Health system performance

9

T he earlier chapters of this report provide detailed statistics and information on the health status of Australia's population, on determinants of Australia's health status and on health services provided in Australia.

This chapter summarises some of those details to provide an integrated picture of the nature and performance of the health system and its impact on the health of the population. It uses a set of 44 indicators designed by the National Health Performance Committee (NHPC) for reporting to Australia's health ministers. It also uses the NHPC's National Health Performance Framework (NHPC 2001) to group the indicators into three 'tiers' covering health status and outcomes, determinants of health, and health system performance.

The NHPC previously used the set of indicators in the *National report on health sector performance indicators 2003* (NHPC 2004). At the request of Australia's health ministers, the AIHW is now assuming this national reporting role in *Australia's health*, starting with this dedicated chapter.

The chapter begins with a brief description of the NHPC's framework and criteria for selecting indicators. The indicator statistics are then presented according to the framework's tiers. The presentation is shaped by the major questions about performance: 'Where are we improving and by how much?', 'Is performance the same for different population groups?', and 'How does Australia compare internationally?'

Detailed information on the indicators is included in the preceding chapters and their location is shown in tables 9.3, 9.5 and 9.7.

9.1 The National Health Performance Framework and indicators

National health performance framework

The National Health Performance Framework (Table 9.1) was developed by the NHPC as a structure to guide the understanding and evaluation of the health system, making it easier to determine how well the system is performing (NHPC 2001). It is broadly consistent with the framework used for this book, as described in Chapter 1.

The health status of the population is of ultimate interest in evaluating health system performance—a measure of success or failure of efforts to improve the population's health. Hence, the framework encompasses tiers for health status and the determinants of health, as well as a third tier that focuses on the health system interventions that influence health status and determinants of health, both for individuals and at the population level.

Questions are used to describe the focus of the three tiers and to highlight that equity is considered integral to each. Each tier also has a number of 'dimensions' or subcategories. They are used to guide the development and selection of indicators that can then be used together to answer each tier's questions.

Table 9.1: 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	Age- and/or condition-specific mortality rates

Determinants of health (Tier 2)

Are the factors determining health changing for the better? Is it the same for everyone? Where and for whom are they 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 or action provided is relevant to the client's needs and based on established standards	Achieves desired results with most cost-effective use of resources

Responsive	Accessible	Safe
Service provides respect for persons and is client-oriented, including 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 to be innovative and respond to emerging needs (research, monitoring)

Source: NHPC 2001.

Australia's health 2008

Health system performance indicators

Performance indicators are defined as 'statistics or other units of information which reflect, directly or indirectly, the extent to which an anticipated outcome is achieved or the quality of the processes leading to that outcome' (NHPC 2001). Outcomes and quality of processes can be difficult to measure, so indicators are not necessarily accurate measures of them. In addition, the extent to which outcomes can be attributed to interventions varies (Box 9.1). Nevertheless, performance indicators can provide useful information to guide decision making.

Box 9.1: The health system and outcomes

How much credit or blame can the health system take for our health? Health status and health determinants are often described as 'outcomes' because the health system aims at improving them.

As discussed in chapters 1 and 4, many factors can influence health. The health system is one influence, and probably a major one for many people. However, the system itself has many parts, involving many forms of prevention and treatment, and health can also be influenced by factors outside the health system such as transport safety.

At a broad level, this makes it difficult to know which aspects of our health status can be attributed to the health system rather than to other influences in our lives, to what extent, and to which parts of the health system.

Outcomes can be clear when the focus is narrow. For example, a clinical trial can show the benefit of a particular medication or surgical procedure for a particular health condition. In contrast, some of the NHPC 'outcome' indicators aim at providing information about the performance of the health system as a whole and cannot be used to assess the extent to which the health system, or any particular component of the system, can take the credit or blame.

Despite these complexities, we know that preventive and treatment approaches are increasingly being based on strong scientific evidence that they work. This makes it reasonable to conclude that many of the health improvements shown in this chapter do indeed reflect the health system to some extent.

The 44 indicators here cover all the components of the health sector identified by the NHPC—acute care, continuing care, primary care and population health—but not all components of the health sector have indicators in every dimension.

The indicators were selected by the NHPC using specific criteria such as they must be measurable for diverse populations, be understood by people who need to act, be relevant to policy and practice, and reflect results of actions when measured over time (NHPC 2001). In addition, as a set, they were designed to reflect a balance of indicators for all appropriate parts of the framework, and to provide feedback on where the system is working well, as well as on areas for improvement.

A full description of each indicator, including its definition and rationale, can be found in the *National report on health sector performance indicators 2003* (NHPC 2004).

9.2 Overview of indicators by tier

Summary information about the NHPC health system performance indicators is presented in this chapter using the three tiers of the framework.

For each tier, a table is included summarising the long-term changes in the indicator levels. Most changes are described as 'favourable', 'unfavourable' or 'no trend', depending on whether the change was in accordance with the goals of the health system to improve the health of Australians. For some indicators, it is not possible to determine whether there was a meaningful change. These indicators are reported as having 'no trend' and their level may be stable or fluctuating. For others, the NHPC's 2003 report does not indicate what direction of change in an indicator would represent a favourable change; for example, if the percentage of people giving informal care rises over time (Indicator 2.04), is that a favourable or unfavourable change? For some indicators no new data were available since the previous report, and for others the new data that were available have been collected or calculated differently, and thus are not comparable to the 2003 figures.

This presentation also includes a summary of previous and current rates for the performance indicators. Previous rates for each indicator have generally been taken from the 2003 report which used varying reference years, depending on data availability. Similarly, the current rates described in this report reflect data from varying years, and the interval periods for each indicator are not consistent.

This presentation further includes comparisons for Indigenous peoples compared with other Australians, variations for other demographic groups, and international comparisons, where possible. Some of the indicators presented in this chapter are age-standardised, but the population base and year used vary between indicators. More detail on specific age-standardisation methods for indicators are available in their corresponding chapter.

Links to the detailed information on each indicator plus additional sources of data are also provided for easy reference.

Tier 1: Health status and outcomes

This tier covers health status, as the overall measure of Australia's success or failure in improving the population's health, through both the health sector and other sectors. The indicators can also be viewed as indicating health outcomes; that is, as wholly or partially attributable to health service interventions (see Box 9.1).

Tier 1 of the framework has four components that bring together a range of indicators that summarises the impact of disease and injury on Australians:

- *Health conditions* are measured through the incidence of selected diseases (and could also include measures of the prevalence of diseases).

- *Human function* focuses on disability measured as core activity limitation.

- *Life expectancy and wellbeing* incorporates life expectancy as a summary statistic of the overall health status of the population, and a measure of psychological distress as an indicator of overall wellbeing.

- *Deaths* information focuses on avoidable and premature death, including infant mortality, and deaths from diseases and injuries that are a focus of the health system.

Table 9.2: Health status and outcomes indicators

Indicator	Favourable trend	No trend	Unfavourable trend	Other
Health conditions: Incidence of heart attacks	✓			
Health conditions: Incidence of cancer			✓	
Human function: Severe or profound core activity limitation				(a)
Life expectancy and wellbeing: Life expectancy	✓			
Life expectancy and wellbeing: Psychological distress		✓		
Deaths: Potentially avoidable deaths				(a)
Deaths: Infant mortality		✓		
Deaths: Mortality for National Health Priority Area diseases and conditions				
Cancers	✓			
Coronary heart disease	✓			
Cerebrovascular disease	✓			
All injuries	✓			
Falls		✓		
Suicide				(a)
Motor vehicle accidents	✓			

(a) Data unavailable or not comparable.

Table 9.3: Health status and outcomes indicators: comparisons

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
1.01 Incidence of heart attacks	**Health conditions:** Incidence of acute coronary heart disease events ('heart attacks')	Per 100,000 2001: 580.2 2005: 511.0	n.a.	Higher in males	Rate 3 times as high as for other Australians	Chapter 5, Figure 5.3 AIHW 2004 AIHW: Mathur et al. 2006a
1.02 Incidence of cancer	**Health conditions:** Incidence rates for cancer	Per 100,000 Males 1999: 545 2004: 573 Females 1999: 388 2004: 395	Fourth worst rate among OECD countries	Higher in males Higher in rural and remote areas for melanoma, cervical cancer and smoking-related cancers Lower in Very Remote areas	Overall cancer rates lower than for other Australians Rates higher for lung cancer, other smoking-related cancers, and cancers of the thyroid, pancreas, oesophagus, liver and gallbladder Very low incidence of melanoma	Chapter 5, Figure 5.1 AIHW & AACR 2007 AIHW & AACR (forthcoming) 2008

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Table 9.3 (continued): Health status and outcomes indicators: comparisons

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
1.03 Severe or profound core activity limitation	**Human function:** Severe or profound core activity limitation by age and sex	1998: 6.1% 2003: 6.3%	n.a.	Higher in females Increases with age with significant increase in those aged 65 years and over	Rates twice as high as in other Australians (people aged 18 years and over in non-remote areas)	Chapter 2, Table 2.9 AIHW 2005a ABS & AIHW 2005
1.04 Life expectancy	**Life expectancy and wellbeing:** Life expectancy at birth	*Males* 1999–2001: 77.4 years 2003–2005: 78.5 years *Females* 1999–2001: 82.6 years 2003–2005: 83.3 years	Second best in world after Japan	Higher in females Highest in ACT and lowest in NT Higher in urban areas	About 17 years lower than for all Australians	Chapter 2, tables 2.3 and 2.4 ABS 2006a WHO 2007
1.05 Psycho-logical distress	**Life expectancy and wellbeing:** Levels of psychological distress as measured by the Kessler 10 scale	Per cent with distress rated as 'very high' 2001: 3.6% 2004–05: 3.8%	n.a.	Higher in females	n.a.	Chapter 5, Table 5.13
1.06 Potentially avoidable deaths	**Deaths:** Number of potentially avoidable deaths	Per 100,000 *Males* 2001: 232.1 *Females* 2001: 121.1	Better rates than New Zealand, except for Indigenous persons	Increases with age Higher for: – males – disadvan- taged areas – rural and remote areas	Almost 4 times the rate of other Australians	Chapter 2, Table 2.16 Page et al. 2006
1.07 Infant mortality	**Deaths:** Infant mortality rate	Per 1,000 live births 2001: 5.3 2005: 5.0	Better than the OECD average but ranked almost among the worst third of OECD countries	Higher in males	Rate 2.5 to 3 times that for other Australians	Chapter 2, Figure 2.3 ABS 2006a OECD 2007

(continued)

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
1.08 Mortality for National Health Priority Area diseases and conditions	**Deaths:** Death rates for National Health Priority Area diseases and conditions	NHPA cancers reported in detail in Chapter 5				
	NHPA cancers	Per 100,000 2001: 104.6 2005: 95.7	Ranked in the better half of OECD countries	Higher in males Higher all-cancer mortality in rural and remote areas Overseas-born Australians have a much lower rate than Australian-born	Rate higher than other Australians for lung cancer and cervical cancer among the NHPA cancers	Chapter 5, Table 5.2 AIHW & AACR 2007 AIHW & AACR (forthcoming) 2008
	Coronary heart disease	Per 100,000 *Males* 2001: 175.7 2005: 136.9 *Females* 2001: 102.5 2005: 80.7	Better than most other OECD countries	Higher in males Higher in disadvantaged areas Higher in rural and remote areas	Rate 3 times that for other Australians	Chapter 5, figures 5.3, 5.4, 5.5 AIHW 2004 AIHW 2007b
	Cerebro-vascular disease	Per 100,000 *Males* 2001: 64.9 2005: 53.3 *Females* 2001: 59.9 2005: 49.3			Rate twice that for other Australians	Chapter 5, Figure 5.5 AIHW 2007b
	All injury	Per 100,000 *Males* 2001: 58.5 2004–05: 50.9 *Females* 2001: 22.2 2004–05: 20.8	In the best third of OECD countries	Higher in older people Increase with remoteness	Rate 2.5 times that for other Australians	Chapter 5, Table 5.22 AIHW 2007b
	Falls	Per 100,000 *Males* 2001: 4.1 2004–05: 5.1 *Females* 2001: 2.4 2004–05: 3.6	n.a.	Rates are very high for older people, particularly those aged 80 years and over	Rate similar for Indigenous and other males and higher for Indigenous females than other females	Chapter 5, Table 5.22 AIHW 2007b
	Suicide	Per 100,000 *Males* 2001: 20.3 2004–05: 15.3 *Females* 2001: 5.3 2004–05: 3.9	n.a.	For males, rates are higher in their 30s and in older age groups	Rate twice that for other Australians	Chapter 5, Table 5.22 AIHW 2007b

Current and previous rates

The 13 indicators in Tier 1 (tables 9.2 and 9.3) show that Australia's health status and outcomes have improved overall since the 2003 report, with a favourable change for most of the indicators. The notable exception was the incidence of cancer, Indicator 1.02, covering all cancers except non-melanoma skin cancers. It showed an unfavourable change over the period between 1999 and 2004, although the level in 2004 was slightly lower than in 1994. Further information on trends in cancer incidence is included in Chapter 5.

Australians are generally living longer; life expectancy at birth increased between 2001 and 2005. Males can now expect to live to 78.5 years on average and females to 83.3 years, an increase of 1.1 years and 0.7 years respectively. The incidence of heart attacks fell from 580 per 100,000 to 511 per 100,000 between 2001 and 2005.

Deaths from diseases and injuries that are National Health Priority Areas (NHPA) provide a means of assessing the performance of programs aimed at these priority areas. Death rates for coronary heart disease and cerebrovascular disease decreased for both males and females between 2001 and 2005. Deaths from cerebrovascular disease fell from 65.2 to 53.3 per 100,000 for males and from 59.9 to 49.3 for females, and coronary heart disease deaths fell from 175.7 to 136.9 per 100,000 for males and 102.5 to 80.7 for females. In contrast to the trend for overall cancer incidence, deaths from NHPA cancers—eight cancers only—fell between 2001 and 2005 from 104.6 to 95.7 per 100,000 persons, reflecting the favourable trend for this indicator. Deaths due to injury over 2001–2004 also show a favourable trend and decreased from 58.5 to 50.9 per 100,000 for males and 22.2 to 20.8 per 100,000 for females.

Although death rates for suicide appear to have fallen, these deaths have been under-enumerated in recent years, so the actual trend in suicide deaths is not clear (ABS 2005).

International comparison

Australia's rank among other countries varies considerably across Tier 1 indicators. Australia rates favourably against other OECD countries on current figures for life expectancy and death rates for NHPA cancers and coronary heart disease. However, Australia rates unfavourably for current rates of cancer incidence and death due to injury. And although Australia's infant mortality rates are lower than the OECD average, they are close to the worst third of member countries on this measure.

Note that the death rates for NHPA cancers place Australia in the better half of OECD countries whereas the incidence for overall cancer places the country in the worst third. This may indicate that Australia's health system compares favourably with other OECD countries in relation to treating cancer, less favourably in relation to preventing it, more favourably in detecting cancer early, or all of these possibilities. It should also be noted that there are hundreds of different cancers and similarly the eight NHPA cancers are quite disparate in their features. This means that rates for overall cancer or for other cancer groupings can mask many variations in success for individual cancers.

Population variations

Tier 1 indicators reflect that people in rural and remote areas have a lower life expectancy and a generally higher incidence of death and disease from reported conditions. This applies to deaths from cardiovascular disease and to cancer incidence and deaths, for example.

Many of the Tier 1 indicator levels also vary with sex and socioeconomic status. Males fare worse than females on all indicators except severe or profound core activity limitation, psychological distress and deaths due to falls. Rates of potentially avoidable deaths and deaths from coronary heart disease are higher in populations with low socioeconomic status.

Indigenous comparison

Where these comparisons are provided, rates for Indigenous Australians across all Tier 1 indicators compare unfavourably with those of non-Indigenous Australians. Life expectancy for Indigenous Australians is, on average, 17 years less than for non-Indigenous Australians. Infant mortality rates are around three times those of non-Indigenous infants and the incidence rates for heart attack and cancer (except for melanomas) for Indigenous Australians are also higher.

Rates of potentially avoidable deaths (explained further in Chapter 2) in the Indigenous population are almost four times those of other Australians. The death rates for National Health Priority Area diseases such as some cancers, falls, suicide and cardiovascular diseases are also higher in Indigenous populations.

Tier 2: Determinants of health

'Determinants of health' is a term used for factors that affect health at the individual or population level. As detailed in Chapter 4, they are the key to the prevention of disease and injury and help explain and predict trends and inequalities in health. They can be environmental, socioeconomic, behavioural and biomedical, and can act more directly to cause disease (such as tobacco smoking) or be further back in the causal chain and act via a number of intermediary causes (such as socioeconomic status). Individuals have a degree of control over some determinants (such as physical inactivity), but other determinants act mainly or entirely at a population level (such as the fluoridation of drinking water).

Tier 2 of the framework organises indicators of determinants of the health of Australians into five dimensions (see Table 9.4):

- *Environmental factors* are summarised with one indicator relating to local environments (smoking in the home) and another relating to the population-wide environment (availability of fluoridated water).

- *Socioeconomic factors* are summarised with an indicator of income inequality across the population.

- *Community capacity* is measured in terms of the level of informal care.

- *Health behaviours* are summarised using four indicators that relate to many chronic diseases and a measure that reflects several of the behaviours, namely overweight and obesity.

- *Person-related factors* are represented by indicators of low birthweight and high blood pressure, both risk factors for a range of health conditions.

Table 9.4 Determinants of health indicators

Indicator	Favourable trend	No trend	Unfavourable trend	Other
Environmental factors: Children exposed to tobacco smoke in the home	✓			
Environmental factors: Availability of fluoridated water				(a)
Socioeconomic factors: Income inequity		✓		
Community capacity: Informal care				(b)
Health behaviours: Adult smoking	✓			
Health behaviours: Risky alcohol consumption		✓		
Health behaviours: Fruit and vegetable intake				
Fruit intake		✓		
Vegetable intake				(a)
Health behaviours: Physical activity		✓		
Health behaviours: Overweight and obesity				
Overweight (but not obese)			✓	
Obesity			✓	
Person-related factors: Low birthweight babies		✓		
Person-related factors: High blood pressure				(a)

(a) Data unavailable or not comparable.
(b) Unclear which direction of change would be favourable or unfavourable.

Table 9.5: Determinants of health indicators: comparisons

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
2.01 Children exposed to tobacco smoke in the home	**Environmental factors:** Proportion of households with dependent children (0–14 years) where adults report smoking inside	2001: 19.7% 2007: 7.8% (Any smoking inside)	n.a.	n.a.	Rate 1.5 times that for other Australians	Chapter 4, Table 4.13 AIHW 2007b
2.02 Availability of fluoridated water	**Environmental factors:** Proportion of the population served by a reticulated water supply that provides satisfactory fluoride levels whether artificially fluoridated or naturally occurring	2001: 69%	n.a.	Significant variation between states and territories due to differences in government policies	n.a.	Chapter 4, Box 4.1

(continued)

Table 9.5 (continued): Determinants of health indicators: comparisons

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
2.03 Income inequity	**Socioeconomic factors:** Ratio of equivalised weekly incomes at the 80th percentile to the 20th percentile income	2000–01: 2.63 2005–06: 2.55	n.a.	n.a.	n.a.	Chapter 4, Table 4.9
2.04 Informal care	**Community capacity:** Percentage of population engaged in informal care	Per cent as primary carers Males 1998: 1.4% 2003: 1.7% Females 1998: 3.4% 2003: 4.3%	n.a.	n.a.	n.a.	Chapter 8, Table 8.29
2.05 Adult smoking	**Health behaviours:** Proportion of people aged 14 years and over who are daily smokers Proportion of people aged 18 years and over who are daily smokers	Aged 14 years and over 2001: 19.5% 2007: 16.6% Aged 18 years and over 2001: 24.0% 2007: 17.5%	Among the best OECD countries	Higher in males Higher in rural and remote areas Higher in disadvantaged areas	Rates double those of other Australians	Chapter 4, Figure 4.6
2.06 Risky alcohol consumption	**Health behaviours:** Proportion of the population aged 18 years and over at risk of long-term harm from alcohol	2001: 10.8% 2007: 13.4%	n.a.	Similar for males and females	Rates similar to those of other Australians	Chapter 4, Table 4.15 ABS 2006b
2.07 Fruit and vegetable intake	**Health behaviours:** Proportion of people eating sufficient daily serves of fruit and vegetables					
	Fruit consumption	*Males* 2001: 47% 2004–05: 48% *Females* 2001: 58% 2004–05: 60%	n.a.	Consumption improves with increasing age	Fruit consumption rate similar to that of other Australians	Chapter 4, Figure 4.11 ABS 2006b
	Vegetable consumption	*Males* 2004–05: 12% *Females* 2004–05: 16%	n.a.	Consumption improves with increasing age	Vegetable consumption rate similar to that of other Australians	Chapter 4, Figure 4.11 ABS 2006b

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Table 9.5 (continued): Determinants of health indicators: comparisons

Indicator	Domain and description	Previous and current rates	International comparison	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
2.08 Physical activity	**Health behaviours:** Proportion of adults insufficiently physically active to obtain a health benefit	2000: 54% 2004: 50%	n.a.	Females are less active than males	Rates similar to those of other Australians	Chapter 4, Figure 4.9
2.09 Overweight and obesity	**Health behaviours:** Proportion of adults overweight or obese					
	Overweight (but not obese)	*Males* 2001: 42% 2004–05: 41% *Females* 2001: 25% 2004–05: 25%		Increases with age but declines after age 65 years Higher in disadvantaged areas	Rates lower than those of other Australians	Chapter 4, Figure 4.19
	Obesity	*Males* 2001: 16% 2004–05: 19% *Females* 2001: 17% 2004–05: 17%	Similar rates of obesity to Canada and the United Kingdom Better than the United States but worse than France and Japan	Increases with age but declines after age 65 years Higher in disadvantaged areas	Obesity rates twice those of other Australians	Chapter 4, Figure 4.19
2.10 Low birthweight babies	**Person-related factors:** Proportion of babies who are low birthweight	1999: 6.2% 2005: 6.4%	Similar to the OECD average	Higher for female babies	Rates more than twice those of babies of other Australian mothers	Chapter 6, Table 6.2 Laws et al. 2007
2.11 High blood pressure	**Person-related factors:** Proportion of persons aged 25 years and over with high blood pressure or on medication for high blood pressure	1999–2000: 30%	n.a.	Slightly higher for males Rates increase sharply with increasing age	Rates 1.6 times those of other Australians	Chapter 4, Figure 4.15

Current and previous rates

The 11 indicators in Tier 2 do not indicate an overall trend in the determinants of health in Australia since the 2003 report. A favourable trend has been occurring for the proportion of children exposed to cigarette smoke in the home (decreased from 19.7% in 2001 to 7.8% in 2007) and the proportion of smokers aged over 14 years in the population (decreased from 19.5% in 2001 to 16.6% in 2007). However, there is an unfavourable trend in overweight and obesity rates overall, although this is not readily seen in the period between 2001 and 2004–05. For two of the indicators, no new data were available, and for a number of other indicators no overall trend was able to be determined, even though the reported rates may have changed since the last report.

International comparison

Australia compares favourably with other OECD countries for one of three NHPC indicators of determinants where international data are available, ranking among the best of the OECD countries for tobacco smoking. However, rates of overweight and obese people in Australia are among the worst for OECD countries. Australia rates better than the United States of America, similar to Canada and the United Kingdom and worse than countries such as France and Japan.

The rate of low birthweight babies born in Australia is similar to the average OECD rate.

Population variations

For a number of health determinants, results for males were less favourable than for females. Participation in smoking is higher among males than females, and males are more likely to be overweight or obese and have high blood pressure. Consumption of fruit and vegetables is higher among females than males, with consumption increasing with age. However, females are less likely to be sufficiently physically active and are more likely to be of low birthweight. Females are more often engaged in informal care than males.

Smoking rates are higher in disadvantaged and rural and remote areas, with males smoking more than females. Rates of obesity also increase in areas of higher disadvantage.

Availability of fluoridated water varies between states and territories because of local government decisions.

Indigenous comparison

Levels of health determinants for Indigenous Australians, where available, are consistently less favourable than for other Australians. This is in keeping with the poorer health status of Indigenous Australians reflected in Tier 1 indicators. They are more likely to be exposed to tobacco smoking in the home as children and twice as likely to be adult smokers as non-Indigenous Australians are. They are also twice as likely to be obese, and rates of high blood pressure are higher in this population.

As illustrated in Tier 1, the rates of Indigenous infant mortality are around three times those of non-Indigenous infants, and the rate of babies born with low birthweight in Indigenous populations is more than twice as high.

Tier 3: Health system performance

The health-care system may be viewed as a combination of the various service categories and interventions of the health-care system. It incorporates population health, primary care, acute care and continuing care, and features considerable overlap of services and functions between them. This tier of indicators brings together performance reporting on the range of components of the health system to create a view of the system's performance as a whole. Some indicators relate to the desired outcomes of interventions in terms of health status or determinants of health. Others are measures of the process of the intervention, with the assumption that a high-quality process will produce a good health outcome.

The tier has nine dimensions against which the indicators are presented:

- *Effectiveness* focuses on whether there have been gains in health status or health determinants that suggest that interventions have been effective. It is assessed using nine indicators that cover aspects of population health, primary care, acute care and continuing care, and a range of acute and chronic health conditions.

- *Appropriateness* aims at whether interventions are undertaken according to 'best practice'. Four indicators cover aspects of primary and acute care.

- *Efficiency* of the system is assessed as the cost of service provision, represented by two indicators of the efficiency of acute care.

- *Responsiveness* is gauged by a measure of waiting times in emergency departments that can also be regarded as a measure of accessibility.

- *Accessibility* of care uses three indicators relevant to primary and acute care, relating to cost of care, geographical accessibility and waiting times.

- *Safe care* is assessed using a process indicator for safety in primary care, and an outcome indicator for acute care.

- *Continuous care* relates to how the sectors of the health-care system work together. It is measured using two indicators relating to the links between primary care and other care.

- *Capable care* is defined by the NHPC as the capacity to provide a health service based on skills and knowledge. It is indicated by a measure of accreditation in general practice.

- *Sustainability* of the health system is defined as capacity to provide infrastructure, such as workforce, facilities and equipment, and be innovative and respond to emerging needs. It is assessed using indicators relating to the health workforce.

The National Health Performance Framework does not include any single dimension identified as 'quality'. Instead, quality has been considered by the NHPC as an integral part of the health system performance tier. The NHPC notes that the dimensions considered in determining the quality of the system are very similar to those measuring health system performance, and that the overall performance of the system cannot be assessed through a single dimension. Thus, a system that is performing well could be defined as delivering interventions of a high quality, assessed using indicators relating to each of the Tier 3 dimensions.

Table 9.6: Health system performance indicators

Indicator	Favourable trend	No trend	Unfavourable trend	Other
Effective: Unsafe sharing of needles		✓		
Effective: Teenage purchase of cigarettes	✓			
Effective: Cervical screening		✓		
Effective: Breast cancer screening		✓		
Effective: Childhood immunisation		✓		
Effective: Influenza vaccination		✓		
Effective: Potentially preventable hospitalisations		✓		
Effective: Survival following acute coronary heart disease	✓			
Effective: Cancer survival	✓			
Appropriate: Appropriate use of antibiotics		✓		
Appropriate: Management of diabetes				(a)
Appropriate: Delivery by caesarean section				(b)
Appropriate: Hysterectomy rate				(b)
Efficient: Hospital costs				(a)
Efficient: Length of stay in hospital	✓			
Responsive: Waiting times in emergency departments		✓		
Accessible: Bulk-billing for non-referred (GP) attendances	✓			
Accessible: Availability of GP services		✓		
Accessible: Access to elective surgery			✓	
Safe: Electronic prescribing and clinical data in general practice	✓			
Safe: Adverse events treated in hospitals				(a)
Continuous: Enhanced primary care services	✓			
Continuous: Health assessments by GPs	✓			
Capable: Accreditation in general practice		✓		
Sustainable: Health workforce—graduates		✓		
Sustainable: Health workforce aged over 55 years			✓	

(a) Data unavailable or not comparable.

(b) Unclear which direction of change would be favourable or unfavourable.

Table 9.7: Health system performance indicators: comparisons

Indicator	Domain and description	Previous and current rates	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
3.01 Unsafe sharing of needles	**Effective:** Percentage of injecting drug users, participating in surveys carried out at needle and syringe programs, who report recent sharing of needles and syringes	2001: 14% 2006: 13%	n.a.	n.a.	Chapter 4, Section 4.5, p145
3.02 Teenage purchase of cigarettes	**Effective:** Percentage of teenage smokers who personally purchased their most recent cigarette	*Aged 12–15 years* 1999: 21% 2005: 17% *Aged 16–17 years* 1999: 48% 2005: 29%	n.a.	n.a.	Chapter 4, Figure 4.7
3.03 Cervical screening	**Effective:** Cervical screening rates for women within national target groups	2000–2001: 63% 2004–2005: 61%	Highest among those aged 45–59 years Lowest among those under 30 years and aged 60 years and over Highest in Major Cities and lowest in Very Remote areas Lowest in disadvantaged areas	n.a.	Chapter 7, tables 7.3 and 7.4
3.04 Breast cancer screening	**Effective:** Breast cancer screening rates for women within the national target groups	1999–2000: 56.4% 2004–2005: 56.2%	Lower in Major Cities and Very Remote areas Higher in Inner Regional, Outer Regional and remote areas Lowest in disadvantaged areas	Lower rates than for other Australians	Chapter 7, Table 7.1 and Figure 7.2
3.05 Childhood immunisation	**Effective:** Number of children fully immunised at 12 months and 24 months	*Aged 12–15 months* 2002: 91.7% 2007: 91.2% *Aged 24–27 months* 2002: 89.4% 2007: 92.5%	Small variation between states and territories	Lower coverage for those aged 12–15 months	Chapter 4, Table 4.19
3.06 Influenza vaccination	**Effective:** Percentage of adults 65 years and over who received an influenza vaccination for the previous winter	2002: 77.0% 2006: 77.5%	Higher for females	Rates higher than for other Australians	Chapter 4, p154

(continued)

Table 9.7 (continued): Health system performance indicators: comparisons

Indicator	Domain and description	Previous and current rates	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
3.07 Potentially preventable hospitalisations	**Effective:** Admissions to hospital that could have potentially been prevented through the provision of appropriate non-hospital health services	Per 1,000 2002: 30.5 2006: 32.0	Rates highest in Very Remote regions, falling with decreased remoteness	Rates 5 times as high as other Australians	Chapter 7, figures 7.18 and 7.19 AIHW 2007a AIHW 2007b
3.08 Survival following acute coronary heart disease	**Effective:** Deaths occurring after acute CHD events ('heart attacks')[a]	*Case fatality* 2001: 47% 2005: 40% *Survival* 2001: 53% 2005: 60%	Similar for males and females Case fatality rates increase markedly with age	Case fatality rates for Indigenous Australians are 1.8 times those of other Australians	Chapter 5, Figure 5.4 AIHW: Mathur 2002 AIHW: 2006a
3.09 Cancer survival	**Effective:** Five-year relative survival proportions for people diagnosed with cancer	*Males* 1992–1997: 54.8% 1998–2004: 58.4% *Females* 1992–1997: 60.8% 1998–2004: 64.1%	Survival declines steadily with increasing age	n.a.	Chapter 5, Table 5.1
3.10 Appropriate use of antibiotics	**Appropriate:** Number of prescriptions for oral antibiotics ordered by GPs for the treatment of upper respiratory tract infections (per 100 encounters)	2001–02: 33.1% 2006–07: 34.6%	n.a.	n.a.	Chapter 7, figures 7.7 and 7.8
3.11 Management of diabetes	**Appropriate:** Proportion of people with diabetes who have received an annual cycle of care within general practice	2002: 18.2	n.a.	n.a.	n.a.
3.12 Delivery by caesarean section	**Appropriate:** Caesarean sections as a proportion of all confinements by hospital status	2000: 23.1% 2005: 30.3%	Higher among older mothers Higher in private hospitals than public hospitals	Lower rates than among other mothers	Chapter 6, Table 6.1 Laws et al. 2006 Laws et al. 2007
3.13 Hysterectomy rate	**Appropriate:** Separation rates for hysterectomies	Per 1,000 females aged 15–69 years 2001–02: 4.55 2005–06: 3.74	Highest in outer regional areas and lowest in very remote regions	n.a.	Chapter 7, figures 7.27 and 7.28

(continued)

Indicator	Domain and description	Previous and current rates	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
3.14 Hospital costs	**Efficient:** Average cost per casemix-adjusted separation for public acute care hospitals	Current prices 2001–02: $3,004 2005–06: $3,698	Variation between states and territories —highest in ACT and lowest in SA (public hospitals)	n.a.	Chapter 7, Table 7.15 and Figure 7.24
3.15 Length of stay in hospital	**Efficient:** Relative stay index by medical, surgical and other DRGs	2001–02: 1.02 2005–06: 0.97	Higher for public compared with private hospitals Variation between states and territories — lowest in Vic and highest in NT	n.a.	Chapter 7, figures 7.33 and 7.34 AIHW 2007a
3.16 Waiting times in emergency departments	**Responsive:** Percentage of patients who are treated within national benchmarks for waiting in public hospital emergency departments for each triage category	Triage category 2001–02 *1* 99% *2* 76% *3* 60% *4* 59% *5* 84% 2005–06 *1* 100% *2* 77% *3* 64% *4* 65% *5* 87%	n.a.	n.a.	Chapter 7, figures 7.36, 7.37 and 7.38 AIHW 2007a
3.17 Bulk-billing for non-referred (GP) attendances	**Accessible:** Proportion of non-referred (GP) attendances that are bulk-billed (or direct billed) under the Medicare program	2002–03: 69.5% 2005–06: 75.6%	n.a.	n.a.	Chapter 7, Figure 7.3
3.18 Availability of GP services	**Accessible:** Availability of GP services on a full-time workload equivalent basis	2001–02: 16,736 2006–07: 18,091	Lower for rural and remote areas	n.a.	Chapter 7, figures 7.16 and 7.17 SCRGSP 2007
3.19 Access to elective surgery	**Accessible:** Median waiting time for access to elective surgery—from the date patients were added to the waiting list to the date they were admitted	2001–02: 27 days 2005–06: 32 days	n.a.	n.a.	Chapter 7, figures 7.30, 7.31 and 7.32
3.20 Electronic prescribing and clinical data in general practice	**Safe:** Percentage of general practices in the Practice Incentives Program who transfer clinical data electronically or use electronic prescribing software	*e-prescribing* 2003: 90.5% 2006: 94.4%, *electronic data transfer* 2003: 89.7% 2006: 93.1%	n.a.	n.a.	Chapter 7, figures 7.13 and 7.14

(continued)

Table 9.7 (continued): Health system performance indicators: comparisons

Indicator	Domain and description	Previous and current rates	Population variations	Indigenous comparison	Chapter, table or figure in *Australia's health 2008* or other sources
3.21 Adverse events treated in hospitals	**Safe:** Proportion of hospital separations where an adverse event treated and/or occurred	2001–02: 4.1% 2005–06: 4.8%	n.a.	n.a.	Chapter 7, Figure 7.29 and Table 7.16 AIHW 2007a
3.22 Enhanced primary care services	**Continuous:** Percentage of GPs using enhanced primary care items	2002–03: 41% 2006–07: 90%	Differences between states and territories — highest in NSW and Vic and lowest in NT and ACT	n.a.	Chapter 7, figures 7.9 and 7.10
3.23 Health assessments by GPs	**Continuous:** Percentage of eligible older people who have received an enhanced primary care annual voluntary health assessment	Eligible non-Indigenous population 2001–02: 16% 2005–06: 21% Eligible Indigenous population 2001–02: 5% 2005–06: 7%	Large variation between states and territories	Rates one-third those of other Australians	Chapter 7, Figure 7.11 SCRGSP 2007
3.24 Accreditation in general practice	**Capable:** Number of general practices accredited against the Royal Australian College of General Practitioners Standards for General Practices	2003: 77.7% 2005–06: 80%	n.a.	n.a.	Chapter 7, Figure 7.15
3.25 Health workforce Part 1	**Sustainable:** Graduates in pharmacy, medicine and nursing as a percentage of the total pharmacy, medical and nursing workforce	*Pharmacy* 1999: 4.4% *Medicine* 1999: 2.5% 2005: 2.4% *Nursing* 2000: 2.5% 2005: 3.0%	n.a.	n.a.	Chapter 8, Figure 8.14
3.25 Health workforce Part 2	**Sustainable:** Proportion of employed nurses, pharmacists, medical specialists and primary care practitioners aged 55 years and over (%)	*Pharmacy* 1999: 31.0% *Medical specialists* 1999: 31.2% 2005: 31.7% *Primary care practitioners* 1999: 25.1% 2005: 28.6% *Nursing* 2000: 10.0% 2005: 19.1%	n.a.	n.a.	Chapter 8, Figure 8.15

(a) The method for age-standardising case-fatality rates for heart attacks has changed since the NHPC (2004) report. The 2001 rate presented here has been recalculated using the new method.

Current and previous rates

The 25 indicators of health system performance provide a mixed picture, depicting a health system that has improved over recent years against some measures, but for which there are indications of stable or declining performance in many areas. Overall, eight of the indicators showed a favourable trend, whereas the trends for the indicator related to the health workforce aged over 55 years and access to elective surgery were unfavourable. Indicators showing improved performance were in the domains of effectiveness, accessibility, continuity and safety. However, data for most indicators in Tier 3 did not provide a clear picture of either improving or declining performance.

Effectiveness

A favourable trend was recorded for three of the nine indicators of effectiveness and for the remaining six there was no trend.

The proportion of teenage smokers aged 16–17 years who personally purchased their most recent cigarette shows a favourable decline over the long term and decreased from 48% to 29% between 1999 and 2005. Survival following a heart attack also shows a favourable long-term trend, reflected in the increase from 70% to 74% between 2001 and 2005. This increase is reflected by the fall in death rates for coronary heart disease and the fall in the incidence of heart attack described in Tier 1. Cancer survival rates were the third indicator of effectiveness to show a favourable trend, in contrast to the incidence rates for cancer described in Tier 1, which had increased unfavourably. There has been no long-term trend in the proportion of children fully immunised at 12 and 24 months, although these rates remain high, currently 91.2% and 92.5% respectively. Screening rates for cervical and breast cancer also showed no trend.

Other indicators of effectiveness showing no long-term trend in their levels include potentially preventable hospitalisations, unsafe sharing of needles, cervical screening, breast cancer screening and influenza vaccination.

Appropriateness

For two of the four measures of appropriateness (caesarean section and hysterectomy rates) the NHPC provided no indication as to whether rates should be higher or lower than that measured for its report. Thus it is not possible to comment on whether the increases noted in the level of these indicators since the previous measurement are unfavourable or not. No new data are available about the management of diabetes, and the level for the measure of appropriate use of antibiotics remained stable.

Efficiency

For the two efficiency indicators, results are mixed. The index for the length of stay in hospital was favourably lower in 2005–06 than in 2001–02. The cost per casemix-adjusted separation was $3,698 in 2005–06 compared with $3,004 in 2001–02 (current prices), suggesting an unfavourable change. However, these costs are not comparable because there is no agreed inflation adjustment factor for them. Applying the standard adjustment for public hospital expenditure, there would be a 6.3% increase in 2005–06 compared with 2001–02.

Responsiveness

Waiting times in emergency departments indicated that responsiveness to the requirements of patients presenting to emergency departments was stable. All patients requiring resuscitation (triage category 1) were seen immediately in 2005–06.

Accessibility

One of three measures of accessibility of medical services (bulk-billing for non-referred (GP) services under the Medicare program) indicated a favourable change in the level of the indicator. There was no trend able to be determined in the availability of GP services.

The median waiting time for elective surgery showed an unfavourable trend, increasing from 27 days in 2001–02 to 32 days in 2005–06.

Safety

Of the two indicators reflecting patient safety, only one shows a favourable change in the indicator level. The use of electronic prescribing in general practice shows a favourable trend, and from 2003 to 2006 increased from 90.5 to 94.4%. Comment cannot be made on the favourable or unfavourable nature of changes in the second indicator of patient safety, the proportion of hospital separations where an adverse event occurred or was treated. Fluctuations in the number of adverse events may reflect fluctuations in detecting and reporting them rather than actual changes in the number occurring.

Continuity

Both measures of continuity within the health-care system relate to enhanced primary care in the GP setting and show a favourable trend. The proportion of GPs using enhanced primary care MBS items rose from 41% to 90% between 2002–03 and 2006–07. The proportion of older people who had received an enhanced primary care annual voluntary health assessment rose between 2001–02 and 2005–06.

Capability

Capability is represented by one indicator, the level of accreditation in general practice. There is currently no trend for this indicator, but the percentage of accredited GP practices is high at 80%.

Sustainability

The sustainability of the health-care system is represented by two indicators, the number of new health graduates as a proportion of the total workforce and the proportion of the workforce aged 55 years and over. Viewed together these give an indication of whether the rates of entry of new graduates into the professions are adequate to replace those retiring. The level of indicator 3.25 part 2—health workforce over the age of 55—exhibits an unfavourable long-term trend, consistent with the change between 1999 and 2005. The proportion of graduates of medicine, nursing and pharmacy courses as a percentage of the total workforce shows no trend. This may indicate that the replacement rates are insufficient to keep up with attrition from retirement, and is probably reflected in the shortage of nurses in Australia. A decline in overall workforce numbers may also have some impact on other indicators within this tier, such as access to elective surgery.

Population variations

Population variation for Tier 3 indicators can be seen across states and territories, remoteness classifications, socioeconomic status, age, sex and the public and private hospital systems. Indicators that varied by state include hospital costs, length of stay in hospital, delivery by caesarean section, childhood immunisation rates and the use of enhanced primary care services.

Screening rates for breast and cervical cancer are lowest in females living in disadvantaged areas.

Cervical screening rates decreased with remoteness, but breast cancer screening was lowest in Major Cities and Very Remote areas and greater in Inner Regional, Outer Regional and Remote areas. Availability of GP services is also lower in rural areas. Potentially preventable hospitalisation rates were highest in Very Remote regions and fell with decreasing remoteness. Females in Outer Regional areas have the highest rates of hysterectomy, whereas those in Remote regions have the lowest rates.

Rates of delivery by caesarean section and length of stay vary between public and private hospitals, with caesarean rates higher in the private hospital sector and longer stays occurring in public hospitals.

Indigenous comparison

Information on Tier 3 indicators for Indigenous Australians and other populations was available only for a small number of indicators, some of those in the effectiveness group and one each for the continuity and appropriateness dimensions.

For indicators of effectiveness, Indigenous populations had lower rates of breast cancer screening and vaccine coverage at 1 year of age and higher rates of death following acute coronary heart disease. This was reflected in the higher death rates from cardiovascular disease in the Indigenous population described in Tier 1. Indigenous Australians are more than 5 times as likely as other Australians to have a hospitalisation that was potentially preventable through the provision of effective non-hospital health services.

Indigenous comparison data are available for one indicator of continuity in Tier 3 and this shows that the rate of enhanced primary care annual voluntary health assessments by GPs for eligible Indigenous peoples is one-third that of other Australians.

Indicators of appropriateness show Indigenous females are less likely to have a caesarean section than non-Indigenous females.

9.3 Conclusion

The overview that emerges shows that health status is steady or improving and few of its indicators show unfavourable trends. Mortality especially is reducing and the levels of certain illnesses and diseases have reduced. Determinants of health show a more mixed picture with smoking-related indicators having improved levels, but rates of overweight and obesity increasing.

Some of the improvement may have been driven by the preventive and treatment activities of the health system, but health improvements are due to the combined impact of many different influences in society, and it is not possible to estimate the contribution of the health system alone.

Australian levels of health compare favourably with those of other OECD countries in the majority of indicators for which OECD comparisons are available; however, improvements in rankings could be an aim in certain areas, particularly for the incidence of cancer and for the rates of obesity and overweight, which are significant determinants for many chronic diseases.

The indicators also show that there are still significant health inequalities in Australia. These are most clearly seen in the indicator results for Indigenous Australians in all three tiers. This is despite the considerable uncertainty around the data for Aboriginal and Torres Strait Islander persons, mostly because of under-identification of Indigenous people in a number of data sets.

Inequalities between high and low socioeconomic groups and urban and rural populations can also be seen across all tiers. This probably reflects the impact that the broader determinants of health have on health outcomes.

Finally, despite the evidence of generally improving health, the picture is much less clear in relation to the 25 indicators in Tier 3 that aim at capturing the health system's performance. The question remains whether this is a fair reflection of Australia's health system or just a result of the short period used here to analyse trends and also of the nature, number and scope of the indicators used. The NHPC set was chosen to be manageable in size and comprehensive in scope, but this is a difficult combination to achieve.

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