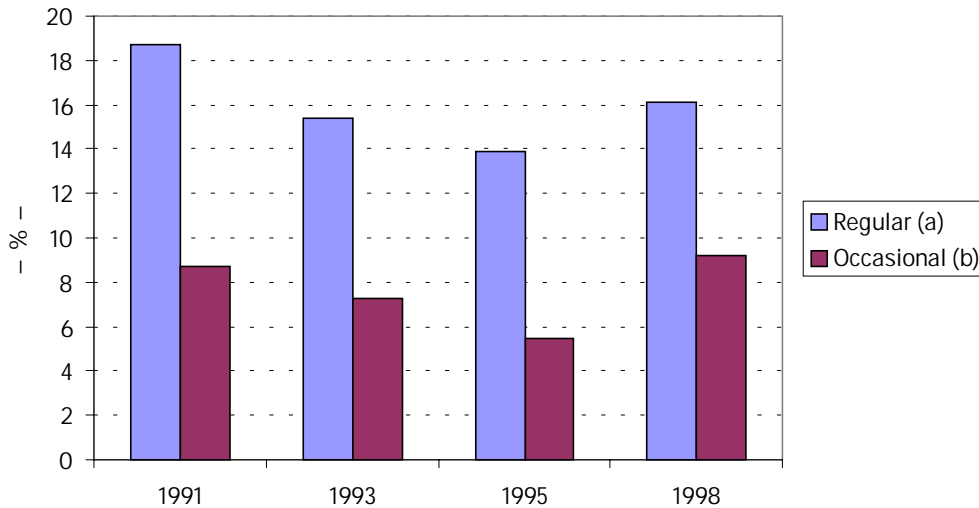
Australian Institute of Health and Welfare (2000), *Australia's Health 2000*, AIHW Cat. no. 19.

Australian Institute of Health and Welfare (2001), *The Quantification of Drug-caused Mortality and Morbidity in Australia, 1998*, by Ridolfo B. and Stevenson C., AIHW Cat. no. PHE 29.

Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. et al, AIHW Cat. no. PHE 17.

Health behaviours – Indicator 4.8 Proportion of adolescents who are current smokers

Proportion of persons age 14–19 years who smoke, Australia, 1991–1998



Proportion of persons aged 14–19 years who smoke by sex, Australia, 1998

Smoking status	Males	Females
	– % –	
Regular (a)	16.3	15.8
Occasional (b)	8.4	10.1
Total	24.7	25.9

(a) Smokes daily/most days.

(b) Smokes less often than daily/most days.

Source: Australian Institute of Health and Welfare (2000), *National Drug Strategy Household Survey, 1998*.

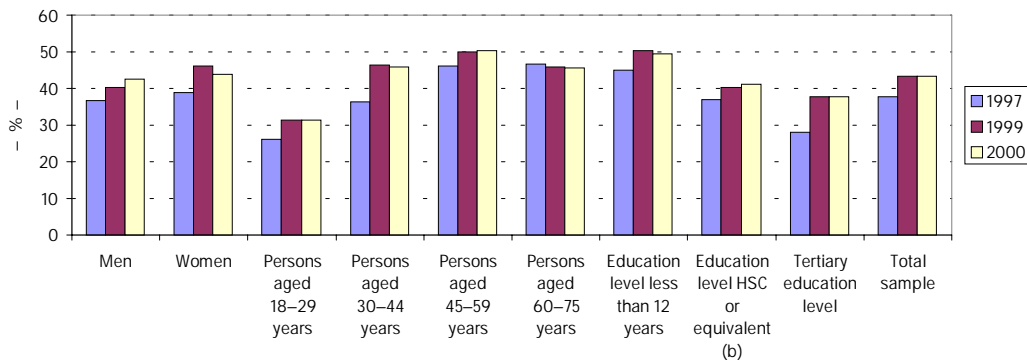
- In 1998, approximately 16% of young people aged 14–19 years smoked daily, with a further 9% being occasional smokers.
- Rates of smoking by younger females were similar to rates in younger males in 1998, which is further evidence of the apparent sustainability of a trend established in the last decade.
- The proportion of young people aged 14–19 years that are occasional or regular smokers increased from 1995 to 1998. The increase for young females (from 19.6% in 1995 to 25.9% in 1998) was slightly higher than for males of the same age group (19.3% to 24.7% respectively). The proportion of smokers in all other age groups declined over the period.
- Maternal smoking during pregnancy has a detrimental effect on the developing child and increases the risk of SIDS, low birthweight and perinatal mortality. The Longitudinal Study on Women's Health has demonstrated that targeting women at the time of planning for, or at the beginning of, pregnancy is an effective time for anti-smoking messages for women.
- About 90% of smokers begin using tobacco by the age of 20 (AIHW, 1998, *National Drug Strategy Household Survey*).
- All jurisdictions have initiated legislative strategies to address the issue of young people's access to tobacco and some have compliance monitoring on the sale of tobacco to minors.

For further information see:

Commonwealth of Australia (2000), *A national approach for reducing access to tobacco in Australia by young people under 18 years of age*, an initiative of the National Expert Advisory Committee on Tobacco and the National Tobacco Policy Officers Group.

Health behaviours – Indicator 4.9 Proportion of adults (aged 18 years and over) insufficiently physically active to obtain a health benefit

Proportion of people insufficiently active (a), Australia, 1997–2000



(a) Insufficient activity levels measured by 'insufficient' time which is defined as less than 150 minutes per week, using the sum of walking, moderate activity and vigorous activity (weighted by two) as promoted in the National Physical Activity Guidelines for Australians.

(b) HSC = Higher School Certificate.

Source: Bauman et al (2002), *Trends in population levels of reported physical activity in Australia*.

- Participation in physical activity has benefits for physical and mental health. It is associated with reduced risk of chronic disease, improved psychological wellbeing and reduced death rates (Armstrong et al, 2000). Physical inactivity is responsible for an estimated 8,000 deaths per year and about 7% of the total burden of disease in Australia, ranking second only to tobacco (AIHW, 1999, by Mathers et al).
- Physical inactivity is associated with high direct health costs, with a conservative estimate of around \$400 million each year (Stephenson et al, 2000). An estimated gross saving of up to \$8 million in health care costs might be achieved for every one per cent gain in the proportion of the population that is sufficiently active. A five per cent increase in the proportion of the population who is sufficiently active is deemed to be an achievable goal and would result in \$30 million savings in health care costs per year (Bauman et al, 1996).
- In 2000, 43% of Australians were insufficiently active to achieve a health benefit. There was a significant increase in the proportion of people insufficiently active from 37.8% in 1997 to 43.4% in 1999 and remaining steady at 43.2% in 2000. This increase in physical inactivity was seen among men and among all age groups with the exception of those aged 60–75 years, among whom activity levels remained constant. Rates of physical inactivity among women also increased between 1997 (36.6%) and 1999 (46.2%) but declined slightly in 2000 (44.0%).

For further information see:

Australian Institute of Health and Welfare (2000), *Physical Activity Patterns of Australian Adults: Results of the 1999 National Physical Activity Survey*, by Armstrong T. Bauman A. and Davies J., AIHW Cat. no. CVD 10, Canberra.

Australian Institute of Health and Welfare (2001), *Heart, Stroke and Vascular Diseases – Australian Facts*, AIHW Cat. no. CVD 13, Canberra.

Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

Bauman A. Bellow B. Booth M. Hahn A. Stoker L. and Thomas M. (1996), *Towards Best Practice for the Promotion of Physical Activity in the Areas of New South Wales*, NSW Health Department, Centre for Disease Prevention and Health Promotion.

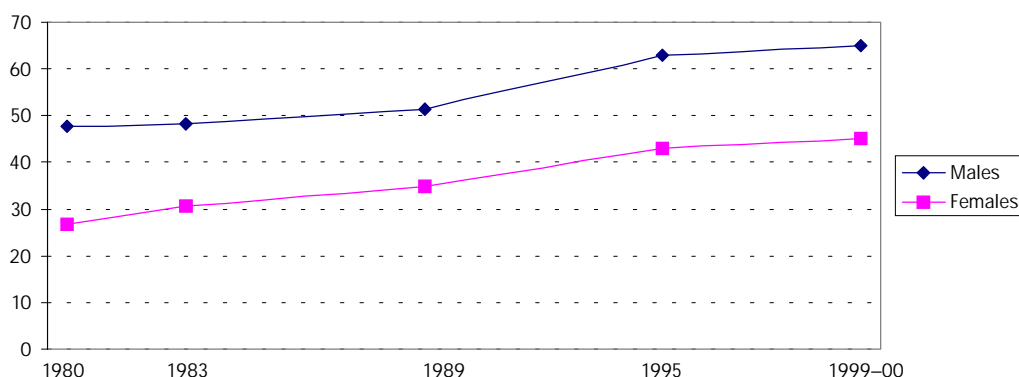
Commonwealth Department of Health and Family Services (1998), *Developing an Active Australia: A Framework for Action for Physical Activity and Health*.

Stephenson J. Bauman A. Armstrong T. Smith B. and Bellow B. (2000), *The Costs of Illness Attributable to Physical Inactivity in Australia: A Preliminary Study*, Commonwealth Department of Health and Aged Care and the Australian Sports Commission, Canberra.

Bauman A. Ford I. and Armstrong T. (2002), *Trends in population levels of reported physical activity in Australia, 1997, 1999, 2000*, Australian Sports Commission, Canberra.

Health behaviours – Indicator 4.10 Proportion of people obese and overweight

Proportion of people overweight and obese, Australia, 1980 to 1999–2000 (a)



(a) 'Overweight' is defined as BMI ≥ 25 and 'Obese' is defined as BMI ≥ 30 . Age standardised to the 1991 Australian population. Comprises persons aged 25–64 years of age.

Sources: Australian Institute of Health and Welfare, *Australian Health Trends 2001*, by de Loopes M. and Bhatia K. AIHW Cat. no. PHE 24.

- There is a strong association between overweight or obesity and health problems such as coronary heart disease, stroke and type 2 diabetes (mature age onset diabetes). In 1996, overweight and obesity accounted for over 4% of the total burden of disease in Australia (AIHW, 1999, by Mathers et al).
- Prevalence of overweight and obesity among Australians increased significantly between 1980 and 1999 (from 27% to 45% among women and from 48% to 65% among men aged 25–64 in capital cities) (AIHW, 2001 CVD Series no. 13, p. 59).
- In 1999–2000, over seven million adult Australians (aged 25 years and over) (60%) were overweight (BMI ≥ 25) and 20% of these were obese (BMI ≥ 30). The proportion of men who were obese increased dramatically from 8% in 1980 to 17% in 1999–2000 and similarly for women, from 7% to 19%.
- Data from the 1995 National Nutrition Survey (ABS) indicated that prevalence of overweight and obesity varies with employment status. Employed men were more likely to be overweight than unemployed men or those not in the labour force. Conversely, employed women were less likely to be overweight than those not in paid employment.
- Among women, those from lower socioeconomic groups were more likely to be overweight, but this association was not apparent among men.
- Increasing physical activity and having a healthy diet are key factors in reducing overweight and obesity. Addressing increasing prevalence of overweight and obesity will require a range of strategies encompassing behavioural, cultural, social, psychological and environmental factors.

For further information see:

Australian Bureau of Statistics and Commonwealth Department of Health and Aged Care Services (1998), *National Nutrition Survey: Nutrient Intakes and Physical Measurements, Australia, 1995*, ABS Cat. no. 4805.0, Canberra.

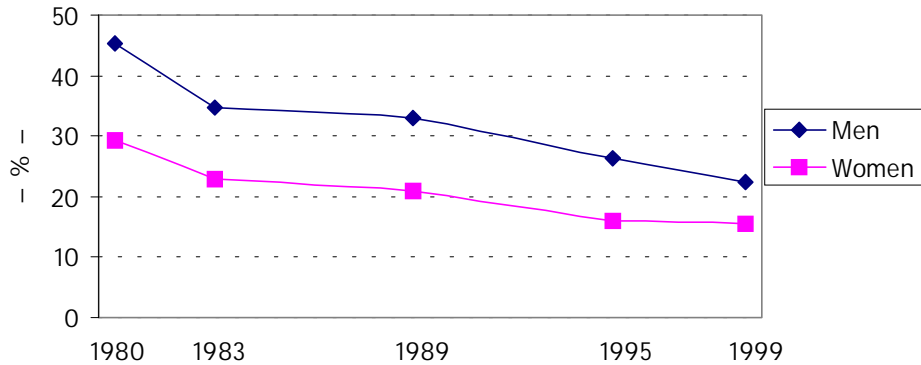
Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

Australian Institute of Health and Welfare (1999), *Heart, Stroke and Vascular Diseases, Australian Facts*, AIHW Cat. no. CVD 7, AIHW and the Heart Foundation of Australia (Cardiovascular Disease Series No. 10), Canberra.

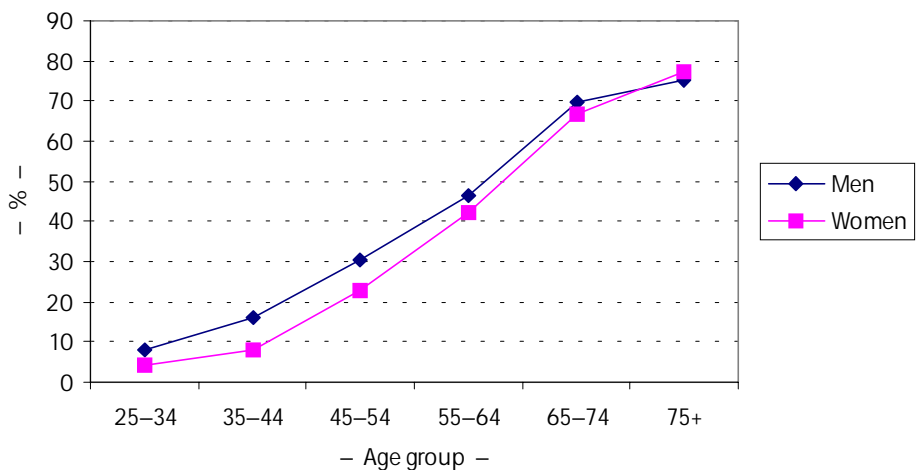
Australian Institute of Health and Welfare (2001), *Heart, Stroke and Vascular Diseases, Australian Facts 2001*, AIHW Cat. no. CVD 13, AIHW, National Heart Foundation of Australia and National Stroke Foundation of Australia, Canberra.

Person-related factors – Indicator 4.11 Proportion of persons with high blood pressure

Proportion of people with high blood pressure (a) by sex, Australia, 1980 to 1999



Proportion of people with high blood pressure (a) by age, Australia, 1999–2000



(a) Age-standardised to the 1991 Australian population. Includes persons aged 25–64. High blood pressure is defined as ≥ 140 mmHg systolic and ≥ 90 mmHg diastolic.

Source: Australian Institute of Health and Welfare (unpublished work), Analysis of results of the 1980, 1983, 1989 Risk Factor Prevalence Study, 1995 National Nutrition Survey, 1999 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

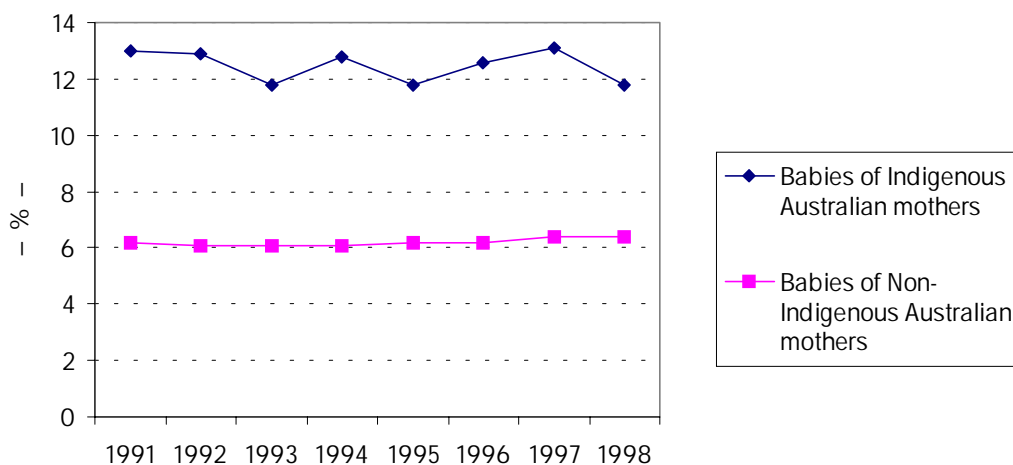
- High blood pressure is a major risk factor for heart disease, stroke and renal failure and accounted for about 5.4% of all disability adjusted life years in 1996 (AIHW, 1999, by Mathers et al). High blood pressure is also one of the most common problems managed by general practitioners.
- The proportion of males and females with high blood pressure has continued to decline. This decline has occurred equally among those on, and not on, medication.
- The factors contributing to high blood pressure include obesity, alcohol misuse, physical inactivity, high dietary salt intake and saturated fat consumption. Cigarette smoking increases the risk of heart attack and stroke in hypertensive individuals.
- In recognition of the importance of blood pressure control the National Heart Foundation has developed guidelines for the measurement and management of hypertension for medical practitioners.

For further information see:

National Heart Foundation (1999), *1999 Guide to the Management of Hypertension for Doctors*, National Heart Foundation of Australia, Surry Hills, New South Wales.

Person-related factors – Indicator 4.12 Low birthweight of babies of Indigenous Australian mothers and non-Indigenous Australian mothers

Proportion of low birthweight babies (<2,500 grams) of Indigenous Australian mothers and non-Indigenous Australian mothers, Australia, 1991–1998



Distribution of low birthweight (<2,500 g) babies of Indigenous Australian mothers and non-Indigenous Australian mothers, Australia, 1991–1998

Babies of:	1991	1992	1993	1994	1995	1996	1997	1998
	– Number –							
Indigenous Australian mothers	923	942	866	956	926	994	1,070	1,030
Non-Indigenous Australian mothers	15,351	15,551	15,508	15,430	15,646	15,532	15,796	15,824
	– % –							
Indigenous Australian mothers	13.0	12.9	11.8	12.8	11.8	12.6	13.1	11.8
Non-Indigenous Australian mothers	6.2	6.1	6.1	6.1	6.2	6.2	6.4	6.4

Source: AIHW Perinatal Statistics Unit (unpublished).

- This indicator is a physical measure which affects individuals at the beginning of their life and which will have a lasting influence on health status.
- Low birthweight babies (<2,500 grams) are more prone to ill health during childhood and adult life. The factors contributing to low birthweight include socioeconomic status, size of parents and age of mother, number of babies previously born, mother's nutritional status, smoking and illness during pregnancy.
- Low birthweight is strongly associated with low socioeconomic status.
- Indigenous mothers are about twice as likely to have a low birthweight infant. There appears to have been little change in this situation between 1991 and 1998.
- The evidence shows that birth outcomes can be improved by ensuring appropriate antenatal care for Indigenous mothers. Programs such as the *Strong Women, Strong Babies, Strong Culture* initiative in the Northern Territory have demonstrated a significant and clinically important decline in the prevalence of low birthweight after the program was introduced.

For further information see:

Mackerras D. (1998), *Evaluation of the Strong Women, Strong Babies, Strong Culture Program: Results for the period 1990–1996 in the three pilot communities*, Menzies School of Health Research.

CHAPTER 5: HEALTH SYSTEM PERFORMANCE

Health system performance (Tier 3) accommodates reporting on a range of service categories and types of interventions across the spectrum of the health care system.

The health system can also be viewed as a care continuum linking the sectors across the system. This continuum can be seen as incorporating four sectors or levels of care that constitute the health system: population health, primary care, acute care and coordinated care. There is considerable overlap of services and functions between these sectors.

Table 5.1 Dimensions of Health System Performance (Tier 3)

Health status and outcomes (Tier 1)		
Determinants of health (Tier 2)		
Health system performance (Tier 3) How well is the health system performing in delivering quality health actions to improve the health of all Australians? Is it the same for everyone?		
Effective	Appropriate	Efficient
Care, intervention or action achieves desired outcome.	Care/intervention/action provided is relevant to the client's needs and based on established standards.	Achieving desired results with most cost effective use of resources.
Responsive	Accessible	Safe
Service provides respect for persons and is client orientated. It includes respect for dignity, confidentiality, participation in choices, promptness, quality of amenities, access to social support networks, and choice of provider.	Ability of people to obtain health care at the right place and right time irrespective of income, physical location and cultural background.	The avoidance or reduction to acceptable limits of actual or potential harm from health care management or the environment in which health care is delivered.
Continuous	Capable	Sustainable
Ability to provide uninterrupted, coordinated care or service across programs, practitioners, organisations and levels over time.	An individual's or service's capacity to provide a health service based on skills and knowledge.	System's or organisation's capacity to provide infrastructure such as workforce, facilities and equipment, and be innovative and respond to emerging needs (research, monitoring).

The indicators selected for this report are drawn from these sectors and are intended to cover the nine dimensions of performance as outlined in Table 5.1. A single indicator may be relevant across several dimensions. The principal indicators are shown in Table 5.2.

The performance measures presented in this chapter attempt to provide an overview of the performance of the Australian health system. The overview that emerges is one of a system that can demonstrate important improvements in performance, but for which there remains considerable scope for further activity. Perhaps more evident is the need for further work in the area of performance measurement, including an understanding of the extent to which measures indicate the potential for improvement.

A number of measures presented suggest improvements in health system performance over time, particularly across the effectiveness and appropriateness categories. Hospital admissions for ambulatory care sensitive conditions such as asthma and diabetes are falling; five year survival rates for people with cancer have improved; screening programs for cervical and breast cancers have increased participation rates; childhood immunisation rates continue to improve accompanied by falls in notifications of vaccine preventable diseases for children; and prescription of antibiotics for upper respiratory tract infections is falling. While these trends are in the right direction, there are undoubtedly opportunities for further improvement. For several of these measures, consideration needs to be given to identifying targets the health system could aim for.

Table 5.2 Health System Performance Indicators

Indicator	Dimension
Separation rates with asthma as principal diagnosis by location	Effective
Separation rates with type 2 diabetes mellitus as principal diagnosis	Effective
Five year survival rates for cancer	Effective
Cervical cancer screening: proportion of females aged 20-69 years screened for cervical abnormalities in a 24 month period by age group	Effective
Breast cancer screening: proportion of females screened through the BreastScreen Australia program in a 24 month period for the target age group (50-69 years)	Effective
Immunisation: proportion of children fully vaccinated at 12 and 24 months of age	Effective
Hospital separation rates for Caesarean sections	Appropriate
Hospital separation rates for myringotomies and tonsillectomies	Appropriate
Prescription of oral antibiotics for upper respiratory tract infection (URTI)	Appropriate
Cost per casemix adjusted separation for selected public hospitals	Efficient
Average length of stay for hospital admissions	Efficient
Per capita fee-for-service expenditure on primary and secondary health services generated by non-specialist attendances	Efficient
Emergency department waiting times	Responsive
Number of Full-time Workload Equivalent GPs by sex and location	Responsive
Days waited for admission for elective surgery (50th percentile)	Accessible
Number of residential care places and community aged care packages per 1,000 persons aged 70 years and over	Accessible
Hospital separations with an adverse event	Safe
Uptake of Medicare Benefits Schedule (MBS) items for enhanced primary care	Continuous
Proportion of workload carried by vocationally registered GPs and other medical practitioners aged over 50 years	Sustainable

For a few measures, the trends are less encouraging. Caesarean section rates in Australia are increasing. Over the last four years, hospital separation rates for myringotomy have only fallen slightly, while hospital separation rates for tonsillectomy have stayed much the same. There is also considerable variation across States and Territories in these rates. These indicators suggest there remains scope for improving the appropriateness of services provided by hospitals.

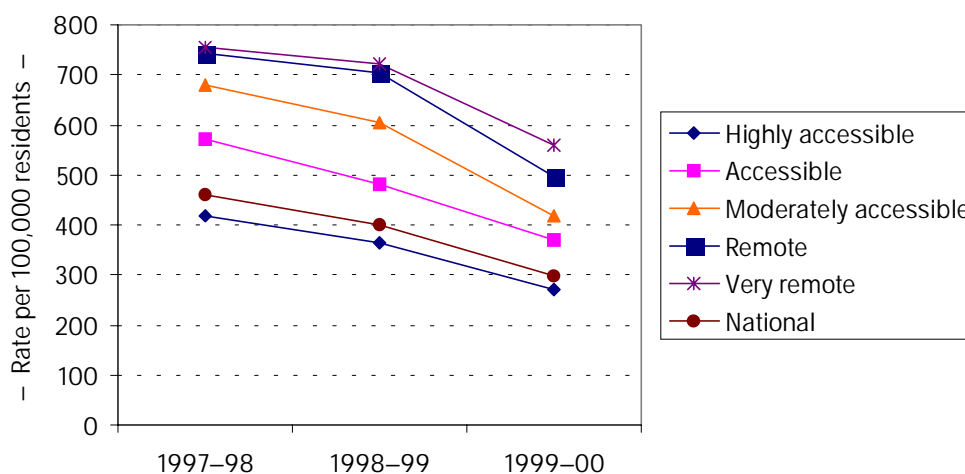
For a number of other measures it is difficult to draw firm conclusions on trends or the broader health system performance. Measures of the efficiency of the health system remain somewhat problematic. While the cost per casemix weighted separation for selected public acute hospitals has been used in Australia for many years as an indicator of efficiency, there still remain a number of problems in comparing these measures across States and over time. The broad measure of average length of stay shows a continuing trend downwards, suggesting improved efficiency in the use of acute services. However, the measure is sensitive to changes in the mix of cases being treated by acute hospitals, and the increasing proportion of same day procedures being performed. When same day separations are excluded, average length of stay has not reduced markedly. Data on per capita fee-for-service expenditures on primary and secondary services generated by non-specialist attendances show a significant increase over the period from 1994-95 to 1998-99. Most of the increases occurred in relation to ordered services such as pathology, diagnostic imaging and pharmaceuticals. These increases could suggest a relative strengthening of the primary health care sector, or they could be interpreted as a relatively high and perhaps uncontrolled growth in at least some ordered services.

In some instances the basic data and construction of the indicator are problematic. Data on emergency department waiting times is affected by different approaches the States and Territories have taken to measuring waiting times. Some measure the time a patient waits before being seen by a doctor. Other States and Territories measure the time a patient waits before being seen by a doctor or nurse.

For some dimensions the performance measures available are relatively weak or not yet developed, in particular measures of safety, continuity, capability and sustainability. While the report offers measures for some of these categories, the measures will need supplementation and enhancement in future versions of this report. For example, the usage of Medical Benefits Schedule items for enhanced primary care demonstrates that the take-up of these recently introduced items is accelerating. However, better measures of the extent to which health services are provided to people in an uninterrupted and coordinated manner may be feasible.

Effective – Indicator 5.1 Separation rates with asthma as principal diagnosis by location

Separation rates (a) with asthma as principal diagnosis (b), by location (c), Australia, 1997–98 to 1999–2000



(a) Separation rates are not age-standardised as reliable estimates of populations within particular age bands were not available.
 (b) Separation counts represent a broad range of cases with a principal diagnosis of asthma, including two ICD-10-AM codings for chronic obstructive pulmonary disease.
 (c) ARIA category is by Statistical Local Area Estimated Resident Population figures supplied by the Australian Bureau of Statistics and are preliminary as at 30 June 2000. Jervis Bay, Christmas Island and Cocos (Keeling) Islands are excluded.
 Source: DoHA (unpublished).

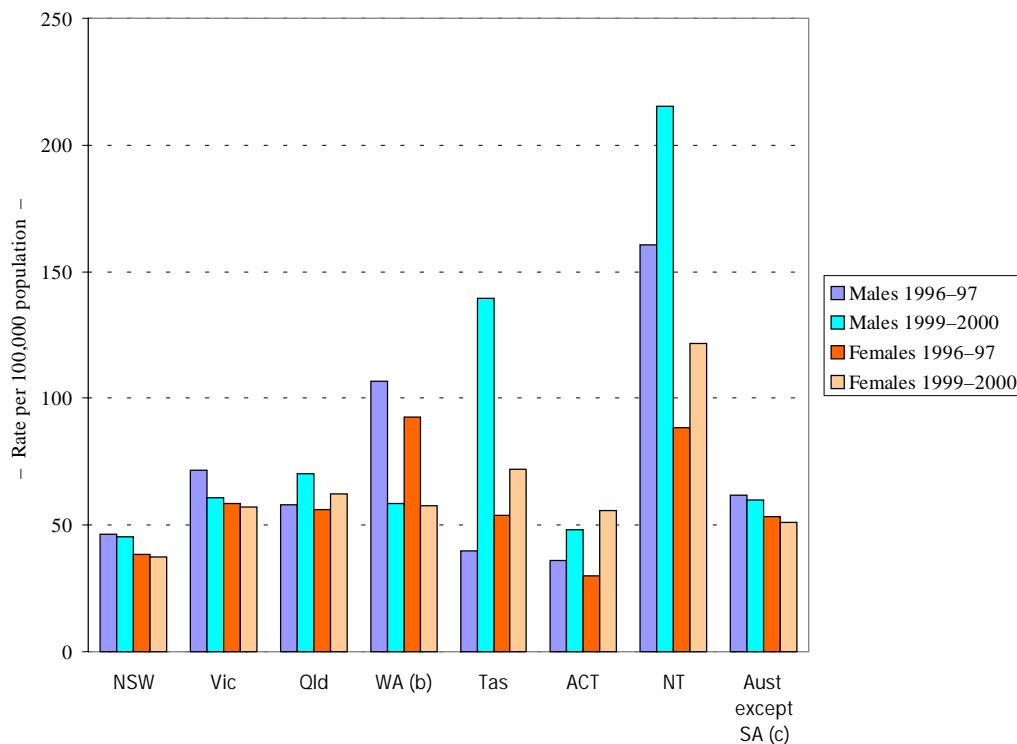
- The 1995 National Health Survey (ABS) estimated that over two million Australians had asthma with prevalence rates highest among 5-14 year olds (21% among boys and 17% among girls). It also found prevalence of asthma in children higher where households had one or more smokers, and in women higher if they were current or ex-smokers.
- Separation rates for asthma in Australia have declined by approximately a third (35.8%) during the period 1997-98 to 1999-2000, overwhelmingly due to very steep declines in recorded separations for chronic obstructive pulmonary disease among those aged 45 and over. Separations for males over 65 have fallen by two-thirds uniformly between 1997-98 and 1999-2000, while those for females in the same age group have dropped by slightly more than one-half, with a more pronounced fall in 1998-99. Separations for males aged 45-64 have declined by one-half and those for females in this age bracket by one-third, both in even portions. These effects have been due almost entirely to changes in chronic obstructive pulmonary disease separations.
- An increase in separations in the 0-14 age groups in 1998-99 was followed by much greater decreases the following year, the one-sixth overall decrease in males being about one-and-a-half times that in females. Very few chronic obstructive pulmonary disease separations were recorded in this age group or that between 15 and 44 years.
- The 2001-02 Federal Budget included funding to support general practice to better manage the clinical care of people with *moderate to severe* asthma. A one-off sign on payment will be made to eligible practices who register to participate in the GP Asthma Initiative. In addition a service incentive payment will be made to GPs who complete the Asthma 3+ Visit Plan for a patient in accordance with the Medicare Benefits Schedule.

For further information see:

Australian Bureau of Statistics (1999), *Australian Social Trends 1999*, Cat. no. 4102.0, Canberra.
 Australian Institute of Health and Welfare (1998), *Health in Rural and Remote Australia*, Canberra.
 Commonwealth Department of Health and Aged Care (2001), *Medicare Benefits Schedule Book*.

Effective – Indicator 5.2 Separation rates with type 2 diabetes mellitus as principal diagnosis

Separation rates (a) with type 2 diabetes mellitus as principal diagnosis, by jurisdiction, Australia, 1996–97 and 1999–2000



Note: Separations with a principal diagnosis of type 2 diabetes represent a small percentage of all separations coded with a diagnosis of type 2 diabetes mellitus. The majority of people with type 2 diabetes admitted to hospital are admitted with diabetes related comorbidities. Data should be interpreted with caution due to changes in counting rules and variations in clinical practice that are being actively investigated.

(a) Separation rates are age adjusted to the Australian national population as at 30 June 1991 using direct standardisation. Crude separation rates for each jurisdiction were calculated using ABS estimates of age-sex specific resident populations within the jurisdiction in each year for the denominators. Multiple episodes for individual patients, particularly where they occur in small populations, will tend to exaggerate rates.

(b) 1996-97 WA separations contain 306 admissions coded with an incorrect diagnosis of 250.40 (renal complication) when the same patient was admitted for dialysis.

(c) SA data have not been published because there have been unexpected increases in hospital separation rates in SA for type 2 diabetes and associated complications between 1996-97 and 1999-2000 which are thought to be due to changes in clinical practice that are being actively investigated.

Source: DoHA (unpublished).

- Overall separation rates for both males and females fell slightly over the three years, by 3% and 4% respectively nationally excluding South Australia. Data on hospital separations, death registrations, surveys and other studies suggest that the Indigenous population has high incidence and prevalence rates of type 2 diabetes. In 1998-99, there were 10 times as many hospital separations for type 2 diabetes than expected for Indigenous males, and 15 times as many than expected for Indigenous females. Diabetes is likely to be under-reported in Indigenous Australians due to poor identification of Aboriginal and Torres Strait Islander peoples in these data collections (ABS and AIHW, 2001).
- Experience over the past decade in Australia and overseas points to the benefits of a 'structured care' approach which focuses on early diagnosis, disease registers and information management systems to support care through patient recalls/reminders and self-audit of performance use of disease management guidelines and improved linkages with allied health services and specialist support. The 2001-02 Federal Budget included funding for a diabetes initiative supporting patient registers and recall/reminder systems, and the completion by GPs of an annual cycle of care for diabetic patients, based on Royal Australian College of General Practitioners and Diabetes Australia guidelines.

For further information see:

Australian Institute of Health and Welfare (1998), *Health in Rural and Remote Australia*, Canberra.

Royal Australian College of General Practitioners and Diabetes Australia (2000), *Diabetes Management in General Practice*, 6th edition.

Australian Bureau of Statistics and Australian Institute of Health and Welfare (2001), *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*.

Effective – Indicator 5.3 Five year survival rates for cancer

Five year relative survival proportions: diagnosis period by sex, Australia, 1982–86 to 1992–97 (a)



(a) Excludes non-melanoma skin cancer.

Source: Australian Institute of Health and Welfare (2001), *Cancer Survival in Australia, 2001*.

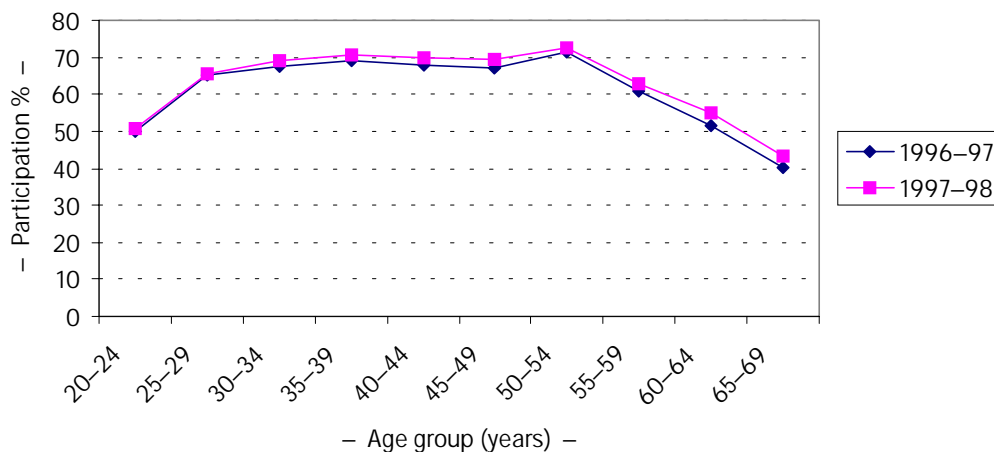
- Survival after a diagnosis of cancer is an important measure in assessing the broad impacts of prevention and early detection methods such as screening and treatment. *Relative survival* is the ratio between what actually happened to a group of people with cancer and what would normally have occurred to them in the absence of cancer. A relative survival of 100% indicates that the disease has made no difference to survival of the group over a given period. A survival rate of less than 100 per cent indicates that fewer members of the group survived for that period than would have been expected for similar people in the general population.
- Relative survival increased between 1982–86 and 1992–97 on average for all cancers (excluding non-melanoma skin cancer) from 43.8% to 56.8% for males and from 55.3% to 63.4% for females.
- Females had higher relative survival than males across all diagnostic periods.
- The largest increases for males were in cancer of the prostate (59.3% to 82.7%) and for females were in cancer of the breast (72.3% to 84.0%).
 - A major factor influencing this increase in survival for both prostate cancer and breast cancer was the introduction of screening in the 1990s – mammographic screening for breast and PSA testing for prostate.
 - This result should be treated with caution for both cancers, as early detection by screening would increase the apparent survival time following diagnosis even if screening made no change to the time of the subsequent death.
 - A further issue for survival after diagnosis with prostate cancer is that many of the cases of prostate cancer detected by PSA screening may, in the absence of screening, have not progressed to causing symptoms and may have remained undetected.

For further information see:

Australian Institute of Health and Welfare and Australasian Association of Cancer Registries (2001), *Cancer Survival in Australia, 2001, Part 1: National Summary Statistics*, AIHW Cat. no. CAN 13, Cancer Series No. 18, AIHW Canberra.

Effective – Indicator 5.4 Cervical cancer screening: proportion of females aged 20–69 years screened for cervical abnormalities in a 24 month period by age group

Participation in the National Cervical Screening Program by women aged 20–69 years (a) by five year age groups, Australia (b), 1996–1997 and 1997–1998



Participation in the National Cervical Screening Program by women aged 20–69 years (a), by jurisdiction, Australia (b), 1996–97 and 1997–98

Year	NSW	Vic	WA	SA	Tas	ACT	NT	Aust (excl. Qld) (b)
1996–97	56.7	68.0	67.4	64.9	65.9	65.1	65.1	62.4
1997–98	60.1	68.1	66.4	67.2	67.5	67.4	64.1	63.9

(a) Participation rates have been adjusted for the estimated proportion of women who have had a hysterectomy by age.

(b) The Queensland Health Pap Smear Register commenced February 1999; therefore no data are available for 1996–97 and 1997–98.

Source: Australian Institute of Health and Welfare (2000), *Cervical screening in Australia 1997–1998*, Cat. no. CAN 9.

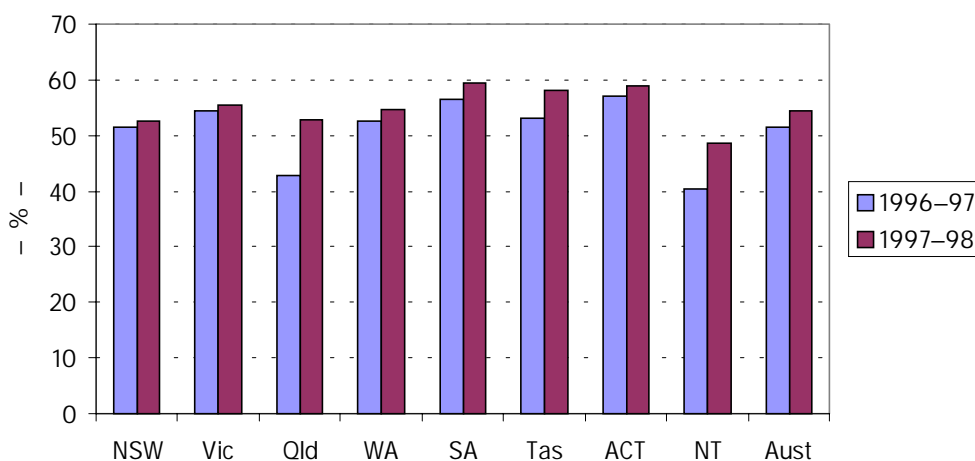
- Increasing participation in cervical screening is important to reduce the number of women who present with cervical cancer and ultimately die from the disease. Women in the 20–69 years age group are actively targeted by a range of strategies. It is recommended that women in the target age group, who have ever been sexually active, have a Pap smear every two years. A total of 2,721,650 women were screened for cervical abnormalities in the January 1997–December 1998 period.
- The participation rate for cervical cancer screening (excluding Queensland) in 1997–98 was 63.9% compared with 62.4% for 1996–97. The highest participation was among women aged 50–54 years (72.5%) and the lowest was 43.4% for 65–69 year old women.
- The jurisdictional participation rates are based on women who were screened in that State or Territory. In 1997–98 Victoria registered the highest participation rate (68.1%) and New South Wales the lowest (60.1%). However, between the periods 1996–97 and 1997–98 New South Wales registered the largest *increase* in participation (6%).

For further information see:

Australian Institute of Health and Welfare (2000), *Cervical Screening in Australia 1997–1998*, Cat. no. CAN 9, Cancer Series No. 14, AIHW, Canberra.

Effective – Indicator 5.5 Breast cancer screening: proportion of females screened through the BreastScreen Australia program in a 24 month period for the target age group (50–69 years)

Participation of women aged 50–69 years in BreastScreen Australia, by jurisdiction, Australia, 1996–97 and 1997–98 (a) (b)



Participation of women aged 50–69 years in BreastScreen Australia, by jurisdiction, Australia, 1996–97 and 1997–98 (a) (b)

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
						– % –			
1996–97	51.6	54.4	42.9	52.6	56.4	53.1	57.1	40.4	51.4
1997–98	52.6	55.4	52.7	54.6	59.5	58.2	58.9	48.6	54.3

(a) Rates are expressed as the percentage of the eligible female population and age-standardised to the Australian population at 30 June 1991.

(b) All differences between 1996–97 and 1997–98 were statistically significant at the 5% level.

Source: BreastScreen Australia.

- Women aged 50–69 years are the target age group for the BreastScreen Australia Program.
- Participation rates have increased for all States and Territories from 1996–97 to 1997–98. Queensland and Northern Territory rates show the largest increase, 22.8% for Queensland and 20.3% for Northern Territory.
- The overall age standardised participation rate for Australia shows a relative increase of 5.6% over the period 1996–97 to 1997–98, increasing from 51.4% to 54.3% of women in the target age group.

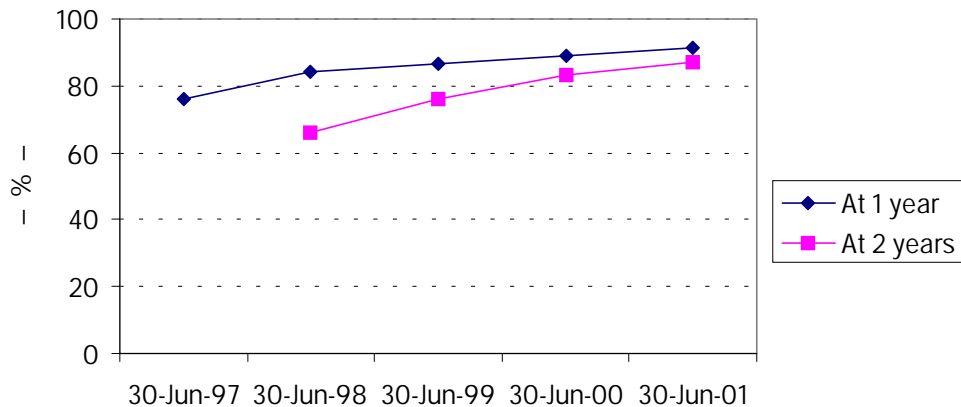
For further information see:

Australian Institute of Health and Welfare (1998), *Breast and Cervical Cancer Screening in Australia 1996–1997*, AIHW Cat. no. CAN 3, Canberra.

Australian Institute of Health and Welfare (2000), *BreastScreen Australia Achievement Report 1997 and 1998*, AIHW Cat. no. CAN 8, Canberra.

Effective – Indicator 5.6 Immunisation: proportion of children fully vaccinated at 12 and 24 months of age

Proportion of children fully immunised, Australia, 30 June 1997 to 30 June 2001



Source: Australian Childhood Immunisation Register (ACIR) for age as at 30 June 2001.

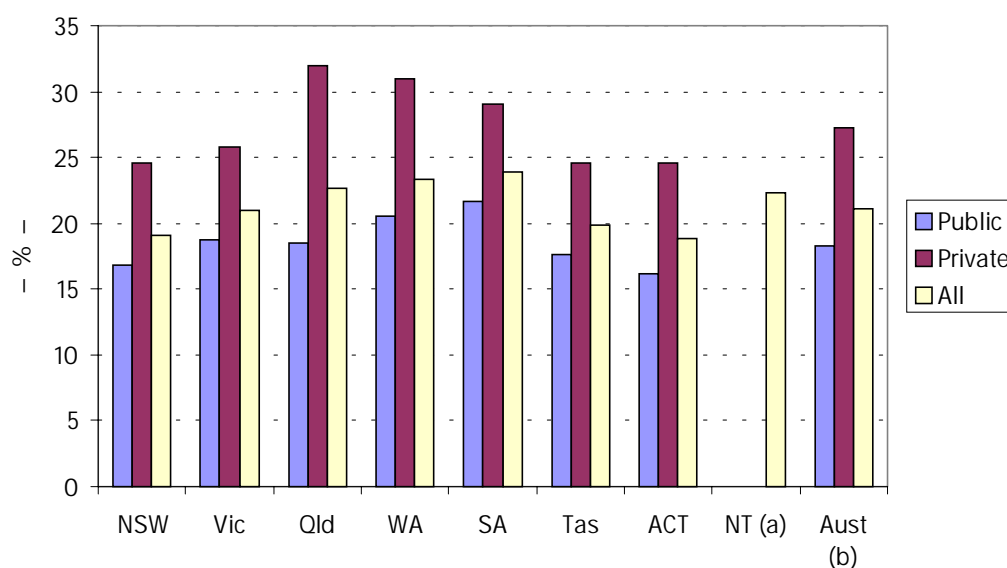
- Immunisation is a highly cost effective intervention in reducing morbidity and mortality rates in vaccine preventable diseases. Health system effectiveness in providing vaccination services can be measured by vaccination coverage at key milestones (12 and 24 months of age).
- Immunisation coverage data from the Australian Childhood Immunisation Register (ACIR) show continued increases in childhood immunisation rates. By June 2001, 91.2% of 1 year old children (aged 12–15 months) were fully immunised, an overall increase of 16.3% since March 1997, with the last four quarters showing little variation in the fully immunised rate. In June 2001 vaccination coverage in all States and Territories, except WA and NT, had reached or exceeded the 90% target rate, with WA and NT recording 89.5% and 89.3% coverage respectively.
- For fully immunised 2 year olds (24–27 months) the national coverage rate had reached 87.0% by June 2001, an increase of 3.6% over the previous 12 months and an overall increase of 23.2% since March 1998, when these data were first collected by the ACIR.
- Notification rates for 0–4 years olds for vaccine-preventable diseases covered by the childhood immunisation program have declined considerably with the increased rates of immunisation. For example, notifications for measles declined by 92% between 1997 and 2000. Pertussis vaccination does not confer lifelong immunity so pertussis continues to circulate in the adolescent and adult communities. Consequently young infants (less than 6 months of age) who have not completed their primary course of pertussis vaccination are at risk of infection due to sibling or other household contact with this disease. The pertussis 3–5 year cyclical trend is reflected in the notification rates.

For further information see:

National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (2000), *Vaccine Preventable Diseases and Vaccination Coverage in Australia, 1993–1998: Supplement*, by McIntyre P. et al, Communicable Diseases Intelligence, Communicable Diseases Network Australia, DHAC, Canberra.

Appropriate – Indicator 5.7 Hospital separation rates for Caesarean sections

Caesarean sections as a proportion of all confinements by patient accommodation status, by jurisdiction, Australia, 1998



(a) Northern Territory data unavailable for accommodation status.

(b) Excluding Northern Territory for data on accommodation status.

Source: Australian Institute of Health and Welfare (2000), *Australia's Mothers and Babies 1998*, AIHW Perinatal Statistics Unit.

Caesarean sections as a proportion of all confinements, Australia, 1990–1999

Country	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Australia	17.5	18.0	18.3	19.0	19.4	19.3	19.5	20.3	21.1	21.9

Source: Australian Institute of Health and Welfare (various years), *Australia's Mothers and Babies*.

- Australia has one of the highest rates of Caesarean section in the developed world, and current trends suggest that the annual rate of increase is accelerating (Senate Community Affairs References Committee Report into Childbirth Procedures, 1999).
- In 1995 the United States initiated a national goal to reduce the United States Caesarean section rate to 15% in accordance with the World Health Organization's recommendation of 10–15% as constituting 'a reasonable and achievable rate' for Caesarean sections in industrialised nations (WHO, *Appropriate Technology for Birth*, 1985, Chalmers, 1992).
- In the United Kingdom patterns of rapid increases in Caesarean section rates, along with wide variation in rates between hospitals and regions, were noted during 1999 and 2000. Such variance in rates were not accounted for by variations in casemix, and has led to the UK initiating a National Caesarean Section Audit to identify clinical best practice, with a view to benchmarking.
- Australian evidence appears similar to that reported in the United Kingdom, with wide variations in clinical practice between individual hospitals and jurisdictions and between the private and public sectors. For example, the Women's Hospitals Australia consortium reported a range of 15% to over 30% for 17 of its member hospitals (Senate Community Affairs References Committee Report into Childbirth Procedures, 1999).

For further information see:

Commonwealth of Australia (1999), *Rocking the Cradle: A Report into Childbirth Procedures*, Senate Community Affairs Reference Committee, ISBN 0 642 71042 2.

UK National Health Service (2001), *National Sentinel Caesarean Section Audit project*, National Institute for Clinical Excellence (NICE).

OECD (2001), *Health At A Glance*, OECD, Oct 2001, ISBN 9264187138 - Selected indicators from key OECD health indicators concurrently published in electronic form as OECD (2001), *Health Data 2001*, OECD, June 2001.

Web site:

<http://www.oecd.org/health>

Appropriate – Indicator 5.8 Hospital separation rates for myringotomies and tonsillectomies

Hospital separation rates, myringotomies and tonsillectomies (a), by jurisdiction, Australia (b), selected years

Procedure	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust(b)
– Separations per 1,000 population –									
Myringotomy									
1997–98	1.76	2.48	1.96	2.07	3.68	1.88	1.54	0.88	2.14
1998–99	1.71	2.31	1.78	2.18	3.33	1.33	1.47	0.59	n.a.
1999–00	1.65	2.29	1.69	2.41	2.94	1.44	1.40	0.61	1.96
Tonsillectomy									
1996–97	1.60	2.16	1.87	1.81	2.49	1.32	1.65	0.48	1.85
1997–98	1.74	2.15	1.89	1.67	2.73	1.50	1.56	0.55	1.91
1998–99	1.88	2.03	1.77	1.89	2.39	1.07	1.40	0.55	n.a.
1999–00	1.73	1.92	1.81	2.10	2.13	1.36	1.40	0.60	1.83

(a) The procedures are defined using ICD-9-CM and ICD-10-AM codes as used by States and Territories. Excludes private hospitals in the Northern Territory and some other hospitals, and so may underestimate above procedures. Excludes multiple procedures during the same separation within the same sentinel group. Rate per 1,000 population was directly age-standardised to the Australian population at 30 June 1991, by five year age groups up to 85 years and over, by age only.

(b) The Australian values for 1998–9 were not calculated because jurisdictions were not all using the same classification. Source: Australian Institute of Health and Welfare, Australian Hospital Statistics (various years).

- Myringotomy (insertion of grommets) for the treatment of acute otitis media in children and tonsillectomy are indicators of the role of primary care services as gatekeeper to secondary services, as the conditions can often be appropriately managed at the primary care level, without recourse to surgical procedures. Variations in separation rates, however, may also be attributed to prevalence or severity of the conditions being treated, differences in clinical practices or availability of primary care services.
- Comparability across jurisdictions and over time may also be affected by differences in coding systems. In 1998–99, New South Wales, Victoria, the Australian Capital Territory, and the Northern Territory defined procedures using ICD-10-AM codes, whereas Queensland, Western Australia, Southern Australia and Tasmania defined procedures using ICD-9-CM codes.
- UK researchers have pointed to a sustained fall nationally and decreased regional variations in myringotomy rates following the issue in 1992 of an *Effective Health Care* bulletin on the treatment of persistent glue ear in children, commissioned because of pre-existing concerns about the appropriate use of grommet insertions. Initial decreases were experienced in New South Wales after the introduction of similar clinical guidelines in 1993–94 but rates had reverted to pre-guideline levels by the end of the decade. Nonetheless, there has been an overall steady reduction in national separation rates during the period 1996–97 and 1999–2000, particularly in South Australia.

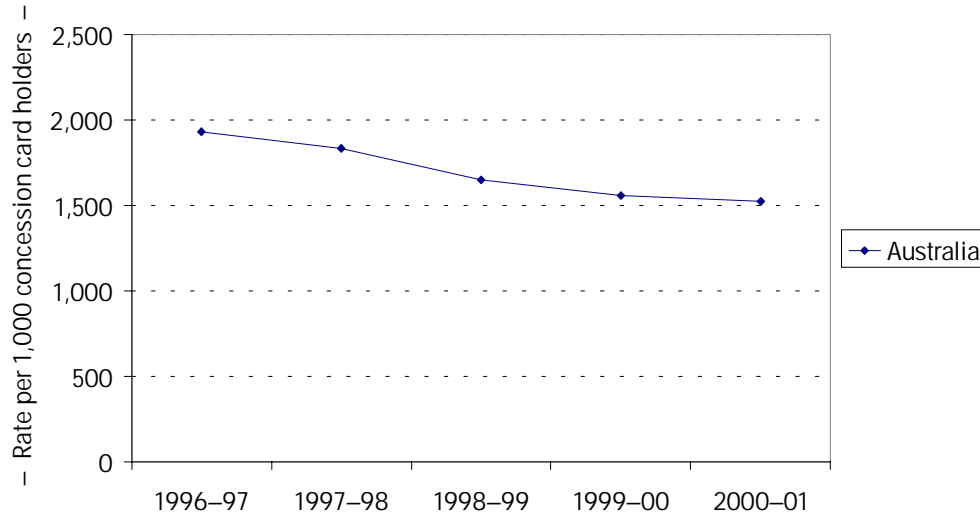
For further information see:

Mason J. Freemantle N. and Browning G. (2001), 'Impact of Effective Health Care bulletin on treatment of persistent glue ear in children: Time series analysis', *British Medical Journal*, vol. 323, pp. 1096-97.

Rob M.I. and Westbrook J.I. 'Myringotomy guidelines not as effective in Australia', *British Medical Journal* electronic responses 13 November 2001.

Appropriate – Indicator 5.9 Prescription of oral antibiotics for upper respiratory tract infection (URTI)

Number of prescriptions for oral antibiotics most commonly used in the treatment of upper respiratory tract infections (a) ordered by all practitioners and dispensed to concessional patients, per 1,000 persons with Pharmaceutical Benefits Scheme concession cards (b), Australia, 1996–97 to 2000–01



Number of prescriptions for oral antibiotics most commonly used in the treatment of upper respiratory tract infections (a) ordered by all practitioners and dispensed to concessional patients, per 1,000 persons with Pharmaceutical Benefits Scheme concession cards (b), by jurisdiction, Australia, 1996–97 to 2000–01

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
– Rate per 1,000 concession card holders –									
1996–97	1,985	2,021	1,850	1,664	1,708	1,636	1,745	1,003	1,907
2000–01	1,663	1,607	1,479	1,245	1,420	1,263	1,511	623	1,521

(a) The oral antibiotics used most commonly in treating upper respiratory tract infections are phenoxymethylpenicillin (penicillin V), amoxycillin, erythromycin, roxithromycin, cefaclor, amoxycillin+clavulanic acid, doxycycline, clarithromycin, and cefuroxime. Extraction of script numbers involving both GPs and specialists for each year in question was on the basis of all active PBS item codes associated with each of these generic names.

(b) Data about the numbers of concession card holders at the end of each financial year were obtained from the Department of Family and Community Services.

Source: DoHA (unpublished).

- Antibiotics have no efficacy in the treatment of viral infections but are still frequently prescribed when they occur, and constitute a significant risk factor for the increasing rate of microbial antibiotic resistance in the general population. GPs have tended to prescribe 90–98% of each of the generic pharmaceuticals involved throughout this period with only minor variations by jurisdiction.
- The data on oral antibiotics that are reported in this indicator relate to concession card holders, because their low cost means there is generally no Commonwealth subsidy for general patients. Although there are variations in health status and population ageing effects that may result in increases in numbers of concession card holders and in the complexity of their pharmaceutical needs, if clinical guidelines for the treatment of URTI were followed more closely by GPs in particular, the trend for prescription of oral antibiotics should nevertheless be downwards.
- Despite some differences across jurisdictions, there has been a steady reduction in prescription rates nationally and in all jurisdictions (approximately 20%) from 1996–97 to 2000–2001. About half is due to a drop in the number of actual scripts, and the other half due to increases in the number of concession card holders, particularly in Queensland, Western Australia and the Northern Territory.

For further information see:

Therapeutic Guidelines Ltd (2000), *Writing Group for Therapeutic Guidelines: Antibiotic, Therapeutic guidelines: antibiotic version 17*, Melbourne.

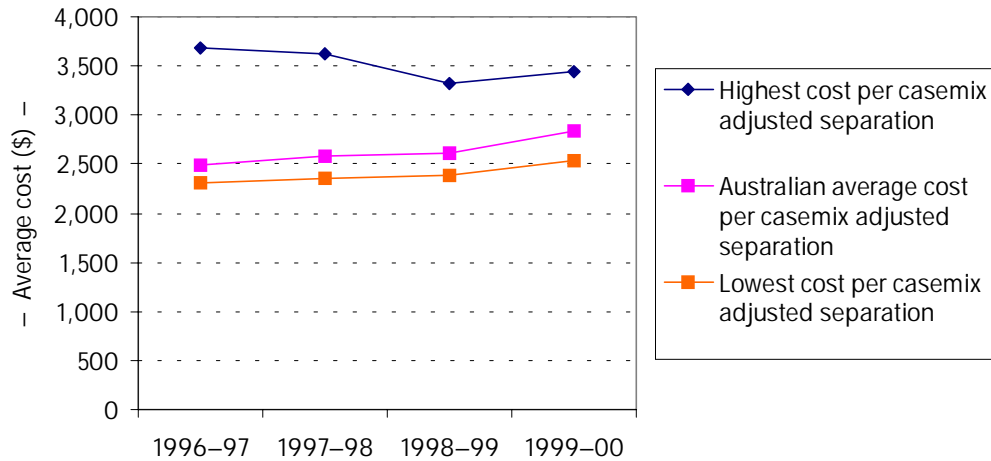
National Prescribing Service (2000), *NPS Evaluation Report No. 2*, Surry Hills, Sydney.

McManus P. Hammond M.L. Whicker A.S.D. Primrose J.G. Mant A. and Fairall S.R. (1997), 'Antibiotic use in the Australian community, 1990–1995', *Medical Journal of Australia*, vol. 167 pp. 124–127.

Turnidge J. (1994), 'Pitfalls in antibiotic prescribing and how to avoid them', *Australian Family Physician*, vol. 23 pp. 563–571.

Efficient – Indicator 5.10 Cost per casemix adjusted separation for selected public hospitals

Cost per casemix adjusted separation for selected public hospitals by jurisdiction, Australia (a), 1996–97 to 1999–2000



Cost per casemix adjusted separation for selected public hospitals, by jurisdiction, Australia (a), 1996–97 to 1999–2000

	NSW	Vic	QLD	WA (b)	SA	Tas	ACT	NT	Aust
– Cost (\$) per casemix adjusted separation –									
1996–97	2,586	2,353	2,354	2,731	2,309	2,660	3,689	3,179	2,496
1997–98	2,637	2,462	2,354	2,966	2,458	2,739	3,623	3,363	2,575
1998–99	2,766	2,413	2,390	3,026	2,431	2,568	3,326	3,297	2,611
1999–00	2,812	2,529	2,556	3,335	2,579	2,848	3,167	3,444	2,832

Note: Changes in the methods of accounting affect the comparability of data across time periods. The time series data shown above should therefore be viewed with caution. Data are current costs and have not been adjusted for inflation.

(a) Excluding psychiatric hospitals, drug and alcohol services, mothercraft hospitals, unpeered and other, hospices, rehabilitation facilities, small non-acute and multi-purpose services.

(b) WA has recomputed its 1999–2000 and 1998–99 figures using more up-to-date information and correcting the reported proportion of costs attributable to inpatients (IFrac). These revised figures are \$2,595 for 1998–99 and \$2,726 for 1999–2000. The 1999–2000 figure is also noted in the Report on Government Services, 2002.

Source: Australian Institute of Health and Welfare (various years), Australian Hospital Statistics.

- Cost per casemix adjusted separation is well accepted as an indicator of hospital efficiency and measures the average cost of providing care for an *acute* admitted patient, whether overnight or same day. However, it is recognised that it is not a good indicator for non-acute or psychiatric services and that the ability to exclude these services varies between jurisdictions. Consequently, care needs to be taken in interstate comparisons to allow for differences in the extent to which these services are provided by public hospitals in each jurisdiction. Differences in counting rules, financial reporting methods, the treatment of various expenditure items (for example, superannuation) and the allocation of overhead costs also have the potential to hinder such comparisons. Other differences in the scope of services delivered by public hospitals may also reduce the comparability of efficiency measures. For example, some jurisdictions admit patients who may be treated as non-admitted patients in other jurisdictions.

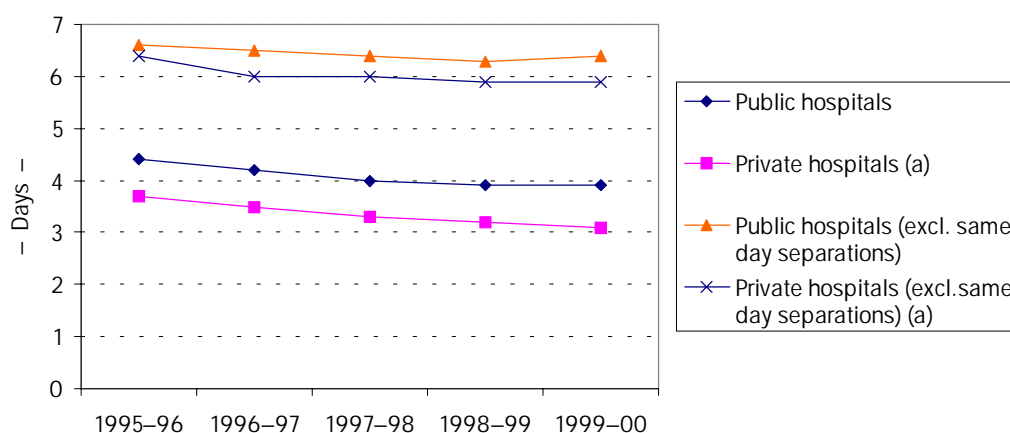
For further information see:

Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP), (2002), *Report on Government Services 2002*, AusInfo, Canberra.

Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics, 1999–2000*.

Efficient – Indicator 5.11 Average length of stay for hospital admissions

Average length of stay (days) by hospital sector, Australia, 1995–96 to 1999–2000



(a) Includes private psychiatric hospitals and private free-standing day hospital facilities.

Source: Australian Institute of Health and Welfare, *Australian Hospital Statistics, 1999-00*, AIHW Cat. no. HSE 14, Health Services Series no. 17, Canberra (Table 4.1).

Average length of stay (days) for the most common DRGs (a) by hospital sector, Australia, 1999–2000

Diagnosis Related Groups (ranked by highest number of separations, excluding same day separations)	Public	Private	Total
		– Days –	
Vaginal delivery without complicating diagnosis	3.08	4.80	3.49
Oesophagitis, gastroenteritis and miscellaneous digestive system disorders age>9 without catastrophic/severe complications and comorbidities	2.63	3.74	2.87
Caesarean delivery without complicating diagnosis	4.90	6.48	5.48
Cholecystectomy without closed common bile duct exploration without catastrophic or severe complications and comorbidities	2.37	2.61	2.47
Chest pain	2.22	2.67	2.30
Tonsillectomy, adenoidectomy	1.22	1.14	1.19
Inguinal and femoral hernia procedures age>0	1.89	2.02	1.96
Hysterectomy for non-malignancy	4.37	5.33	4.80
Bronchitis and asthma age<50 without complications and comorbidities	2.10	2.68	2.15
Heart failure and shock without catastrophic complications and comorbidities	6.38	8.43	6.85

(a) Separations for which the type of episode of care was reported as acute, or was not reported and the length of stay was less than 366 days.

Source: Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics 1999-00*, AIHW Cat. no. HSE 14, AIHW Health Statistics Series no. 17, Canberra.

- Ideally the length of stay should be adjusted for changes in casemix complexity over time since increases in case complexity would impact on length of stay and the apparent changes in efficiency.
- With the exception of tonsillectomy and adenoidectomy, the average length of stay for the top 10 AR-DRGs with the highest number of separations was lower for the public hospitals than private hospitals.
- The casemix-adjusted length of stay, or 'relative stay index', for acute patients in public hospitals in 1999–2000, was highest in the NT (1.17) and lowest in Queensland (0.93) (SCRCSSP, 2002).

For further information see:

Australian Institute of Health and Welfare (2001), *Australian Hospital Statistics 1999-00*, AIHW Cat. no. HSE 14, AIHW Health Statistics Series no. 17, Canberra.

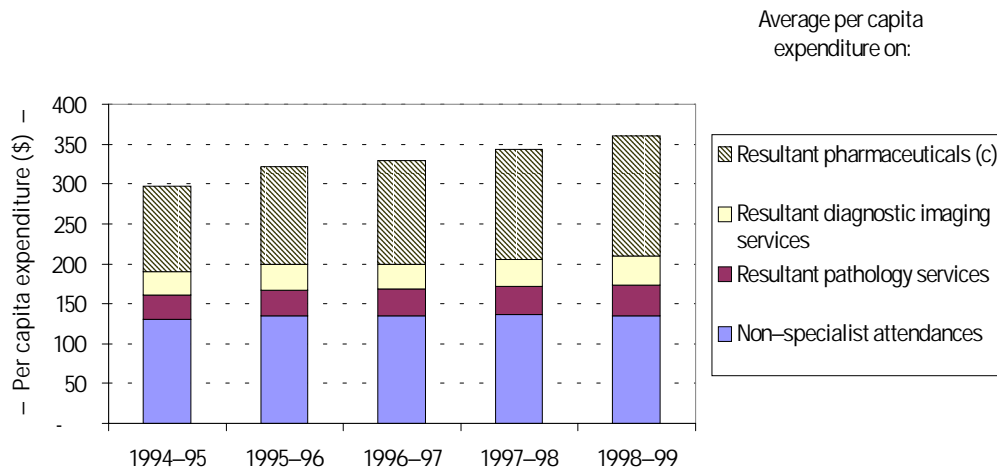
Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP) (2002), *Report on Government Services 2002*, AusInfo, Canberra.

Web site:

<http://www.aihw.gov.au/publications/hse/ahs99-00/index.html>

Efficient – Indicator 5.12 Per capita fee-for-service expenditure on primary and secondary health services generated by non-specialist attendances

Average per capita expenditure (a) on primary and secondary health services generated by non-specialist attendances (b), Australia, 1994–95 to 1998–99



Average per capita expenditure (a) on primary and secondary health services generated by non-specialist attendances (b), Australia, 1994–95 to 1998–99

Year	Average per capita expenditure (\$) on:			
	Non-specialist attendances	Resultant pathology services	Resultant diagnostic imaging services	Resultant pharmaceuticals (c)
	– Per capita expenditure –			
1994–95	130	31	29	107
1995–96	135	32	31	123
1996–97	135	33	31	130
1997–98	136	35	34	139
1998–99	136	38	36	151

(a) Expenditure includes sources other than the Commonwealth but excludes other sources of remuneration for GPs such as the Practice Incentives Program, the General Practice Immunisation Incentives Scheme and funding of the Divisions of General Practice Program.

(b) There are a number of other important services related to patient management such as physiotherapy, home nursing care and other allied health services but available data do not generally permit attribution to non-specialist attendances.

(c) Pharmaceutical expenditure excludes expenditure on prescriptions where no benefit was payable under the PBS. It also excludes drugs supplied by doctors without a prescription and non-prescription drugs purchased over the counter on the recommendation of the attending physician.

Source: DoHA (unpublished).

- Per capita fee-for-service expenditure increased by 21% over the period 1994–95 to 1998–99, with annual increases ranging from just under 3% to nearly 8%.
- Per capita fee-for-service expenditure on non-specialist attendances increased by 4%, mostly during 1995–96, while that on pathology services rose 20% in accelerating fashion, that on diagnostic imaging services went up 24%, and that on pharmaceuticals rose just over 40%. As a result, the proportion of the total arising from non-specialist attendances fell fairly steadily from 43.7% in 1994–95 to 38.6% in 1998–99, at the same time as the proportion attributable to pharmaceutical services gradually increased from 36.0% to 41.9%. Expenditure on each of pathology and diagnostic imaging services remained at about 10% of the total throughout.
- A three-year General Practice Memorandum of Understanding was signed in June 1999 between the Commonwealth Government and the Royal Australian College of General Practitioners, the Rural Doctors Association of Australia and the Australian Divisions of General Practice. It provides an agreement regarding joint management of increased funding for general practice with a view to the development of good clinical practice.

For further information see:

Commonwealth Department of Health and Aged Care (2000), *General Practice in Australia*, Canberra.

Responsive – Indicator 5.13 Emergency department waiting times

Emergency department waiting times: Proportion of patients seen within triage category, by jurisdiction, 1999–2000 (a)

Triage category number	NSW(b)	Vic	Qld(b)	WA(c)	SA(d)	Tas	ACT	NT(e)
				–	%	–		
1. Resuscitation	98	100	95	99	99	88	98	100
2. Emergency	76	77	68	75	71	63	89	48
3. Urgent	63	71	61	64	65	59	82	62
4. Semi-urgent	67	60	68	60	66	66	75	50
5. Non-urgent	89	86	89	83	91	88	89	67
<i>Data coverage</i>								
Estimated proportion of emergency visits (per cent)	79.0	99.8	80.0	100.0	64.0	100.0	100.0	54.7
Hospitals (number)	51	29	20	4	8	4	2	2

(a) Care needs to be taken in interpreting these data. Nationally agreed definitions exist but there may be differences in how data are collected. Data may vary across jurisdictions as a result of differences in clinical practices (for example, on the allocation of cases to urgency categories). States have also adopted different approaches to identifying when a patient has been seen. A new national standard has now been adopted that allows being seen by either a nurse or a doctor to be used in this measure. For 1999–2000 data, however, NSW and Queensland have reported on the basis of time to being seen by a doctor only.

(b) Waiting time is measured from arrival to time seen by a doctor (not a doctor or a nurse).

(c) Data provided for metropolitan teaching hospitals.

(d) Data provided for metropolitan hospitals only.

(e) Category 2 rate is the result of a data entry issue which has now been rectified. NT data for 2000–01 show that 68.9 per cent of Category 2 patients were seen within 10 minutes.

Source: Steering Committee for the Review of Commonwealth/State Service Provision (2002), *Report on Government Services 2002*, AusInfo, Canberra.

- Responsive and accessible services are important dimensions of health system performance and access to emergency care is an indicator of the overall performance of the acute hospital sector. Timely and clinically appropriate access to emergency care is a high priority for the community and reflects the capacity of hospitals as a whole to deal with the most urgent cases, particularly those reflected in triage categories 1 to 3.
- Data from individual jurisdictions on the percentage of patients seen within each triage category are based on standard definitions. However, the method of collection and quality of data varies so they should be interpreted with caution. The data indicate the priority given to those patients needing immediate resuscitation (triage category 1).
- A more comparable and informative measure of performance on emergency department waiting times would be provided if there was also data on the average time waited for each triage category.

For further information see:

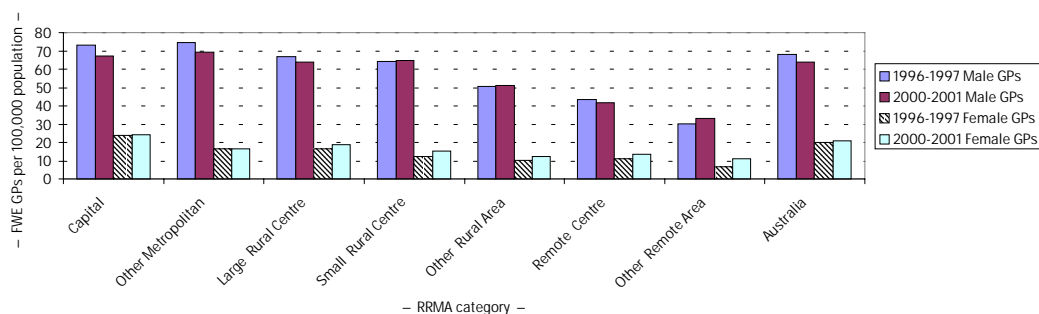
Steering Committee for the Review of Commonwealth/State Service Provision (SCRCSSP) (2002), *Report on Government Services 2002*, AusInfo, Canberra.

Web site:

<http://www.pc.gov.au/gsp/index.html>

Responsive – Indicator 5.14 Number of Full-time Workload Equivalent GPs by sex and location

Number of Full-time Workload Equivalent (a) GPs (b) by sex in urban/rural areas, 1996–97 to 2000–01



Number of Full-time Workload Equivalent (a) GPs (b), by jurisdiction, Australia, 1996–97 to 2000–01

Year	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
– Number of full-time workload equivalent GPs per 100,000 population –									
1996–97	92.2	89.1	88.0	79.1	89.8	81.4	68.8	49.3	88.1
1997–98	92.6	86.6	88.5	78.4	90.2	80.3	75.7	49.5	87.7
1998–99	90.8	86.5	87.5	76.0	89.7	78.4	72.6	52.1	86.5
1999–00	90.1	86.3	86.2	76.0	86.6	78.9	70.5	52.5	85.8
2000–01	88.4	85.1	86.1	75.0	90.1	79.0	67.7	51.8	85.0

(a) See Glossary for explanation of the calculation of the full-time workload equivalent measure.

(b) Some primary care services are provided by salaried doctors in community health settings and, particularly in rural areas, by accident and emergency departments of public hospitals. In small rural centres, other rural and remote areas, the majority of day-to-day medical care in hospital settings, including primary care, in-patient care and most procedural care is provided by GPs. Consequently the FWE measure will understate GP workload undertaken in rural and remote areas.

Source: DoHA (unpublished).

- The chart illustrates how accessibility to female general practitioners has been maintained in metropolitan areas and increased from a low base in rural and remote areas between 1996–97 and 2000–01. Accessibility to female general practitioners has also improved in each State and Territory overall. At the same time there has been a slight overall reduction in GP availability in the metropolitan areas of oversupply while in rural and remote areas workload increases were recorded in at least 2000–01 suggesting that earlier patterns of decline may have bottomed out.
- While approximately one-third of all GPs are female, they undertake around one-quarter of the workload and are less likely to be attracted to rural and remote areas than men. In 1998, 53% of vocationally recognised female GPs worked fewer than 35 hours per week compared with 12% of men. Men's average hours per week peak earlier at a significantly higher level than women's, whose hours drop and rise again in their 30s, coinciding with child-bearing. (DHAC, 2001, *The Australian Medical Workforce*).
- In 1989, 10.7% of commencing medical students had rural origins. This increased to 17.3% in 1997 and 25.2% in 2000. The 2000-01 Federal Budget expanded the Rural Australian Medical Undergraduate Scholarships scheme that supports rural students who wish to pursue a medical career, and resulted in scholarships being offered to 100 medical students commencing in the 2001 academic year, in return for a commitment from them to practise in rural and regional areas for at least six years after postgraduate training. The Commonwealth's Rural Women's GP Service also provides regular female GP visits to more than 100 rural communities with little or no access to female GPs.

For further information see:

Australian Medical Workforce Advisory Committee (2000), *The General Practice Workforce in Australia*, AMWAC Report 2000.2, Sydney.

Commonwealth Department of Health and Aged Care (2000), *General Practice in Australia, 2000*, Canberra.

Commonwealth Department of Health and Aged Care (2001), *The Australian Medical Workforce Occasional Papers*, New Series no. 12.

Accessible – Indicator 5.15 Days waited for admission for elective surgery (50th percentile)

Median waiting times for patients admitted from waiting lists, by jurisdiction and hospital peer group, 1999–2000 (a)

Peer group	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Total
– Median waiting time (days) –									
Principal referral and women's and children's hospitals	22	27	21	33	26	36	n.p.	n.p.	24
Large hospitals	31	33	27	..	40	n.p.	n.p.	n.p.	31
Medium hospitals	28	22	29	29	n.p.	..	28
Total (b)	26	28	22	31	30	36	n.p.	23	27

(a) Estimated data coverage varied by hospital peer group and State and Territory. For Principal referral and women's and children's hospitals, coverage was estimated to be 100% nationally and for each State and Territory except Qld (98%). For large hospitals, coverage was estimated to be 77% nationally, 100% for NSW, Qld, SA, Tas and NT, 52% for Vic and 0% for WA. For medium hospitals, coverage was estimated to be 58% nationally, 100% for NSW, 15% for Vic, 92% for Qld, 72% for WA and 0% for SA. Tas and NT have no hospitals in this peer group. For all hospitals combined, coverage was estimated to be 85% nationally, 100% for NSW and NT, 71% for Vic, 95% for Qld, 75% for WA, 67% for SA and 99% for Tas.

(b) Includes data for hospitals not included in the specified hospital peer groups.
.. not applicable.

n.p. not published because there was only one hospital in the peer group.

Source: Australian Institute of Health and Welfare, National Elective Surgery Waiting Times Data Collection.

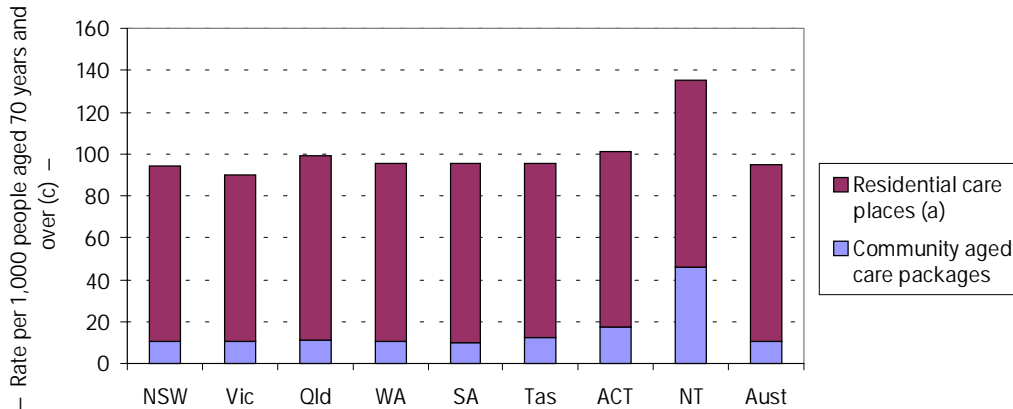
- Overall, the median waiting time for patients who were admitted from waiting lists was 27 days, ranging from 22 days in Queensland to 36 days in Tasmania. Ninety per cent of patients were admitted within 175 days, ranging from 134 days in Queensland to 292 days in Tasmania (AIHW, 2002).
- The shortest median waiting time was for patients admitted from waiting lists in hospitals in the 'Principal referral and women's and children's hospitals' peer group. The longest median waiting time was for patients admitted from waiting lists in hospitals in the 'Large hospitals' peer group (AIHW, 2002).

For further information see:

Australian Institute of Health and Welfare (2002), *Waiting Times for Elective Surgery in Australia*, AIHW Cat. no. HSE 18, Health Series no. 18, AIHW, Canberra.

Accessible – Indicator 5.16 Number of residential care places and community aged care packages per 1,000 persons aged 70 years and over

Number of operational residential care places (a) and community aged care packages per 1,000 persons aged 70 years and over, by jurisdiction, Australia, 2000



The number of operational residential care places (a) and community aged care packages and the combined provision ratio per 1,000 persons aged 70 years and over, Australia, 1994 to 2000

Year (b)	Residential care places	Community aged care packages	Total	Ratio per 1,000 persons aged 70 years and over (c)
– Number –				
1994	131,351	1,227	132,578	93.5
1995	134,810	2,542	137,352	93.9
1996	136,851	4,431	141,282	93.5
1997	139,058	6,124	145,182	93.3
1998	139,917	10,046	149,963	93.7
1999	140,651	13,753	154,404	93.9
2000	141,162	18,149	159,311	94.5

Note: The data in this table were extracted from residential aged care service datasets provided to the Australian Institute of Health and Welfare by the Department of Health and Aged Care.

(a) Refers to aged care places that are in use.

(b) As at 30 June.

(c) Based on Australian Bureau of Statistics population estimates released in December 2000.

Source: Australian Institute of Health and Welfare (2001), *Residential Aged Care in Australia, 1999-00*.

- Community care packages are designed to provide care services to those living at home who would otherwise be eligible for low level residential care.
- Aged care places and community aged care packages are combined to present an indication of the provision of aged care against the planning ratio. The planning ratio target is 100 places and packages per 1,000 persons aged 70 years and over.
- The combined ratio of residential aged care places and community aged care packages per 1,000 persons aged 70 years and over increased from 93.5 in 1994 to 94.5 in 2000. This was as a consequence of new aged care places and packages being made available.
- The provision of community aged care packages rose from 2.9 per 1,000 persons aged 70 years and over in 1996 to 10.8 per 1,000 persons aged 70 years and over in 2000 reflecting the preference of older Australians to remain in their own homes for as long as possible.

For further information see:

Australian Institute of Health and Welfare (2001), *Residential Aged Care in Australia, 1999-00: A Statistical Overview*, AIHW Cat. no. AGE 19, Aged Care Statistics Series no. 9, AIHW, Canberra.

Australian Institute of Health and Welfare (2001), *Community Aged Care Packages in Australia, 1999-00: A Statistical Overview*, AIHW Cat. no. AGE 20, Aged Care Statistics Series no. 10, AIHW, Canberra.

Safe – Indicator 5.17 Hospital separations with an adverse event

Hospital separations with an adverse event by external cause group, Australia, 1997–98

External cause	Separations	Proportion of total separations
	Number	%
Misadventures (a)	4,877	0.1
Complications (b)	190,739	3.4
Drug adverse effects (c)	53,388	1.0
Total adverse event separations (d)	264,347	4.8

(a) Includes misadventures to patients during surgical and medical care – abbreviated as 'Misadventures'.

(b) Includes surgical and medical procedures as the cause of abnormal reaction of patients or later complication, without mention of misadventure at the time of procedure - abbreviated as 'Complications'.

(c) Drugs, medicaments and biological substances causing adverse effects in therapeutic use – abbreviated as 'Drug adverse effects'. Includes adverse effects from a correct drug properly administered. However, some medication-related adverse events are coded under 'Accidental Poisonings' and cannot be distinguished from poisonings not related to an adverse event.

(d) Includes separations with no external cause.

Source: Australian Council for Safety and Quality in Health Care (ACSQHC) (in progress), *Safety in Numbers, A Technical Options Paper for a National Approach to the Use of Data for Safer Health Care*, located at www.safetyandquality.org.

- Hospital separations data can be obtained from the National Hospital Morbidity Database (NHMD), the primary purpose of which is to record reasons for hospitalisation including diagnosis, the procedures the patient underwent and external causes of injury and poisoning. However, a recent AIHW analysis has shown that hospital separations data can be used to identify a proportion of hospital-treated morbidity arising from adverse events (Hargreaves, 2001 in ACSQHC (in progress), *Safety in Numbers*).
- In 1997–98, there were 264,347 separations where an adverse event was reported accounting for 4.8% of all separations. Ongoing improvements in data collection methodologies and data quality will enable time series analysis to be conducted in the future.

For further information see:

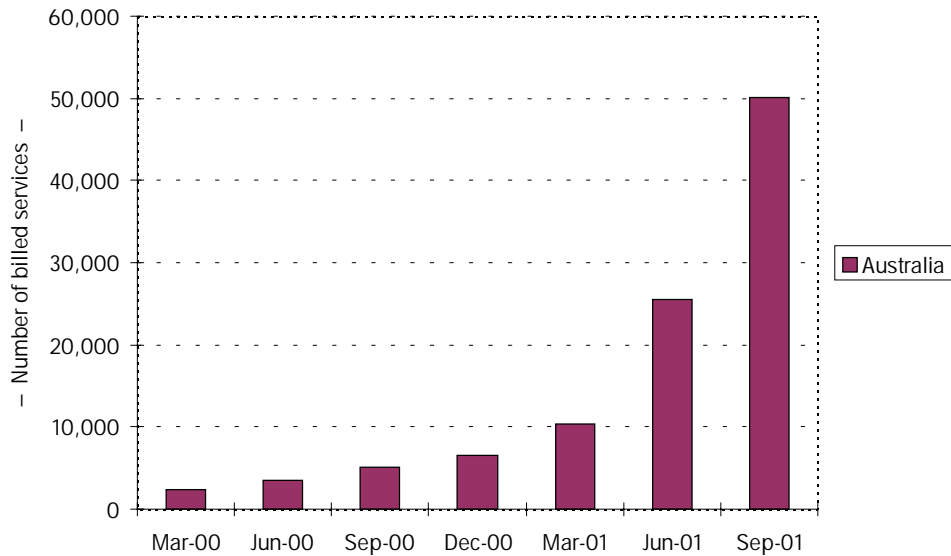
Australian Council for Safety and Quality in Health Care (ACSQHC) (in progress), *Safety in Numbers, A Technical Options Paper for a National Approach to the Use of Data for Safer Health Care*.

Web site:

www.safetyandquality.org

Continuous – Indicator 5.18 Uptake of Medicare Benefits Schedule (MBS) items for enhanced primary care

Multidisciplinary Care Planning (all services) attendances by non-specialist medical practitioners, Australia, March quarter 2000 to September quarter 2001



Multidisciplinary Care Plans per 100,000 population aged 65 years and over (a), by sex and jurisdiction, Australia, September quarter 2001 (b)

Sex	NSW	Vic	Qld	WA	SA	Tas	ACT	NT	Aust
– Rate per 100,000 population aged 65 years and over –									
Males	789	888	814	953	1,607	432	411	257	884
Females	893	1,037	1,144	1,072	1,751	534	390	302	1,044
Persons	848	972	994	1,019	1,688	490	399	279	985

(a) Services per 100,000 capita is based on the number of services divided by the number of persons enrolled in Medicare at the end of each time period for the individual age and sex categories.

(b) Figures include only claims that qualify for Medicare Benefit and for which a claim has been processed in the quarter in which the claim is lodged. They do not include services provided by hospital doctors to public patients in public hospitals, services as a result of a compensation or insurance claim, or services that qualify for a benefit under the Department of Veterans' Affairs National Treatment Account.

Source: Health Insurance Commission, Medicare Benefits Schedule (MBS) Item Statistics (unpublished).

- In its 1999-2000 Budget the Federal Government put in place a range of programs. An integral part of this Enhanced Primary Care package was the introduction in November 1999 of new MBS items to provide for annual health assessments for older Australians, and multidisciplinary care planning and case-conferencing for people of any age with chronic conditions and complex care needs.
- There has been a steady increase in uptake of all the items across all jurisdictions since their introduction, and an increasing proportion of these services are being provided at home or in residential care facilities. More than 90% of these services were bulk-billed and expenditure on the new items totalled \$8.8 million in the first eight months from their introduction to June 2000, increasing to \$23.4 million in 2000-01.
- Among practitioners who carried out health assessments in the June quarter 2001, the median number was four or five in metropolitan areas and small or large rural centres, and two or three elsewhere. Median numbers of multidisciplinary case plans and case conferences completed in all metropolitan and rural categories were respectively three or four, and one. The median number of health assessments undertaken by these male practitioners in each State was two or three, higher than that by females.

For further information see:

Commonwealth Department of Health and Aged Care, *Annual Report, 2000-2001*.
Health Insurance Commission, *Annual Report, 2000-2001*.

Sustainable – Indicator 5.19 Proportion of workload carried by vocationally registered GPs and other medical practitioners aged over 50 years

Proportion of workload carried by vocationally registered GPs and other medical practitioners aged over 50, Australia by location, 1991–92 to 2000–01 (a)

Year	Capital city	Other metropolitan	Large rural centre	Small rural centre	Other rural area	Remote centre	Other remote area	Aust
				– % –				
1991–92	26.4	31.0	25.5	24.2	25.6	16.5	19.2	26.3
1994–95	28.3	31.7	25.7	25.8	27.4	18.1	27.1	28.1
1997–98	32.5	37.8	28.2	27.9	30.2	21.3	23.1	32.0
2000–01	39.8	42.4	31.9	32.2	31.9	25.8	24.0	38.1

(a) Data have been extracted by general practitioners' (often multiple) individual practice locations at which at least one Medicare Benefits Schedule service has been rendered in a particular financial year. A full-time workload equivalent value is calculated for each practitioner by dividing the practitioner's Medicare billing (schedule fee value of claims processed by the Health Insurance Commission during the financial year) by the mean billing of full-time practitioners for that financial year. Data categorised by the Rural, Remote and Metropolitan Area classification. Source: DoHA (unpublished).

- The table illustrates how, with the exception of the most remote areas, the proportion of the workload carried by general practitioners aged over 50 has continued to rise quite noticeably. In metropolitan areas where the oversupply of GPs is being addressed in part through restrictions on the issue of provider numbers, this proportion has risen by over ten percentage points in the past six years.
- Apparent shortages in some medical disciplines, particularly affecting rural and remote areas and the public hospital system, became a focus of attention in the early 1990s, together with lack of reliable data with which to analyse the extent and location of these shortages.
- Since 1994, Commonwealth funding of vocational training of GPs has been conditional on the annual intake of registrars being reduced to 400, from a high of 830 in 1993, in order to limit growth of the total GP workforce. With the introduction of rural medical bonded scholarships, the total intake has recently been increased to 450, with 200 places set aside for training in rural general practice. Together with the provider number restrictions this has had the effect of reducing growth in the GP workforce from 3% in 1995 to 0.3% in 1997 and 1.7% in 1998. Combined with the expected increase in GP numbers through the State and Territory Overseas Trained Doctor recruitment schemes, this should be sufficient to meet ongoing growth in demand in the short term (Australian Medical Workforce Advisory Committee, 2000).
- As older GPs retire, they are replaced by GPs who prefer lighter clinical workloads and who are increasingly female. Continuing changes in the composition of the GP workforce will require continual monitoring and adjustment to training placements and incentives for rural practice.

For further information see:

Australian Medical Workforce Advisory Committee (2000), *The General Practice Workforce in Australia*, AMWAC Report 2000.2, Sydney.

Australian Medical Workforce Advisory Committee (1998), *Sustainable Specialist Services: A Compendium of Requirements*, AMWAC Report 1998.7, Sydney.

Commonwealth Department of Health and Aged Care (2001), *The Australian Medical Workforce Occasional Papers*, New Series No. 12.

Department of Health and Aged Care (2001), 'Rural doctors and retention', by Hirsch N. Calcino G. and Fredericks C., Paper presented to the 6th National Rural Health Conference, March 2001.

CHAPTER 6: INTERNATIONAL DEVELOPMENTS IN HEALTH PERFORMANCE MEASUREMENT

International origins of the NHPC Framework

There is wide interest internationally in the measurement of health system performance. National level indicator sets have been constructed in many countries, including the United States *Leading Health Indicators for Healthy People 2010* and Canadian health indicators developed under that country's *Health Information Roadmap* initiative. These and other locally developed indicator sets and frameworks were considered at a workshop on Population Indicator Frameworks for Population Health, convened by the National Public Health Partnership in March 2000. Selection of a modified form of the Canadian Roadmap Initiative indicator framework as the most suitable for Australia established broad-based consensus and led to its adoption by the NHPC as the National Health Performance Framework (NHPC, 2001). The close correspondence with the Canadian framework also contributed to a growing international consensus on frameworks for health performance indicators.

ISO Health Indicators Conceptual Framework

Noting the efforts by the World Health Organization (WHO) and the Organisation for Economic Cooperation and Development (OECD) to report comparative data on health and health care, the Canadian Institute for Health Information proposed to the International Standards Organisation (ISO) in 2000 that it develop and promulgate a standard for a health indicator framework. It argued that such a framework would provide a shared reference point and enable more comparable and consistent indicator development and reporting. The Canadian proposal, based on the framework developed under its Health Information Roadmap initiative, has subsequently been considered by the ISO's Health Informatics Committee TC/215. Discussions in the ISO forum have yielded much useful comment on the framework, including from countries such as Japan and South Africa, whose different health care models brought a different perspective.

Elements of the Australian modification have been debated and some, such as the focus on inequalities across the entire indicator framework and the inclusion of genetic health determinants, have been accepted as useful additions. Similarly, other international perspectives have provided ideas for consideration of the NHPC's Health Indicators Performance Framework when it is reviewed following Australian consultation.

In addition to refining ideas for the health indicator framework, the ISO discussion has recognised the value of linking the health indicators conceptual framework to parallel work on an international standard for a Health Information Architecture Framework (equivalent to the Australian National Health Information Model). The place of indicators in a broader health information model can thereby be made clear in a consistent view of health information. In pursuing this area of work, the ISO committee has not sought to establish standards for specific indicators, recognising that circumstances in each country will require different perspectives. Nevertheless, discussion has demonstrated that there is wide acceptance of the value of selecting indicators that have a recognised place in a standard framework.

An extension project that is also being investigated by ISO TC/215, following an Australian suggestion, is a link between the indicator framework and a standard form of metadata representation for indicators, similar to the newly developed indicator module in Australia's Knowledgebase of health metadata.

WHO's World Health Report

In its World Health Report 2000 *Health Systems: Improving Performance* the WHO presented an index of national health systems' performance aimed at three goals: good health, responsiveness to the expectations of the population, and fairness of financial contribution (WHO, 2000). These goals, and the compact set of indicators that the WHO has selected to represent them, match a less detailed framework than is proposed by the NHPC. Nevertheless, the NHPC will consider the opportunity for closer alignment of its framework with the WHO performance indicators, to achieve greater consistency of national and international health performance reporting.

The NHPC has noted that the performance indicator framework used for the WHO's 2000 report did not include direct assessment of determinants of health, which, as a focus for public health action, is a major component of the NHPC framework and of the framework under consideration by ISO TC/215. However, the NHPC understands that the WHO is undertaking an extensive program of work on risk factors and that incorporation of exposure to risk factors into performance indicators is under consideration for future WHO reports.

WHO health and responsiveness surveys

As part of its information gathering for health system performance reporting the WHO has been developing surveys on health and health system responsiveness. A responsiveness survey conducted by the WHO was trialled in Australia in early 2001, gaining a low level of response. Subsequently, Australia participated in an international technical group meeting in Geneva reviewing the methodology and content of the survey. The Department of Health and Ageing together with the Australian Institute of Health and Welfare and the Australian Bureau of Statistics is working with WHO to further investigate issues involved in further health and health system responsiveness surveys. Future surveys may provide data useful for improving services at local or regional levels on the one hand and allowing international comparisons on the other.

OECD health framework and reporting

The OECD published a new report *Health at a Glance* in October 2001 which includes indicators of health status, health care resources, health care utilisation and health expenditures, using information from its *OECD Health Data* database provided by member countries. In 2001 the OECD also commenced a new three-year Health Project. The project focuses on measuring and analysing the performance of health care systems in member countries and factors affecting performance. As part of this project it co-sponsored with Health Canada a conference *Measuring Up*, held in Ottawa in November 2001.

The OECD has proposed a framework for reporting on health system performance that has a focus on three broad goals: health improvement/outcomes, responsiveness and access, and financial contribution/health expenditure. A broad comparison shows much in common with frameworks used by the WHO, Australia's NHPC, Canada and other countries.

Commonwealth Fund

The Commonwealth Fund convened an International Working Group on Quality Indicators in July 2000. In this meeting an initial set of indicators were reviewed and further work was planned to determine a proposed set of indicators. These were discussed at a meeting of the Technical Subcommittee held in June 2001. Representatives attended from the governments of the United States, United Kingdom, Canada, Australia and New Zealand. Further work is being conducted to determine the comparability of the data, the evidence base of the indicators and the feasibility of establishing international indicators of quality.

Health classifications

Under the auspice of the Heads of Collaborating Centres for Health Classification, work is under way to determine a WHO Family of International Classifications. The WHO's 54th World Health Assembly in May 2001 endorsed the International Classification of Functioning, Disability and Health (ICF) as a companion classification to the long-established International Classification of Disease (ICD). Further work is under way to consider other classifications needed to describe diverse aspects of health seen in various settings.

Australia participates actively in these developments through the National Health Information Management Group's Expert Group on Health Classifications and through the Australian Institute of Health and Welfare as the WHO Collaborating Centre for Health Classification in Australia. These classifications serve as an additional standardising influence on health system performance reporting as they are the basis of indicators describing health status and functioning in frameworks proposed by the NHPC, WHO and other organisations.

For further information see:

OECD (2001), *'Measuring Up': Improving Health Systems Performance in OECD Countries*, OECD Health Conference on Performance Measurement and Reporting, 5-7 November, Ottawa, Canada. Presentations available online at: <http://www1.oecd.org/els/health/canconf/presentations.htm>

CHAPTER 7: USING PERFORMANCE INFORMATION FOR HEALTH SYSTEM IMPROVEMENT

This chapter addresses the issue of the use of performance information for benchmarking within the Australian Health System. The first section provides an outline of initial ideas on how the National Health Performance Committee could address its terms of reference relating to the promotion of benchmarking. The rest of the chapter is devoted to outlining some of the benchmarking initiatives within the States and Territories (Section 7.2) and other Australian organisations.

7.1 The role of the National Health Performance Committee in promoting benchmarking

In addition to the development and reporting against a national health performance indicator framework, the terms of reference for the NHPC include the encouragement of benchmarking for the improvement of health system performance (see Box 1.1, Chapter 1). While the focus for the Committee during its first two years has been the development of an indicator framework and the commencement of national reporting, the Committee has also examined the role it could play in encouraging the use of performance information for health systems improvement. This chapter discusses the Committee's preliminary deliberations on this role.

The vision of the NHPC is for a health system that searches for, compares, learns from the best and improves performance through the adoption of benchmarking practices across all levels of the system. Benchmarking has been described as 'the ongoing, systematic process to search for and introduce best practice into an organisation' (NHPC, 2000). Benchmarking is generally used to compare an organisation or service with similar leading organisations or services to provide a catalyst to improve performance. It is important to acknowledge that successful benchmarking requires that performance comparison be followed by activities that seek to understand the practices contributing to superior performance, leading to the spread of those practices across participating organisations.

Benchmarking activities are widespread within the Australian health system in the public and private sectors. Many benchmarking activities are occurring without the direct involvement of Government agencies, while others are the direct result of Government initiatives. Later in this chapter an outline is provided of some of the benchmarking activities currently being undertaken by the States and Territories.

While the Committee has developed preliminary ideas on how it might promote benchmarking across the health system, the intention is to refine these ideas through holding a national workshop on benchmarking in the first part of 2002 in collaboration with relevant agencies and organisations. The workshop will focus on developing strategies that reflect the most appropriate contributions the NHPC could make to the promotion of benchmarking across the system.

In its initial discussions, the Committee has identified four roles it could play:

- promoting the national health performance indicator framework for benchmarking in the health system;
- encouraging the application of benchmarking;
- encouraging the development of expertise in benchmarking; and
- contributing to the development and availability of data for benchmarking purposes.

Promoting the national health performance indicator framework for benchmarking in the health system

While the framework has been developed with the intention of structuring reports to Health Ministers on the performance of the health system, it could also provide a useful template for structuring data accessed for a variety of performance reporting and benchmarking activities.

An advantage of the framework is that it prompts attention to the broad and balanced range of performance dimensions, even though these dimensions may not always be applicable to specific performance measurement efforts. The proposed criteria for selecting indicators for the framework also provide a useful check list for ensuring performance measures are identified or developed that will be effective in performance improvement.

Encouraging the application of benchmarking across the health system

As mentioned there is an extensive and diverse range of benchmarking activities already undertaken throughout the health system. However, benchmarking activities seem to be more the exception than the rule. More could be done to encourage the spread and application of benchmarking so it is taken up as an intrinsic part of health care delivery. This needs to occur at an appropriate organisational level to achieve ongoing improvements in clinical practice and service delivery.

Encouraging the development of expertise in benchmarking

In addition to encouraging the use of benchmarking, the practice of benchmarking needs to be of a sufficient standard and rigour to derive benefit. Some attention needs to be given to developing within the health sector people with the necessary skills to support and undertake benchmarking.

Contribute to the development and availability of data for benchmarking purposes

A potential danger in unduly focusing on comparing performance at the jurisdictional level is that it may evoke defensive behaviours by participating jurisdictions. These behaviours may be antithetical to the promotion of benchmarking. Two ways in which the National Health Performance Committee could seek to avoid this problem include promoting the development of better indicators, and ensuring performance information is available at a level, such as at a hospital level, that will facilitate more meaningful comparison of performance.

Many of the performance indicators currently available reflect information that is readily available rather than ideal measures of performance. While performance indicators always have some limitations, there is the potential for much better measures to be developed. By sponsoring research into refining existing indicators, and proposing more appropriate indicators, the Committee could usefully contribute to ensuring performance data is more likely to be used in benchmarking activities.

As a by-product of developing national performance indicators, the Committee could also ensure that data and information required for meaningful performance benchmarks becomes available and is accessible. Wherever possible, this information should be accessible and relevant down to an appropriate organisational unit, such as the hospital level or even the clinical unit level.

7.2 Benchmarking activities within the State and Territory health agencies

7.2.1 New South Wales

There has been a strong promotion of benchmarking activities and quality services, in both clinical and non-clinical areas, across NSW Health. Many of these activities were identified in the previous report of the National Health Performance Committee. Over the last twelve months there has been substantial progress in a number of key areas which are mentioned below.

In February 1999, *The Framework for Managing the Quality of Health Services in NSW* (the Quality framework) was endorsed following broad consultation with key stakeholders in health, both locally and nationally. The framework identified various dimensions of quality (which broadly align with the national framework developed by the National Health Performance Committee) for which indicators have been developed. During the last year, in collaboration with the Health Services Research Group of Newcastle University, a set of indicators derived from existing data sources was identified (see Box 7.1 for the appropriateness and effectiveness indicators). Data on these indicators is presented in order to flag issues that may relate to the quality of health care provided and help identify variations in practice potentially useful for follow-up studies. Reports were prepared for all New South Wales Area Health Services. The reports identify the potential gains in the event that each Area Health Service rate moves to the rate of the best 20th percentile for New South Wales. Workshops have been conducted in each Area Health Service to provide opportunities for more focused discussion.

Box 7.1 Appropriateness and Effectiveness Indicators

- Caesarean section deliveries as a proportion of all deliveries.
- Laparoscopic cholecystectomy as a proportion of all cholecystectomies.
- Hysterectomy separation rate for women aged less than 35 years.
- Hysterectomy separation rate for women aged between 35 and 59 years.
- Tonsillectomy separation rate for people aged less than 15 years.
- Tonsillectomy separation rate for people aged over 15 years.
- Myringotomy separation rate for people aged less than 15 years.
- Coronary artery bypass grafting separation rate.
- Percutaneous transluminal coronary angioplasty, including stenting separation rate.
- Total knee replacement separation rate for people aged over 65 years.
- Total hip replacement separation rate for people aged over 65 years.
- Diabetes separation rate.
- Lower extremity amputation separation rate for people with diabetes as a diagnosis.
- Asthma separation rate for people aged between 5 and 34 years.

As part of the NSW Government's Action Plan for Health, an Acute Care Implementation Group examined the variation in length of hospital stay and clinical practice evident in data held by NSW Health. Analysis has been undertaken for a range of procedures at the level of the admitting doctor. A number of key measures such as rates of procedures performed on a day only basis, rates of

admission on day of surgery, readmission rates and length of stay have been developed, and arrangements established to allow these measures to be available to clinicians on a routine and regular basis. These measures have been incorporated into the quality measures developed under the Quality Framework.

7.2.2 Victoria

A number of themes underpin improvement of quality across the Victorian public health acute and non-acute sectors. They include structural changes to improve quality, development of quality indicators, data system improvements to support monitoring and reporting, and continued improvement of efficiency indicators.

Key initiatives to facilitate quality improvement are:

- enactment of legislation to clarify Health Service Board of Management governance responsibilities for ensuring effective systems are in place for accountable and transparent monitoring and reporting of health service quality outcomes.
- publication of annual *Quality of Care Reports* by Health Services to inform their communities of the quality of care in their services. The Reports also promote changes in systems, clinical practice and continuous improvement.
- establishment of a Victorian Quality Council to review system wide performance, identify issues and advise on strategies for improvement. The Council will also liaise closely with the Australian Council for Safety and Quality in Health Care to ensure that statewide initiatives are consistent with national approaches.
- systemic quality performance monitoring including the establishment of Consultative Councils to examine preventable causes of morbidity and mortality through a focus on details of clinical cases with a view to improving practice at a system wide level.
- implementation of a Quality Framework consistent with the National Health Performance Framework, that provides a context for review, evaluation and continuous improvement of performance indicators to achieve meaningful and sustainable performance monitoring that is balanced across the care dimensions. Funding for quality improvement accompanies the framework and includes bonus components subject to Health Service performance against targets.
- projects to support the intelligent use of data to improve quality of care in the high cost specialties of cardiac surgery and intensive care. These will provide aggregate, hospital specific outcomes data broadly reflective of the quality of intensive care and cardiac surgery. Analysis and review of this data will inform proactive addressing of any quality of care issues that may be identified.
- non-acute services such as primary health, aged care and mental health to continue to focus on the measurement of performance as a priority. A strategy to improve performance measurement, reporting and data collection has been developed and implemented in three stages. It included an initial rationalisation of performance measures and reporting arrangements within the boundaries of existing systems and business protocols. Development of a consistent approach to performance measurement and reporting has also been completed and a third stage of major reform of performance measures, development of new approaches and the identification of opportunities for further strategic development work continues.
- hospital based health services report financial and operating information on a monthly basis which includes data addressing a number of key indicators of efficiency and financial viability. In turn, management information derived from these reports is circulated back to the larger hospitals for comparative review and discussion on a monthly basis. Industry performance reporting is now consolidated as a web based annual *Hospitals Comparative Data* report, which presents information on admitted patient expenditure, total nonadmitted patient occasions of service, and workforce data.

7.2.3 Queensland

Using known and projected impacts of the burden of disease and health differentials, Queensland Health has developed a comprehensive and compelling case for a set of Strategic Directions to ensure appropriate development of the State's health services from 2000 to 2010. The Queensland Health Strategic Plan 2000–2010 articulates three principal strategic directions that need to be progressed to optimise health gain through effective balance of investment and adoption of an integrated approach to service delivery. The Strategic Directions for 2000–2010 are:

- addressing the Burden of Disease;
- investing in Public Health (prevention, promotion, and early intervention); and
- improving Indigenous Health.

The Queensland Government has also committed to ensuring that service delivery is aligned with government priorities and positive outcomes for Queenslanders under the State's 'Charter of Social and Fiscal Responsibility'. Consistent with that commitment, Queensland Health has developed a set of Health Outcome Plans and Population Policy Frameworks addressing the three Strategic Directions. The objectives of these plans and frameworks are expressed as a set of key outcomes addressing the National Health Priority Areas of older people, Aboriginal and Torres Strait Islander peoples, women, and child and youth health.

Performance reporting

The Queensland Health Strategic Framework is the basis for coordination of strategic and operational planning, budget development and resource allocation across the organisation. An integrated structure of Outcome indicators and Output performance measures and targets for both external reporting and internal management purposes is incorporated into the Strategic Framework. Queensland Health undertakes a comprehensive annual cycle of evaluation and reporting of financial and non-financial performance indicators.

Maintaining the value in performance monitoring

These developments are all aimed at providing Queensland Health with information to better assess need, manage resources and provide services to improve the health and wellbeing of Queenslanders. For resources to be targeted and delivered effectively, it is essential that Queensland Health identify the areas of greatest health gain. Interventions targeted to address these high gain areas will become core business for Queensland Health and be reflected in planning long-term, system wide patterns of investment in health service development across the acute, non-acute, primary health and community support sectors.

Therefore, development of Queensland Health performance management systems focuses on the following:

- using indicators based on current best practice (for example, the National Health Performance Framework);
- using indicators that motivate for improvement in health service delivery;
- using indicators that make sense at various levels of health service delivery; and
- establishing a cycle of reporting (annual, mid-year, quarterly) to assess performance and assist managers in using performance reports to initiate changes in practice.

In order to progress the establishment of this framework for reporting, the following activities are being pursued:

- identifying the information needs required at different levels of planning, management and reporting;
- determining the relationships between the information at each level;
- setting standards for the gathering, analysis and utilisation of that information;
- design of report format for user-friendly and timely reporting against these indicators; and
- provision of training in management processes to enable effective use of such reports.

Meeting public perceptions and expectations

The Queensland Health Strategic Plan 2000–2010 is a site map on the Queensland Health Internet and intranet sites, and is linked to all associated plans, performance reports and research documentation and to the Commonwealth's Health *Insite* portal.

7.2.4 Western Australia

Current approaches to performance measurement in the Western Australian Health System reflect the implementation of an Output Based Management framework across the Western Australian State sector and the adoption of a purchaser/provider model for the Health System.

The Western Australian Health System is currently in a period of transition. A recent review commissioned by the Government recommended a number of changes to the structural and organisational arrangements for the Health System.¹ The implementation of these new arrangements will provide the basis for developing and implementing a comprehensive, coherent and robust performance measurement strategy and framework to underpin performance management and accountability within the Western Australian Health System.

¹ Health Administrative Review Committee (2001), *Report of the Health Administrative Review Committee*, June, unpublished.

The Department of Health is funded within the Output Based Management framework. This framework is the principal mechanism by which the Government's expectations and the outcomes sought are integrated with the outputs purchased from the Department of Health. The Department is, in turn, responsible for securing the delivery of outputs from health services that reflect the Government's expectations.

The overall goal of the Western Australian Health System is to promote, protect and restore the health of the people of Western Australia. The Department of Health's model for service planning and purchasing provides an integrated focus on intervention strategies, health conditions and populations. (A reporting framework has been adopted to provide an integrated approach to planning, purchasing and performance reporting.)

The reporting framework has guided the development of a comprehensive set of key performance indicators reported by the Department of Health, and Health Service providers in their annual reports to Parliament and the public of Western Australia.

Work has commenced to review performance measurement, monitoring systems and evaluation processes within the Western Australian Health System. The key aim is to further develop the framework that underpins performance measurement and management. This will support the development of a coherent and integrated set of performance indicators to be used as a basis for reporting and benchmarking across all levels of service delivery.

7.2.5 South Australia

The SA Department of Human Services has developed a Planning Framework to align the various plans that contribute to the achievement of strategic directions prescribed in the Human Services Portfolio Strategic Plan. The development of broad outcome measures and key performance indicators at the various planning levels have been promoted across the portfolio. Measures and indicators have evolved in high order Service Improvement Plans including Moving Ahead (Older Persons), Mental Health, Disability and Aboriginal Reconciliation. Key performance indicators that are relevant to the various business units and programs are emerging in business plans. Progress reports are collated for both levels of plans every six months.

The Department is in the process of reviewing the output classes and measures reported to the SA Department of Treasury and Finance. The revised measures will be reported from 2002–03. Where appropriate, output measures are aligned to the performance information profiles for the respective Service Improvement Plans.

The Department is in the process of rolling out a Service Excellence Framework that was developed in consultation with funded services in 2001. The Framework articulates the Department's expectations of funded services in the context of the Human Services Portfolio Strategic Plan. Eight categories have been defined and a series of sub-elements have been defined in matrix form. The Framework includes a service excellence cycle of planning, controls assurance, continuous improvement and performance management which are integral to the elements. It is intended that services will conduct self-assessment against the Framework and then seek validation by an independent assessor. It is anticipated that the achievements of services will become integral to the annual funding and service level agreement negotiations. Where services are assessed as implementing the organisational learning elements, the assessors will conduct a benchmark assessment of the respective service against 'like' prominent agencies.

The reporting of performance information is currently prescribed in health funding and service level agreements. It is anticipated that the nature of this information may be expanded as the number of services actively assessing themselves against the Service Excellence Framework increases.

7.2.6 Tasmania

The Tasmanian Department of Health and Human Services has adopted the National Health Performance Committee's Framework as a basis for measuring and monitoring its own performance. This reflects an increased emphasis on performance monitoring and improvement through which an annual performance review will be conducted using each of the three tiers of the national framework and from this, performance issues/areas for improvement will be distilled and used as the basis for quarterly monitoring. Like the national framework, there is considerable work to be done around indicator selection and/or development.

The Tasmanian approach has also expanded the framework to accommodate both the broader notions of health and wellbeing together with a health and human services system. The Agency is currently working on incorporating the community developed benchmarks set by 'Tasmania Together' into the

framework. Tasmania Together is a 20 year social and economic blueprint for the future that was developed independent of government influence and through the work of community leaders and extensive community consultation. Government agencies will be required to report annually to an independent body on their performance against a range of population-based indicators and targets. Strategic activity towards the achievement of targets will be monitored through the State Government budget process on both a 3 and 1 year basis.

The approach to benchmarking in Tasmania centres around comparison of State performance with that of other jurisdictions and national averages against a range of indicators sourced from the Report on Government Services, published data from the Australian Institute of Health and Welfare, Australian Council of Healthcare Standards and indicators relating to National Health Priorities.

7.2.7 Australian Capital Territory

Quality and safety

The Australian Capital Territory health care quality strategic and operational plan 'Quality First' has been developed in response to a commitment under the 1998–2003 Australian Health Care Agreement. The primary focus is to address quality within the Australian Capital Territory hospital system. In addition, as hospitals operate as an integral part of a wider health care system, those services at the interface between the hospital and the wider health system which have an impact on hospital services are included in the Plan.

Significant projects to be implemented based on the Plan include the following:

- The Australian Patient Safety Foundation's Australian Incident Monitoring Scheme (AIMS) is currently being implemented across the ACT Health portfolio. The system will provide a uniform mechanism for capturing details of health care incidents, will guide the development of strategies for reducing their occurrence and will measure the effectiveness of such strategies.
- The two hospitals have implemented a Clinical Health Improvement Program where the aim is to improve patient clinical outcomes by clinician involvement in the ownership of services and care. The program facilitates peer clinicians to develop best practice clinical pathways, measure variation from the pathway and determine the cause of the variation. The objective is to reduce variation and to enable consistent replication of the best possible outcomes.
- The aim of the Falls Clinic project is to reduce fall related injury notably fractured neck or femur by implementing protocols for multidisciplinary risk assessment treatment, of older people at risk of falling, and improved continuity of care. Linkages are to be developed between tertiary and primary care settings and increase awareness of risk factors in both the hospital and community settings.

Benchmarking

The Canberra Hospital provides data to the Benchmarking Consortium for use in the publication of the Casemix Review which compares data for DRGs and Clinical Service Groups between hospitals in the Group. A 'Report Card' in the Report indicates direct comparisons at a DRG level allowing the hospital to compare its practices with better performing hospitals or to act as a mentor for those hospitals not performing as well. A set of performance indicators including risk, quality access, service efficiency and cost efficiency measures are submitted annually to the South Eastern Australasian Hospital Benchmarking Consortium for inter-hospital data comparisons.

Purchase agreements with public hospitals

Under the purchase agreement that the Department has with public hospitals is an agreed reporting framework as a schedule to the contract. Monthly reports are required on admitted patient care, emergency department waiting times, elective surgery waiting list and a monthly data bulletin. Quarterly reports are required in line with the Department's obligation under the Australian Healthcare Agreement. A quarterly revenue report is also required.

The reporting framework is compatible with the third tier of the NHPC Framework 'Health System Performance'. Monthly reports against the performance indicators address effectiveness, appropriateness, efficiency, accessibility and responsiveness. The service quality components of the agreements address safety.

7.2.8 Northern Territory

The Department of Health and Community Services has strategic goals aimed at strengthening the capacity of Northern Territory non-government and private sector organisations to deliver health and community services and developing a far more robust and diverse health sector. It is anticipated that the Department of Health and Community Services will be replaced as the main service provider over

the next 5–10 years. The Department of Health and Community Services Funder–purchaser-provider framework has been modified by replacing 'purchasing' with a 'service development' function to achieve the capacity building objectives.

There are a number of initiatives driving a strategic approach to performance measurement across the care continuum:

- the Primary Health Care Access Program through the Department of Health and Ageing. This program provides funding for Health Service Zones in rural and remote areas to overcome access issues and build local capacity to manage health services.
- the reform in the non-government sector to align policy objectives with funding, service plans and monitoring.
- service level agreements for the five public hospitals in the Northern Territory to report on access, effectiveness, appropriateness, quantity, quality and consumer participation.
- the NT Treasury has commenced the introduction of accrual accounting and output based funding requiring development of output measures over 3–5 years.
- requirement for the annual report to provide more quantitative health and costing information related to strategic goals and policies.

The Department of Health and Community Services has adopted the National Health Performance Framework for development of performance measures and reporting in the future. Box 7.2 identifies progress in reporting against the framework.

Box 7.2: Territory Health Services Performance Measures

Health Status and Outcomes

Health conditions	<ul style="list-style-type: none"> * Statutory reporting of communicable diseases quarterly by the Centre for Disease Control * 2001 Report on prevalence and incidence of five Chronic Diseases in the NT based on disease registers and community based research * Report on injury and trauma is in preparation and to be completed by March 2002 * Mothers and Babies health status (midwives collection) reported annually (1999 Report in press) * Report on health status of infants to young adults in the NT (1998)
Human function	<ul style="list-style-type: none"> * Non-fatal burden of disease for injury has been prepared but not published
Life expectancy and wellbeing	<ul style="list-style-type: none"> * Burden of Disease Study in preparation for the Aboriginal population. To be completed by October 2002
Deaths	<ul style="list-style-type: none"> * Mortality Report 1979–1997 (published in 1999) * Note: Currently attempting to produce morbidity and mortality by the 21 Health Service Zones.

Determinants of Health

Environmental factors	<ul style="list-style-type: none"> * Water quality monitoring reports by the NT Power and Water Authority * Food Market Basket (Remote areas) cost, availability and quality of fresh fruits and vegetables, assessed and reported annually
Socioeconomic factors	<ul style="list-style-type: none"> * Education levels reported in the Statistical Report on Chronic Diseases and Infancy to Young Adulthood report * Employment reported in the Statistical Report on Chronic Diseases and From Infancy to Young Adulthood report * Income reported in the Statistical Report on Chronic Diseases and Infancy to Young Adulthood report
Community capacity	<ul style="list-style-type: none"> * Health Services locations reported in the Department of Health and Community Services Annual Report * Use of services and professionals in CATI Survey report * Others being defined and developed
Health behaviours	<ul style="list-style-type: none"> * Tobacco and alcohol consumption reported annually * Measures of physical activity under development * Breast feeding reported periodically

Person-related factors	* Congenital abnormalities reported in the Mothers and Babies health status (midwives collection) reported annually. 1999 Report in press
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Health System Performance

Effective	* Reported for hospital sector and for Chronic Diseases and Communicable Diseases (immunisation rates)
Appropriate	* No activity
Efficient	* Relates to Treasury Output Measures * Reported for hospital sector and for Chronic Diseases * More work planned on service costs
Responsive	* Consumer reporting by hospitals * Health Complaints Commission Reports annually
Accessible	* Reported for hospital sector and for Chronic Diseases * Health Complaints Commission Reports annually * Patient Assisted Travel Scheme Reports and Inter-hospital Transfer Reports by activity and cost
Safe	* Reported for hospital sector and for Chronic Diseases * Health Complaints Commission Reports annually
Continuous	* No activity
Capable	* Accreditation rates available but not reported for community health, hospitals, GPs * Health Registration Board reports on qualifications * Workforce Planning Statistics on industry based training and competency frameworks
Sustainable	* Health Research expenditure, Aboriginal Health expenditure, Public Health expenditure, Mental Health expenditure all reported currently

7.3 Other benchmarking related activities across Australia

7.3.1 The Australian Council on Healthcare Standards

The Australian Council on Healthcare Standards (ACHS) Performance and Outcomes Service (POS) was established with the aim of developing measures of the quality of patient care in health care organisations.

The measures, called 'Clinical Indicators', are defined as objective measures of the clinical management and outcome of patient care in quantitative terms. Clinical Indicators are 'flags' which can alert to possible problems and opportunities for improvement in patient care. They lend objectivity and interest to quality activities by allowing for comparison of performance against national aggregate data. Clinical Indicators have been developed in partnership with a wide range of Australian Medical Colleges, Professional Associations, specialist societies, clinicians, consumers and interested parties.

There are three basic principles used to develop Clinical Indicators:

- That they be relevant to practice in the health care industry;
- That the relevant data are available;
- That the measure is achievable.

For further information:

<http://www.achs.org.au>
Phone 02 9281 9955
Email pos@achs.org.au

7.3.2 The Royal Australian College of General Practitioners

The Royal Australian College of General Practitioners (RACGP) is widely recognised as the arbiter of standards for general practice. As well as setting the standards for general practice training, assessment of competence, and quality assurance, the RACGP also sets the standards for general practices, embodied in *Standards for General Practices*, 2nd edition.

Accreditation of general practices

These standards are applied so that accreditation of general practices should:

- aim to attain the highest quality of general practice in an achievable and gradual manner
- provide a publicly recognisable measure of quality in general practice
- be voluntary, but should have tangible benefits
- be for a defined period
- be an educational and developmental process and not a punitive one
- be in the hands of the profession.

For further information:

Director, Assessment and Practice Standards, The Royal Australian College of General Practitioners, 1 Palmerston Crescent, South Melbourne, VIC 3205.

Website: <http://www.racgp.org.au>

General Manager, AGPAL, PO Box 2058, Milton, Qld, 4064.

Web site: <http://www.agpal.com.au>

7.3.3 Australian Private Hospitals Association

Australian Council on Healthcare Standards accredits the vast majority of private hospitals (78%). By comparison, only 52% of public hospitals are similarly accredited. Therefore most private hospitals are reporting on indicators established by the Council (National Health Performance Committee, 2000).

Health insurance funds are now using the ACHS information to inform their purchasing decisions. This is an issue with private hospitals, as the quality or clinical indicators reported on for the ACHS were intended to be used by facilities to improve care outcomes. Where hospitals are at risk of not being contracted by a major insurer unless, for example, unplanned readmissions to theatre figures are 'good', there is the real risk of data manipulation so as to present the best face to a potential purchaser. This, of course, degrades the potential for outcomes data to be used for its primary purpose – care improvement.

Private hospitals have therefore resisted the provision of clinical, quality and/or outcomes data to non-provider agencies. Consequently there are no standardised outcomes data collections in the private sector.

7.3.4 Australian Health Insurance Association

Health insurance funds use a variety of performance indicators to inform their decision making process in relation to hospital contracting. While some funds use, or seek, more sophisticated data than others, most compare data such as cost, readmission rates and average length of stay, and other material drawn from the Hospital Casemix Protocol to allow them to benchmark and compare hospitals. Accreditation by ACHS is used by many funds to determine benefit levels, etc.

Health funds are anxious to obtain more data about hospital performance particularly in relation to outcomes. Private hospitals have been less than enthusiastic about supplying such data, and indeed have opposed any attempt by funds to tie payments to outcome or similar data.

Health insurers believe the provision of quality data is an important component of their funding strategies. This interest in developing systems which promote improved quality in the private hospital sector with a view to encouraging 'health gain' and assist hospitals in improving their own performance is expected to continue. Some progress has been made in discussions relating to psychiatric care, where a committee involving the medical profession, private hospitals, insurers and consumers have agreed on a model for collecting and analysing data relating to outcome measures.

7.3.5 Hospital Benchmarking Roundtables and Consortia

The Health Roundtable Limited is a membership organisation structured as a not-for-profit company limited by guarantee. The aims of the organisation are to provide opportunities for health executives to learn how to achieve Best Practice in their organisations; to collect, analyse and publish

information comparing organisations and identifying ways to improve operational practices; and to promote interstate and international collaboration and networking among health organisation executives.

Membership in The Health Roundtable is by invitation to hospital Chief Executives only. The Chief Executives are invited to become personal members, and their hospitals are then invited to become organisational members. Members are organised into 'Chapters' to facilitate ongoing small-group discussions. Each Chief Executive is expected to serve on the Board of Directors of the Chapter of The Health Roundtable to which he or she belongs in order to set the agenda and monitor progress. Members may invite a limited number of guests to participate in activities of The Health Roundtable. The 22 hospitals within The Health Roundtable account for over 20% of all public hospital admissions in Australia and New Zealand, with well over one million inpatient episodes per year.

The Health Roundtable process is based on two major approaches: workshopping key issues and analysing casemix performance. The workshopping process uses face-to-face discussion of key operational issues and innovations involving the Chief Executives, key clinicians, and management staff of each member hospital. Workshops have concentrated on ways of improving the management of clinical processes. In addition, workshops with clinical information and casemix data managers from each hospital have been convened to review the techniques of data analysis and the differences in data practices between hospitals. The Health Roundtable also provides in-depth comparative analyses of casemix performance to all member hospitals every six months.

The members attribute the success of The Health Roundtable to several key factors including:

- voluntary participation by hospital chief executives
- emphasis on practical operational issues with solutions that can be implemented immediately
- direct control of the agenda and priorities by the members themselves
- focus on face-to-face discussion of real data with peers from other hospitals
- active involvement of hospital managers and clinicians from several disciplines
- recognition that all member hospitals have innovative practices to contribute
- confidence that the information shared within the group will not be revealed to others and will not be used to the detriment of any member
- independent, professional analytical support by the benchmarking organisation.

The Health Roundtable's agenda is set by the Board of Directors of each chapter, and modified during the year as new issues emerge. It is expected that the agenda will continue to include comparisons of practices in specific clinical specialties, analysis of key functional areas such as nursing, and increased workshopping of clinical cost comparisons.

For further information:

Dr Michael Walsh (Alfred Hospital) is the current President of The Health Roundtable Limited.

Dr David Dean serves as the General Manager.

For further information about The Health Roundtable or licensing its methodologies, please contact:

General Manager
The Health Roundtable Limited
PO Box 438
Turrumurra, NSW 2074
Phone: (02) 9440 2016
Email: david.dean@hrt.org.au.

7.3.6 Benchmarking in Women's and Children's Hospitals

Women's Hospitals Australasia and the Children's Hospitals Australasia have a number of initiatives in hand to assist member hospitals in enhancing the health and wellbeing of women, children and neonates. Their benchmarking initiatives are focused on providing information to support clinical improvement. The features of the Associations' program are that it is clinician driven, comprehensively supported by all levels of management and is thus not 'top down' or 'paper driven'.

Key performance indicator development

Member hospitals are currently identifying a number of key performance indicators that are useful to clinicians in enhancing their clinical practice. The indicators are being developed to ensure that the outcomes of the clinical forum program are measurable and support the concept of enhancing the quality, safety and cost effectiveness of the services provided. The indicators will be included in the national database.

Clinical improvement program

Over the last twelve months, the Associations have conducted successful programs of clinical improvement on the vexed topics of caesarean sections and perioperative issues. A number of initiatives are in hand to ensure that hospitals are able to achieve best current practice.

It should be noted that the Associations comprise the leading women's and children's hospitals, as well as major women's and children's units in general hospitals throughout Australia and New Zealand.

For further information:

Anne Cahill, National Director, Women's Hospitals Australasia and the Children's Hospitals Australasia, Level 1, 99 Northbourne Avenue, Turner, ACT, 2612, telephone (02) 6230 4400, fax (02) 6230 6699, email: acahill@wha.asn.au

APPENDIX

Membership of the National Health Performance Committee, as at January 2002

Member	Organisation
Dr David Filby (Chair)	Queensland Health
Commonwealth	
Mr Peter Broadhead	Commonwealth Department of Health and Ageing
Dr Vin McLoughlin	Commonwealth Department of Health and Ageing
Mr Peter Woodley *	Commonwealth Department of Health and Ageing
States/Territories	
Mr Jim Pearse	NSW Health
Dr Jenny Bartlett	Department of Human Services, Victoria
Dr Ian Ring	Queensland Health
Ms Kathryn Cook	Department of Health, Western Australia
Mr Jim Davidson	SA Department of Human Services
Mr Nick Goddard	Department of Health and Human Services, Tasmania
Ms Susan Killion	ACT Department of Health, Housing and Community Care
Dr Steve Guthridge	NT Department of Health and Community Services
Organisations	
Mr Geoff Sims	Australian Institute of Health and Welfare
Mr Russell Schneider	Australian Health Insurance Association Limited
Mr Michael Roff	Australian Private Hospitals Association
Dr Ric Marshall	National Health Information Management Group
Dr Louisa Jorm	National Public Health Partnership

* Ms Jean Douglass until December 2001.

GLOSSARY

AR-DRG

An Australian system of Diagnosis Related Groups (DRGs). See DRG.

Average length of stay (ALOS)

The average of the lengths of stay for a group of admitted patients in a hospital or group of hospitals. The length of stay for a patient is the difference between the date of separation and date of admission, less any leave days. For same day patients, the length of stay is attributed a value of one day.

Benchmarking

The ongoing, systematic process to search for and introduce best practice into an organisation. Benchmarking is generally used to compare an organisation or service with similar leading organisations or services to provide a catalyst to improve performance.

Body Mass Index (BMI)

A person's weight (body mass) relative to height. It is a measure of body mass corrected for height that is used to assess the extent of weight deficit or excess. In sedentary populations, body mass index (BMI) also provides an imprecise but practical indicator of the level of body fat. Adult body mass index is calculated by: weight (kg) divided by (height (m) squared).

Casemix

The number and type of patients treated by a hospital or group of hospitals. In Australia, casemix for inpatients is described using the DRG classification system.

Casemix adjusted separations

The number of inpatient separations for a hospital or group of hospitals multiplied by the average case weight. This product is often termed the units of care.

Case weight

The relative costliness of a particular DRG, determined so that the average case weight for all DRGs is 1.00.

Disability-adjusted life years (DALYs)

The DALY measure is the number of years lost due to premature mortality (relative to average life expectancy) combined with years lived in states of less than full health (i.e. years lived with disability) and is known as a health gap measure.

Disability in the context of the DALY term is defined as any departure from full health, and can include a short-term disability from a common cold, through to a long-term disability such as quadriplegia. This is a broader definition of disability than that often used in common language.

The methodology used to calculate 'Years of life lived with disability' requires further consultation and debate within Australia. The weights assigned to various disabilities are derived from overseas research that attempted to measure the extent to which people were prepared to trade off reductions in mortality against reductions in disability (i.e. years of life with good health against years of life with various disabilities). There may be issues around the acceptability to the Australian community in general and to various disability groups of both the basic trade-off methodology and the specific weights assigned to various disabilities. See also *Disability weights*.

Disability weights

Disability weights are constructed from use of a preference measure indicating society's willingness to prevent, cure or treat that health state in relation to other health problems. As such, it does not imply any value on an individual experiencing an illness or disability. There may, however, be issues around the acceptability to some groups of people with a disability of the DALY concepts in general, and the specific weights assigned to various disabilities. At the very least, there is a need for discussion within the community as to how well the weights (especially those derived from overseas research) reflect the views of both the people most affected by disability and Australian society as a whole.

DRG

A DRG (Diagnosis Related Group) provides a clinically meaningful way of relating the number and type of patients treated in a hospital (i.e. its casemix) to the resources required by the hospital. Each DRG represents a class of patients with similar clinical conditions requiring hospital services.

Eligible public patient

An eligible person who receives or elects to receive public hospital service free of charge.

Enhanced Primary Care (EPC) package

The Enhanced Primary Care package is made up of a range of innovative programs designed to assist people with chronic illnesses and complex care needs (many of whom are older Australians) as well as their carers and the health professionals who look after them. The aim of the programs is to promote a more integrated approach to service delivery among health professionals and other service providers (see <http://www.health.gov.au/pubs/budget99/fact/hfact2.htm>). Importantly, these programs encourage a greater role for consumers in making decisions about their health. The Package includes the following initiatives: helping GPs participate in multidisciplinary care planning, Commonwealth Carelink Centres, further coordinated care trials, preventing falls in older people and IT initiatives to keep health providers in touch.

Full-time Workload Equivalent for GPs

Data have been extracted by major practice postcode of general practitioners in the June quarter of each financial year. A full-time workload equivalent value is calculated for each practitioner by dividing the practitioner's Medicare billing (schedule fee value of claims processed by the Health Insurance Commission during the financial year) by the mean billing of full-time practitioners for that financial year (for instance, the minimum threshold in 1999–2000 was \$75,585). While often used in counting doctors, full-time workload equivalent values are really a measure of service provision. Because they take into account doctors' varying workloads, they are generally considered to provide a better overall indicator of medical workforce supply under Medicare than are head counts.

Morbidity

Any departure from a state of physiological or psychological wellbeing. Collectively, morbidity refers to the details of conditions and treatments relating to a group of patients.

National Health Data Dictionary (NHDD)

The NHDD provides national standard data definitions and specifies national minimum data sets.

National Health Information Knowledgebase (NHIK)

The NHIK is an electronic repository and information management environment for metadata and data standards. The Knowledgebase is an Internet application designed and created by the Australian Institute of Health and Welfare.

National Hospital Morbidity Database (NHMD)

The NHMD is a compilation of electronic summary records collected in admitted patient morbidity systems in public and private hospitals. Almost all hospitals in Australia are included. The exceptions are public hospitals not within the jurisdiction of a State or Territory health authority or the DVA (such as hospitals operated by correctional authorities and hospitals located in offshore territories). Military hospitals are also excluded. The database is managed and maintained by the AIHW.

Performance Indicator

In the context of this report a performance indicator is a statistic or other unit of information which reflects, directly or indirectly, the extent to which an anticipated outcome is achieved or the quality of the processes leading to that outcome. (Source: National Health Information Management Group (NHIMG) (2000), *National Summary of the 1998 Jurisdictional Reports against the Aboriginal and Torres Strait Islander Health National Performance Indicators for Aboriginal and Torres Strait Islander Health*, AIHW Cat. no. 5, AIHW, Canberra.)

Separation

The term used to refer to the episode of care, which can be a total hospital stay (from admission to discharge, transfer or death), or a portion of a hospital stay beginning or ending in a change of type of care (e.g. from acute to rehabilitation). 'Separation' also means the process by which an admitted patient completes an episode of care by being discharged, dying, transferring to another hospital or changing type of care.

Socioeconomic quintiles

This method uses an index that classifies people according to the average disadvantage of their statistical local area (SLA) of usual residence. The Index of Relative Socioeconomic Disadvantage

(IRSD), developed by the Australian Bureau of Statistics, is constructed using principal components analysis. It is derived from social and economic characteristics of the local area such as low income, low educational attainment, high levels of public sector housing, high unemployment, and jobs in relatively unskilled occupations.

Data are classified into quintiles of socioeconomic disadvantage according to the IRSD for their SLA of usual residence, with quintile 1 including the most disadvantaged households and quintile 5 the least. SLAs were grouped into quintiles so that each quintile contained approximately 20% of the total Australian population.

Triage category

The urgency of the patient's need for medical and nursing care.

Years of life lived with disability (YLD)

This measure relates to years lived with disability. See *Disability weights*.

Note: This definition is found in the Global Burden of Disease study published by the Harvard School of Public Health on behalf of the World Health Organization and the World Bank.¹ The Australian Burden of Disease study refers to YLD as 'years of life lost due to disability'.²

Years of life lost (YLL)

This measure relates to years lost to premature mortality.

Note: Further definitions of terms can be found in the relevant sources.

¹ Murray C.J. and Lopez A.D. (eds.) (1996), *The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*, Harvard School of Public Health (on behalf of the World Health Organization and the World Bank), Harvard University, Cambridge, MA.

² Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.

REFERENCES

- Australian Bureau of Statistics (1995 and 2001), *Surveys of Voluntary Work, Australia, 1995 and 2000*, ABS Cat. no. 4441.0, ABS, Canberra.
- Australian Bureau of Statistics (2001), *Accounting for Change in Disability and Severe Restriction 1981–1998*, Working Papers in Social and Labour Statistics no. 2001/1, ABS, Canberra.
- Australian Bureau of Statistics (2001), *Australian Social Trends, 2001*, Cat. no. 4102.0, ABS, Canberra.
- Australian Bureau of Statistics and Australian Institute of Health and Welfare (2001), *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples 2001*, ABS Cat. no. 4704.0, AIHW Cat. no. IHW 6.
- Australian Bureau of Statistics and Commonwealth Department of Health and Aged Care Services (1998), *National Nutrition Survey: Nutrient Intakes and Physical Measurements, Australia, 1995*, ABS Cat. no. 4805.0, Canberra.
- Australian Council for Safety and Quality in Health Care (ACSQHC) (in progress), *Safety in Numbers, A Technical Options Paper for a National Approach to the Use of Data for Safer Health Care*.
- Australian Institute of Health and Welfare (1994–2001), *Australia's Mothers and Babies, 1992–1999*, Perinatal Statistics Series nos. 1–3, 5–10, AIHW National Perinatal Statistics Unit, Sydney.
- Australian Institute of Health and Welfare (1998), *Health in Rural and Remote Australia*, AIHW Cat. no. PHE 6, AIHW, Canberra.
- Australian Institute of Health and Welfare (1999), *Australia's Welfare 1999*, AIHW, Canberra.
- Australian Institute of Health and Welfare (1999), *Heart, Stroke and Vascular Diseases: Australian Facts*, AIHW Cat. no. CVD 7, AIHW and the Heart Foundation of Australia, Cardiovascular Disease Series no. 10, Canberra.
- Australian Institute of Health and Welfare (1999), *International Health - How Australia Compares*, by de Looper M. and Bhatia K., AIHW Cat. no. PHE 8, AIHW, Canberra.
- Australian Institute of Health and Welfare (1999), *The Burden of Disease and Injury in Australia*, by Mathers C. Vos T. and Stevenson C., AIHW Cat. no. PHE 17, Canberra.
- Australian Institute of Health and Welfare (2000), *1998 National Drug Strategy Household Survey*, by Adhikari P. and Summerill A., AIHW Cat. no. PHE 27, Drug Statistics Series no. 6, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *Australian Hospital Statistics 1999–00*, AIHW Cat. no. HSE 14, Health Services Series no. 17, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *Australia's Health 2000: The Seventh Biennial Health Report of the Australian Institute of Health and Welfare*, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *BreastScreen Australia Achievement Report 1997 and 1998*, AIHW Cat. no. CAN 8, Cancer Series no. 13, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *Cervical Screening in Australia 1997–1998*, AIHW Cat. no. CAN 9, Cancer Series no. 14, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *Disability and Ageing, Australian Population Patterns and Implications*, AIHW Cat. no. DIS 19, Disability Series, AIHW, Canberra.
- Australian Institute of Health and Welfare (2000), *National Health Data Dictionary (NHDD)* [online], AIHW, Canberra [cited 26 March 2002]. Available from: <http://www.aihw.gov.au/>
- Australian Institute of Health and Welfare (2000), *Physical Activity Patterns of Australian Adults: Results of the 1999 National Physical Activity Survey*, by Armstrong T. Bauman A. and Davies J., AIHW Cat. no. CVD 10, AIHW, Canberra.
- Australian Institute of Health and Welfare (2001), *Australia's Health Services Expenditure to 1999–2000*, AIHW Series Health Expenditure Bulletin no. 17, AIHW, Canberra.
- Australian Institute of Health and Welfare (2001), *Community Aged Care Packages in Australia, 1999–00: A Statistical Overview*, AIHW Cat. no. AGE 20, Aged Care Statistics Series no. 10, AIHW, Canberra.
- Australian Institute of Health and Welfare (2001), *Heart, Stroke and Vascular Diseases – Australian Facts*, AIHW Cat. no. CVD 13, AIHW, Canberra.
- Australian Institute of Health and Welfare (2001), *Residential Aged Care in Australia, 1999–00: A Statistical Overview*, AIHW Cat. no. AGE 19, Aged Care Statistics Series no. 9, AIHW, Canberra.
- Australian Institute of Health and Welfare (2001), *The Quantification of Drug-caused Mortality and Morbidity in Australia, 1998*, by Ridolfo B. and Stevenson C., AIHW Cat. no. PHE 29, AIHW, Canberra.
- Australian Institute of Health and Welfare (2002), *Waiting Times for Elective Surgery in Australia*, AIHW Cat. no. HSE 18, Health Series no. 18, AIHW, Canberra.
- Australian Institute of Health and Welfare (unpublished work), Analysis of results of the 1980, 1983 and 1989 Risk Factor Prevalence Study, 1995 National Nutrition Survey and 1999 Australian Diabetes, Obesity and Lifestyle Study (AusDiab).

- Australian Institute of Health and Welfare (unpublished work), Analysis of the results of the National Nutrition Survey, 1995 (ABS 1997, Cat. no. 4802.0).
- Australian Institute of Health and Welfare and Australasian Association of Cancer Registries (2001), *Cancer in Australia 1998*, AIHW Cat. no. CAN 12, Cancer Series no. 17, Canberra.
- Australian Institute of Health and Welfare and Australasian Association of Cancer Registries (2001), *Cancer Survival in Australia, 2001, Part 1: National Summary Statistics*, AIHW Cat. no. CAN 13, Cancer Series no. 18, AIHW, Canberra.
- Australian Medical Workforce Advisory Committee (1998), *Sustainable Specialist Services: A Compendium of Requirements*, AMWAC Report 1998.7, Sydney.
- Australian Medical Workforce Advisory Committee (2000), *The General Practice Workforce in Australia*, AMWAC Report 2000.2, Sydney.
- Bauman A. Bellew B. Booth M. Hahn A. Stoker L. and Thomas M. (1996), *Towards Best Practice for the Promotion of Physical Activity in the Areas of New South Wales*, NSW Health Department, Centre for Disease Prevention and Health Promotion.
- Bauman A. Ford I. and Armstrong T. (2002), *Trends in population levels of reported physical activity in Australia, 1997, 1999, 2000*, Australian Sports Commission, Canberra.
- Canadian Institute for Health Information and Statistics Canada (2000), *Canadian Health Information Roadmap Initiative Indicators Framework 2000* [online], Ottawa, Canada [cited 26 March 2002]. Available from: <http://www.cihi.ca>
- Chalmers B. (1992), 'WHO appropriate technology for birth revisited', *British Journal of obstetrics and gynaecology*, vol. 99, no. 9, pp. 709–710.
- Chapman S. Borland R. Scollo M. Brownson R.C. Dominello A. and Woodward S. (1999), 'The impact of smoke-free workplaces on declining cigarette consumption in Australia and the United States', *American Journal of Public Health*, vol. 89 pp. 1018–1023.
- Commonwealth Department of Health and Aged Care (1998), *National Drug Strategic Framework 1998–99 to 2002–03*, Canberra.
- Commonwealth Department of Health and Aged Care (2000), *General Practice in Australia*, Canberra.
- Commonwealth Department of Health and Aged Care (2000), *The Australian Health Care System – An Outline*.
- Commonwealth Department of Health and Aged Care (2001), *Medicare Benefits Schedule Book*.
- Commonwealth Department of Health and Aged Care (2001), *Medicare Statistics, June Quarter 2001*.
- Commonwealth Department of Health and Aged Care (2001), 'Rural doctors and retention', by Hirsch N. Calcino G. and Fredericks C., Paper presented to the 6th National Rural Health Conference, March 2001.
- Commonwealth Department of Health and Aged Care (2001), *The Australian Medical Workforce Occasional Papers*, New Series no. 12.
- Commonwealth Department of Health and Aged Care (various years), *Annual Report*, Canberra.
- Commonwealth Department of Health and Aged Care and Australian Institute of Health and Welfare (1999), *National Health Priority Areas Report: Mental Health 1998*, AIHW Cat. no. PHE 13, HEALTH and AIHW, Canberra.
- Commonwealth Department of Health and Family Services (1991, 1993 and 1995), *National Drug Strategy Household Survey* (1991 survey known as the *National Campaign Against Drug Abuse Household Survey*), Canberra.
- Commonwealth Department of Health and Family Services (1998), *Developing an Active Australia: A Framework for Action for Physical Activity and Health*, Canberra.
- Commonwealth of Australia (1999), *Rocking the Cradle: A Report into Childbirth Procedures*, Senate Community Affairs Reference Committee, ISBN 0 642 71042 2.
- Commonwealth of Australia (2000), *A national approach for reducing access to tobacco in Australia by young people under 18 years of age*, an initiative of the National Expert Advisory Committee on Tobacco and the National Tobacco Policy Officers Group.
- Glover et al. (1999), *A Social Health Atlas of Australia, vol. 1*, Public Health Information Development Unit, University of Adelaide, South Australia.
- Hackshaw A.K. Law M.R. and Wald N.J. (1997) 'The Accumulated Evidence on Lung Cancer and Environmental Tobacco Smoke', *British Medical Journal*, vol. 315, pp. 980–988
- Health Administrative Review Committee (2001), *Report of the Health Administrative Review Committee*, June, unpublished.
- McDonald, P. (1995), *Families in Australia: A Socio-demographic Perspective*, Australian Institute of Family Studies, Victoria.
- Mackerras D. (1998), *Evaluation of the Strong Women, Strong Babies, Strong Culture Program: Results for the period 1990–1996 in the three pilot communities*, Menzies School of Health Research.
- McManus P. Hammond M.L. Whicker A.S.D. Primrose J.G. Mant A. and Fairall S.R. (1997), 'Antibiotic use in the Australian community, 1990–1995', *Medical Journal of Australia*, vol. 167 pp. 124–127.

- Mathur S. Gajanayake I, and Hodgson G. (2000), *Diabetes as a Cause of Death, Australia, 1997 and 1998*, AIHW Cat. no. CVD 12, Diabetes Series no. 1, AIHW, Canberra.
- Murray C.J. and Lopez A.D. (eds.) (1996), *The Global Burden of Disease: A comprehensive assessment of mortality and disability from diseases, injuries and risk factors in 1990 and projected to 2020*, Harvard School of Public Health (on behalf of the World Health Organization and the World Bank), Harvard University, Cambridge, MA.
- National Centre for Immunisation Research and Surveillance of Vaccine Preventable Diseases (2000), *Vaccine Preventable Diseases and Vaccination Coverage in Australia, 1993–1998: Supplement*, by McIntyre P. et al, Communicable Diseases Intelligence, Communicable Diseases Network Australia, DHAC, Canberra.
- National Health and Medical Research Council (1997), *The Health Effects of Passive Smoking*, Australian Government Publishing Service, Canberra.
- National Health Information Management Group (2000), *National Summary of the 1998 Jurisdictional Reports against the Aboriginal and Torres Strait Islander Health National Performance Indicators for Aboriginal and Torres Strait Islander Health*, AIHW Cat. no. 5, AIHW, Canberra.
- National Health Performance Committee (2000), *Fourth National Report on Health Sector Performance Indicators – A Report to the Australian Health Ministers' Conference* [online], NSW Health Department, Sydney [cited 26 March 2002]. Available from: <http://www.aihw.gov.au/indicators/index.html>
- National Health Performance Committee (2001), *National Health Performance Framework Report, 2001* [online], Queensland Health, Brisbane [cited 26 March 2002]. Available from: <http://www.aihw.gov.au/indicators/index.html>, <http://www.health.gov.au/publicat.htm>, <http://www.health.qld.gov.au/nathlthrpt/index.htm>
- National Heart Foundation (1999), *1999 Guide to the Management of Hypertension for Doctors*, National Heart Foundation of Australia, Surry Hills, New South Wales.
- National Injury Surveillance Unit (2000), 'Suicide in Australia: Trends and Data for 1998', by Harrison J.E. and Steenkamp M., Australian Injury Prevention Bulletin no. 23, AIHW Cat. no. INJ 25, AIHW National Injury Surveillance Unit, Flinders University of South Australia, Adelaide.
- National Prescribing Service (2000), *NPS Evaluation Report No. 2*, Surry Hills, Sydney.
- Organisation for Economic Cooperation and Development (2001), *Health at a Glance*, OECD, Paris.
- Organisation for Economic Cooperation and Development (2001), 'Measuring Up': *Improving Health Systems Performance in OECD Countries*, OECD Health Conference on Performance Measurement and Reporting, 5–7 November [online], Ottawa, Canada [cited 26 March 2002]. Available from: <http://www1.oecd.org/els/health/canconf/presentations.htm>
- Organisation for Economic Cooperation and Development (2001), *OECD Health Data 2001: Comparative Analysis of 30 Countries*, OECD, Paris.
- Royal Australian College of General Practitioners and Diabetes Australia (2000), *Diabetes Management in General Practice*, 6th edition.
- Steering Committee for the Review of Commonwealth/State Service Provision (2002), *Report on Government Services 2002* [online], AusInfo, Canberra [cited 26 March 2002]. Available from: <http://www.pc.gov.au/gsp/index.html>
- Stephenson J. Bauman A. Armstrong T. Smith B. and Bellow B. (2000), *The Costs of Illness Attributable to Physical Inactivity in Australia: A Preliminary Study* [online], Commonwealth Department of Health and Aged Care and the Australian Sports Commission, Canberra [cited 26 March 2002]. Available from: <http://www.ausport.gov.au/active/research/>
- Therapeutic Guidelines Ltd (2000), *Writing Group for Therapeutic Guidelines: Antibiotic, Therapeutic guidelines: antibiotic version 11*, Melbourne.
- Turnidge J. (1994), 'Pitfalls in antibiotic prescribing and how to avoid them', *Australian Family Physician*, vol. 23, pp. 563–571.
- United Kingdom National Health Service (2001), *National Sentinel Caesarean Section Audit project*, National Institute for Clinical Excellence.
- World Health Organization (2000), *The World Health Report 2000, Health Systems – Improving Performance* [online], Geneva [cited 26 March 2002]. Available from: <http://www.who.int/whr/>
- World Health Organization (1985), Recommendations [of the Joint Interregional Conference on Appropriate Technology for Birth], Joint Interregional Conference on Appropriate Technology for Birth 1985, Fortaleza, Brazil.

Note: In November 2001, the Commonwealth Department of Health and Aged Care became known as the Commonwealth Department of Health and Ageing (DoHA).

