

# Tiers and dimensions of the Rural Health Information Framework

Each of the tiers ('Health status', 'Determinants of health' and 'Health system performance') in the Rural Health Information Framework consists of a number of dimensions that allow for further structured understanding of the framework.

The following review of the framework under each tier and overview of the indicators is organised such that:

- the dimension is defined as in the National Health Performance Framework;
- the range of desirable information is outlined and a rationale is given for the choices;
- options and data limitations or issues are briefly discussed;
- indicators against which it is currently possible to report are listed (detailed documentation for each indicator is provided from page 63); and
- if the development of an indicator has not been possible because of conceptual or data problems, details are included from page 163.

For all indicators, it is desirable to report for the entire population, the Indigenous population and also the non-Indigenous population in each area. Consideration of Indigenous health is important because the health of Indigenous people can be worse than for other Australians and because summary measures of the health of people living in rural, and especially remote areas, can be strongly influenced by the health of Indigenous people. Without structured analysis, it is not possible to determine whether poor health outcomes in rural and remote areas are associated with remoteness or with Indigenous health issues (or indeed both).

Reporting for the Indigenous population can frequently be difficult or impossible because of problems with the accuracy of identification of Indigenous people in data collections. The problems can be associated with the information not being required at the time of collection, not provided, provided inaccurately or it can be associated with the change over time of the likelihood of identifying as an Indigenous person.

Reporting for non-Indigenous populations can be affected by the same sort of issues that affect reporting for Indigenous people, but to a lesser extent. In reporting for non-Indigenous populations it is desirable to also describe Indigenous health issues (either at a regional or national level). In some situations inaccurate inferences about regional Indigenous health might be made on the basis of presented data for non-Indigenous and the total population. These should be anticipated and addressed in the text wherever possible.

The geographic classification used in this report is the ASGC Remoteness Structure, recently developed by ABS and GISCA. However, any geographic classification could be used (including DoHA categoric ARIA and RRMA).

Indicators described in this framework are frequently suites of indicators. Where similar data is to be analysed and presented in a similar way (e.g. indicator 1.1.1, The prevalence of chronic diseases), there has been an attempt to avoid duplication and present these summary measures as a group under the heading of a single indicator.

It is desirable to keep indicators as simple as possible; however, it is clear that simple indicators run the risk of providing a distorted view of reality. For example, simply

describing how death rates change across geography, without also describing the effect of Indigenous health or that of migration of the aged, can give a very different impression of the pattern of regional death rates. Further, analysing across geography adds another level of complexity to the presentation of health statistics. Consequently indicators may require presentation across time, geography, by gender, Indigenous status and age, making presentation complex. Wherever possible, presentation should attempt to summarise the main issues and trends for complex issues.

In the documentation for each indicator, contact details have been provided for people who have provided input to this framework and who could provide further advice for updating or otherwise modifying indicators.

In using the framework, users are encouraged to seek feedback from experts in the field to test their findings, particularly in the light of the data constraints and gaps discussed in the last chapter.

## ***Health status (Tier 1)***

The four dimensions of this tier are:

- 1.1 Health conditions
- 1.2 Human function
- 1.3 Life expectancy and wellbeing
- 1.4 Deaths

### **1.1 Health conditions**

*The health conditions dimension provides information on the prevalence of disease, injury or other health-related states. Information on the prevalence, incidence and burden of disease and injury provides a baseline to evaluate trends in the population's health. The ultimate effectiveness of health programs and strategies can be indicated from this baseline data, although there may be social and/or economic circumstances that influence health conditions. A decline in the prevalence or severity of a disease or injury is an important goal of a well performing health system.*

*Possible indicators for this dimension may include prevalence, incidence or burden of disease such as:*

- *trends in the prevalence/incidence of health conditions within the National Health Priority Areas such as diabetes, cardiovascular disease, cancer, mental health including depression, injury and asthma; and*
- *morbidity attributable to licit and illicit drugs.*

Source: *National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- chronic diseases;
- injury;
- mental health;
- oral health;
- communicable diseases; and
- birth outcomes.

#### **Chronic diseases**

Chronic diseases are those that are ongoing or recur over a period of time. These include diseases such as cardiovascular diseases (e.g. coronary heart disease and stroke), cancers, diabetes, renal disease and respiratory diseases (e.g. chronic obstructive pulmonary disease (COPD), emphysema and asthma). As a group, these diseases are responsible for a large proportion of deaths. For these diseases generally, there is a need to be able to report on:

- the prevalence of disease in the community (i.e. the number of people who have these diseases);
- the incidence of illness events (e.g. coronary, stroke, or asthma attack) due to these diseases; and
- the rate of death due to these diseases.

Of these three (prevalence, incidence and death), data for death is most reliable and can serve as an indicator for the others.

Prevalence can be inferred through the National Health Survey but information is self-reported and there is little data collected from remote areas.

Incidence of heart attack could be estimated by admissions to hospital for this cause (however, the assumption has to be made that chances of admission are equal in each area; it is unclear whether this is the case). Admissions for asthma can be influenced by the local setting (e.g. precautionary admission in more remote hospitals), and so may not be a good indicator. Admission for conditions such as dialysis or renal transplant may be influenced by geographic location and cultural setting and so may not prove to be a good indicator of renal disease across geography.

**Suggested indicator:**

**1.1.1: *The prevalence of chronic diseases*** – from the ABS National Health Survey, the prevalence of a range of conditions including diseases of the circulatory system, cancers, respiratory disease, diabetes and renal disease. See page 63.

**Injury**

Injury and death due to injury appear to be more common in non-metropolitan areas, as a result of occupational injury, motor vehicle accidents, suicide, interpersonal injury and environmental hazards (e.g. dog bite). So as to better understand the burden of injury across geographic zones, there is a need to report on:

- a measure of the burden of non-fatal injury, which varies from minor to serious and from temporary to permanent; and
- the rate of death due to the major injury causes of death, such as motor vehicle accidents, suicide, occupational injury and interpersonal violence.

Describing occupational injury is difficult because of lack of accurate identification about occupation both in census and mortality data. Another option is to use data on occupational injuries and diseases contained in the National Workers' Compensation Statistics database compiled by the National Occupational Health and Safety Commission (NOHSC) from information supplied by Commonwealth, State and Territory workers' compensation authorities. These agencies processed workers' compensation claims received from insurance companies, self-insurers and some government departments. Although the National data set can be used to report rates in each of the States, it is not currently possible to report at a finer geographic level.

Use of National Hospital Morbidity data may be misleading in describing differentials between areas because of the greater probability of precautionary admission in regional and remote area hospitals.

**Suggested indicator:**

**1.1.2: *Prevalence of injuries*** – from the ABS National Health Survey, the prevalence of injuries. See page 65.

## Mental health

More than one million Australians suffer from a mental disorder at any one time, with half of these affected long-term (AIHW 1999). Major disorders include affective disorders (mainly depression), substance use disorders and anxiety disorders. So as to understand the burden of poor mental health across geographic areas, there is a need to report on:

- prevalence of affective disorders (including depression), anxiety and substance use disorders; and
- rates of suicide and attempted suicide (reported in part under indicator 1.4.5).

### Suggested indicator:

**1.1.3: Prevalence of depressive, anxiety and substance abuse disorders** – percentage of males and females aged 18 years and over by area, who report depressive, anxiety and substance abuse disorders. See page 66.

## Oral health

Oral health affects diet and the ability to eat, personal appearance and self-esteem, social inclusion and the need for assistance. This indicator aims to determine whether the oral health of people who live in rural and remote areas is similar to that of people who live in metropolitan areas by answering the following questions:

- Are people just as likely to have the same number of decayed, missing or filled teeth in metropolitan and non-metropolitan areas?
- Are non-metropolitan people just as likely to be edentulous, or have restorative dentistry or dentures as people from metropolitan areas?
- Can people afford to go to the dentist for a check-up and preventive work to the same extent in all geographic zones?
- Are waiting times for dental appointments of similar length in metropolitan and non-metropolitan areas?

The first and second issues are described by indicator 1.1.4 below. The last two issues relate to access: one is essentially an interplay between income and expenditure (described later under the 'Socioeconomic factors' dimension), the other relates to the 'Appropriate' dimension and cannot yet be reported against.

### Suggested indicator:

**1.1.4: Oral health** – the mean number of decayed, missing and filled teeth in 6 year olds, 12 year olds and 35–44 year olds, and the percentage of those older than 65 years who are edentulous in each area. See page 67.

## Communicable diseases

As a result of the introduction of immunisation, antibiotics and improved sanitation last century, the incidence of communicable disease has declined. However, a number of significant communicable diseases continue to contribute a substantial burden, particularly for some communities. In addition, prevention strategies rely on continuous surveillance and intervention. This range of diseases includes childhood infectious diseases such as measles and pertussis, influenza, food poisoning, vector-borne and arboviral diseases such as Ross River virus and Murray Valley encephalitis, sexually transmitted infections (STIs, e.g. chlamydia and syphilis) and those also transmitted through needle sharing (including HIV, and hepatitis B and C).

### Suggested indicator:

**1.1.5: Incidence of communicable diseases** – rate of disease notifications for all arboviral disease, pertussis, food-borne disease and selected STIs. See page 69.

## Birth outcomes

The health of children at birth influences their immediate survival and future health prospects. An understanding of variation in birth weight and/or gestation across geographic zones would be useful in assessing the extent of poorer health amongst newborn babies from non-metropolitan areas. Because of the suspected links between the health of babies and children with health at later life stages, understanding of birth outcomes may also indicate the potential for future health.

Issues of potential interest include:

- birth weight of newborn babies; and
- gestational period of newborn babies.

Both of these can be reported, but birth weight has been selected as it is likely to be a more useful measure, and the two are correlated.

### Suggested indicator:

**1.1.6: Birth outcomes** – mean and percentage of birth weights in each of a number of ranges (<1500, 1500–2499g, 2500–2199g, 4200+g) by Indigenous status of mother. See page 70.

## 1.2 Human function

*The human function dimension captures information on the level of disability and impaired function in the population. It includes information on the prevalence of impaired functioning, activity limitations and restrictions in participation. It is one of the goals of the health system to maintain optimal function of people and limit impairment or disability related to injury, disease or other disorders.*

*Possible indicators for this dimension may include:*

- *years lived with disability (YLD); and*
- *impairment ratings and levels of independence/dependence.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- severity of disability (profound, severe, moderate, mild);
- type of disability (psychiatric, intellectual, sensory and physical); and
- days off work or away from usual activity as a result of illness.

In addition it would be useful to know the extent to which any difference in the prevalence of disability across geographic zones is due to the possible migration of disabled people to less remote centres so as to access services. Currently, this information is not available.

### Prevalence of disability

Both the severity and type of disability are important.

#### **Suggested indicator:**

**1.2.1: Prevalence of disability** – the age-standardised prevalence rate in the population younger than 65 years with any disability and the age-standardised percentage of the same population with a profound/severe activity limitation. The indicator also presents the estimated number of people with disabilities in these two groups. See page 71.

### Days away from usual activity as a result of illness

One possible measure of the burden of illness is a count of days off work as a result of illness. However, in areas where there is less work or higher levels of unemployment, this measure may substantially underestimate the day-to-day burden of illness. A better measure may be the number of days away from usual activity as a result of illness, as people who are not in the workforce are also counted; however, if activity is usually impaired by long-term illness, this measure may slightly understate the burden.

#### **Suggested indicator:**

**1.2.2: Days away from usual activity as a result of illness** – the age-standardised mean of the number of days away from usual activity as a result of illness (using the ABS National Health Survey). Again, there may be some difficulty in reporting for the remote areas due to restricted sampling in those areas. See page 73.

### 1.3 Life expectancy and wellbeing

*The life expectancy and wellbeing dimension includes broad measures of physical, mental and social wellbeing of individuals and other derived indicators. It is one of the goals of the health system to assist people to live a potentially achievable life span with minimal disability or disease.*

*Indicators that may give an impression of performance of the health system in achieving these goals are:*

- *Disability-adjusted life expectancy (DALE);*
- *Disability-adjusted life years (DALY); and*
- *self-assessed health.*

Source: *National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- disability-adjusted life expectancy (DALE);
- disability-adjusted life years (DALY);
- self-assessed health; and
- self-assessed happiness.

#### **Disability-adjusted life expectancy (DALE)**

A measure of life expectancy indicates how long people can expect to live, but, it does not take into consideration poor health and disability people may experience (for example) in the last few years of their life (i.e. the quality of life in all years is not taken into consideration). Disability-adjusted life years represent the average equivalent years of good health that a person can expect to live from birth. Differences in healthy life expectancy (DALEs) across geographic zones may prompt public health action. Calculation of DALEs, like DALYs, requires an understanding of the prevalence of disability in the area as a result of a range of conditions; such data is available nationally, but not for each area, consequently these summary statistics cannot be calculated by area. Local data is possibly available for Victoria, although the restricted range of remoteness categories in Victoria may reduce the usefulness of extrapolating to the rest of Australia.

Instead, life expectancy, unadjusted for disability, could be used to describe differences in life expectancy across geography.

#### **Suggested indicator:**

**1.3.1: Life expectancy**— life expectancy at birth for males and females within each area, as well as the probability of living to age 55 and to age 65 years. See page 75.

While life expectancy can be calculated for each area, possible migration of sicker older people to less remote areas would be likely to bias life expectancy figures. A measure of the probability of reaching 55 years and 65 years of age would provide a hedge against this sort of bias.

#### **Disability-adjusted life years (DALY)**

Disability-adjusted life years (DALYs) are a composite measure of the number of years of life cut short by death plus the number of years lived with disability (weighted for severity). DALYs attempt to aggregate the burden imposed by death and the burden imposed by disability into a single measure. As such they are a good summary measure of the burden of

ill health. It is not currently possible to calculate DALYs for each area for the same reasons as for DALEs.

A proxy measure is the calculation of years of life lost (unadjusted for disability) or its converse, premature mortality. This statistic is reported in the 'Deaths' dimension of this tier.

**Suggested indicator:**

**1.4.4: 0–65 years mortality and premature mortality** – as described on page 16.

**Self-assessed health status**

How healthy do people feel? Self-assessed health status from the ABS National Health Survey is a valuable measure of general health status as perceived by the individual.

**Suggested indicator:**

**1.3.2: Self-assessed health status** – percentage of respondent's health status assessed as 'excellent, very good, good, fair, poor' in each area. See page 76.

**Self-assessed happiness**

What is health without happiness? A measure of happiness or how people feel about their life as a whole, is included because of happiness's intrinsic value as a common human goal and as it links comfortably with mental health.

**Suggested indicator:**

**1.3.3: Happiness or 'how people feel about their lives as a whole'** – from the ABS National Health Survey, how people in each area feel about their lives. See page 77.

## 1.4 Deaths

*The deaths dimension includes age and/or condition-specific mortality rates. Information on rates and causes of death by age, sex and population group will provide valuable information on the causes and conditions that lead to premature death and identify groups at risk. A reduction in premature deaths would indicate effective interventions across the health system.*

*Possible indicators may include:*

- *perinatal and infant mortality;*
- *years of life lost (YLL) for certain health conditions; and*
- *leading causes of death.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- death rates;
- perinatal mortality;
- age-specific mortality;
- a measure of the burden of premature mortality; and
- a measure of the relative and absolute contribution to overall mortality and premature mortality of the leading causes of death.

### Death rates

Overall measures of mortality (e.g. age-standardised death rates) summarise mortality for various population groups (e.g. Indigenous, non-Indigenous people, males and females). While DALYs and DALEs under the dimension 'life expectancy and wellbeing' describe the burden of ill health and mortality in a single measure, death rates are a useful measure of mortality alone. Comparison of 'all cause' death rates for a number of population groups adds to the understanding of mortality across geographic areas. Allowances should be made for anomalies in age-specific death rates (especially in the older age groups).

A single measure of death rate (or indeed any other variable) may suggest a level of uniformity within an area. So, in addition, a measure of the heterogeneity of overall death rates within broad rural, regional and remote areas may also be useful.

#### **Suggested indicator:**

**1.4.1: Overall mortality**—indirectly age-standardised 'all cause' death rate, by sex in each area. Rates to be presented also as a trend over time. As a measure of the heterogeneity of death rates within broad geographic areas, death rates calculated for each SLA could also be presented for each broad geographic area. See page 78.

### Perinatal mortality

High rates of stillbirth and the death of infants soon after birth are largely preventable. Perinatal mortality and the general health of the community are frequently related. Perinatal mortality is well suited to modification through public health action/primary health care; identification of differential rates of perinatal mortality may suggest targeted action.

#### **Suggested indicator:**

**1.4.2: Perinatal mortality**—perinatal mortality per 1,000 births. Foetal, neonatal and overall perinatal death rate to be reported. See page 80.

### **Age-specific mortality**

While the bulk of deaths occurs in older age groups, high mortality of the young in some areas can substantially contribute to differences in statistics such as years of life lost (YLL). Identification of areas where mortality in some age groups is particularly high may suggest strategies to reduce rates.

#### **Suggested indicator:**

**1.4.3: Age-specific mortality** – age-specific death rates for males and females from each area. See page 81.

### **Premature mortality**

Summary death rates (e.g. age-standardised rates) are heavily influenced by the mortality of older people in the community. Deaths of younger people are frequently preventable. A measure of the number of years of life lost as a result of premature mortality (both in an absolute and relative sense) would provide an awareness of the burden of mortality for younger people (i.e. those younger than 65 years) in the community.

#### **Suggested indicator:**

**1.4.4: 0–65 years mortality and premature mortality** – indirectly age-standardised ‘all cause’ death rate for those younger than 65 years in each area. The total number of years of life lost (YLL) in each area for those who are younger than 70 years of age at death. The use of the two different ages is explained on page 82.

### **Leading causes of death and excess deaths**

As a means of providing a sense of perspective, a measure of the contribution to overall and premature mortality of the leading causes of death has value. In addition, such a measure would indicate those conditions or injuries that are responsible for the excess<sup>1</sup> deaths (and also excess premature deaths). This indicator would also describe the number of excess deaths for major population groups within each geographic area and identify the causes that contribute most.

#### **Suggested indicator:**

**1.4.5: Leading causes of death and excess deaths** – the number of deaths due to each major cause and the number of deaths in excess of that expected if Major City rates applied in each area. Specific causes of death to be described include cardiovascular diseases, cancer, respiratory diseases, diabetes, renal disease and injury (as well as a number of more specific causes under each of these). See page 84.

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<sup>1</sup> Excess deaths are defined here as the number of deaths in excess of what would be expected if Major City age-specific death rates applied in each area.

## **Determinants of health (Tier 2)**

The five dimensions of this tier are:

- 2.1 Environmental factors
- 2.2 Socioeconomic factors
- 2.3 Community capacity
- 2.4 Health behaviours
- 2.5 Person-related factors

### **2.1 Environmental factors**

*Environmental factors such as air, water, food and soil quality and access to clean water and fresh fruit and vegetables directly influence the health of Australians. Longer-term environmental impacts include the depletion of the ozone layer, increases in UV levels and increased salinity of our water systems.*

*Possible measures to monitor environmental factors include:*

- *air quality—levels of pollution, dust and pollen counts, Legionella reports;*
- *stratospheric ozone levels;*
- *smoke—free homes and workplaces;*
- *water—pollutants, bacterial readings, blue green algae; and*
- *food quality—salmonella reports etc.*

Source: *National Health Performance Framework Report, August 2001.*

The physical environment in which people live plays a pivotal role in population health. Adequate air, water, food and shelter are basic necessities of life. Protection from pathogens, the extremes of temperature and ultraviolet radiation are other examples of environmental factors that affect health. Ultimately issues such as soil depth and quality, climate, biodiversity and sustainable utilisation of resources such as fisheries and forests are of critical importance to rural communities now, and indeed to the health of future populations generally, and are currently under threat (McMichael 1993).

Most nationally reported or suggested indicators (e.g. stratospheric ozone, etc.) may not be appropriate rural health indicators because variation across remoteness classes does not occur or its variation is unrelated to remoteness (e.g. stratospheric ozone). Instead, environmental indicators that relate to the following factors may be more appropriate in this framework:

Access to and/or quality of:

- water;
- sewerage;
- food;
- housing;
- recreational and cultural facilities or spaces;
- the workplace; and
- the levels of pollutants.

It is currently difficult to report against many of these factors, due to limited availability of national data. Some States have data and some factors have been investigated in one-off surveys.

## **Water**

Adequate quantities of clean water are essential for the maintenance of health. The availability of biologically safe 'tap water' (or water which is otherwise the immediate source of household water), particularly regarding the degree of faecal contamination, is a basic necessity for the maintenance of health. In addition, the chemical quality of water (including the presence of salts and pollutants such as agricultural chemicals and heavy metals) may also be of relevance. Fluoridation of reticulated domestic water supplies has clear public dental health benefits.

### **Suggested indicator:**

**2.1.1: Fluoridated water**— the percentage of 'local areas' in which reticulated water supplies have a fluoride concentration within the NHMRC guidelines. See page 86.

## **Sewerage**

Decent sewage disposal is another basic requirement for health. Adequate sewage disposal is essential to prevent the spread of disease through direct human contact or through contamination of water supplies.

What constitutes effective sewage disposal may differ from place to place. Typically, it may consist of a sewerage system with primary, secondary and tertiary treatment of effluent, maintained by local government. However, it may also consist of a well maintained and sited septic system. It is likely impractical that small isolated communities or farm houses be connected to the sewer; septic systems are a reasonable alternative. However, at sites, or in communities, where the system is not well maintained, any sewerage system, but particularly a septic system, can fail and become a health hazard.

## **Food availability**

The price of food is addressed under the dimension 'Community capacity' in this tier. However, irrespective of the price of food, the availability of certain foods can be restricted in more remote areas. For example, fresh fruit and vegetables, or their variety, may simply not be available. Availability of fresh fruit and vegetables is important for the maintenance of health.

A national data source has not been identified and this indicator requires development. A possible proxy is to report the results of individual State surveys (e.g. Public Health Services 2001).

## Housing

Housing provides the most basic of the environments in which people live. Important issues include the degree of crowding (covered under the dimension 'Community capacity'), security aspects, the building's effectiveness in maintaining a comfortable internal temperature, appointment with furniture (e.g. appropriate numbers of beds), the functioning of household fixtures and appliances (does the toilet work, is there a functioning fridge, shower, kitchen sink). Additionally, is there appropriate personal space for people and a place for children to play, study or have privacy? Does the house have access to electricity and is the telephone connected?

### Suggested indicator:

**2.3.8: Overcrowding in households** – as described on page 27.

## Recreational and cultural facilities or spaces

Recreational and cultural facilities or open space provide people with the space or facilities for activity and learning that make life interesting or pleasant. Football grounds, bowling alleys, pubs, churches, libraries and museums, beaches, national parks, walking tracks, rivers and swimming pools are examples of some of these. Their importance lies in providing people with an opportunity for activity, enjoyment and learning, and as such, they also provide people with an opportunity to develop and interact with other people.

A data source has yet to be identified.

## The workplace

Farming, mining and fishing are potentially dangerous occupations. Additionally, an under-supply of work may encourage workers to accept workplace standards that are less safe. A measure of the level of safety within workplaces and/or the rate of workplace accidents would be useful in identifying areas for improvement.

An indicator is not currently possible because the National Occupational Health & Safety Commission does not collect details of geographic location (other than State). Measures of mortality or hospital morbidity may be an alternative, but there are some concerns about the accuracy and completeness of details of occupation recorded in National Mortality databases and the ABS Census.

An indicator requires development.

## Pollutants

It is likely that both the concentration of, and human exposure to, pollutants would be lower in non-urban environments. However, it is possible that exposure to small particulates may be greater in non-metropolitan areas because of the presence of dusts, smoke and pollens. Exposure to some hazardous materials may occur as a result of poorer living conditions through material or equipment no longer thought to be safe (e.g. asbestos sheeting, lead-lined equipment, etc.) and the consequence of 'making do' or of affordability.

Exposure to a number of agricultural chemicals is frequently raised as a potential health hazard, but the effects of this exposure are either so subtle or the identification of cases of ill health linked to exposure so inadequate as to make a causal link difficult to establish.

A data source has yet to be identified.

## 2.2 Socioeconomic factors

*Research has shown clear associations between socioeconomic factors such as education, employment and income and the health status of Australians. Generally, population groups with lower socioeconomic status have poorer health than those with higher socioeconomic status. Reporting the socioeconomic factors affecting health will help to inform public policy. This could encourage greater intersectoral collaboration to help address health inequalities and improve health status and health outcomes.*

*Suitable indicators may include health outcomes or health determinants broken down by:*

- *education level (primary/secondary/tertiary);*
- *employment status; and*
- *income.*

Source: *National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- education;
- employment;
- income; and
- a combined measure of these three (SEIFA).

### Education

Education provides opportunities for employment and income as well as a foundation for the development of life skills and awareness of the relationship between lifestyle, outlook on life and health outcomes. The educational background of the adult population will influence their health and that of their family, while educational opportunities for children influence their future life choices, and hence health. The lower prevalence in more remote areas of employment requiring higher education is likely to reduce the motivation of students to complete secondary or tertiary education. For those who do complete secondary education, the need to migrate to a metropolitan area so as to complete tertiary studies will act to maintain the lower average educational level of non-metropolitan communities, unless they return after completion. Additionally, reduced higher level employment opportunities in non-metropolitan areas for the general adult population (as for school leavers), can only help to maintain the lower average level of educational attainment within rural/remote communities.

There are two substantial aspects of this issue which need to be considered:

- the educational level of the rural and remote population compared to the metropolitan population; and
- the educational opportunities for children and young people living in rural and remote areas.

Educational level of the population relates to the population's socioeconomic status and hence predisposition to disease (e.g. through personal risk factors), as well as people's ability to take advantage of available services. An understanding of educational level may also be important in relation to targeting health information and in explaining disparities in health status and health service utilisation.

Educational opportunity for children and young people relates to future educational level, life opportunities, health status and health service utilisation. As such, it is important to be aware of educational opportunities and barriers for young people from rural areas; understanding these may assist in addressing future potential inequity.

#### **Suggested indicators:**

**2.2.1: Educational status of the adult population** – as expressed by the proportion of people aged 20–39, 40–59 and 60+ who have completed primary school, Year 10, Year 12 and some tertiary qualification. Data pertaining to the level at which schooling was finished is unlikely to be possible; the proposed proxy is the age by which school was left (*viz.* before 12, 17 and 19 years). This provides a measure of educational status of the adult population. See page 87.

**2.2.2: High school retention rates** – as expressed by the ratio of 17 year olds who are currently enrolled in secondary education to the average number of children aged 10–14, four years previously. This provides a measure of the educational opportunity for young people.

Actual high school completion rates would be preferable to current enrolments, but this information is not available by geographic location. Enrolments are known and so the closest proxy is to calculate an enrolment rate for 17 years olds. See page 88.

**2.2.3: Progression from school to university** – as expressed by the percentage of 17–20 year olds commencing the first year of tertiary study for the first time.

Commencements were chosen rather than completions because a geographic identifier is not included in the data set describing completion of university study (*i.e.* it is not possible to describe the rate of completion of university studies by students from rural and remote areas). Additionally, at the end of their studies, home address is more likely to be the location where students are studying or are working, rather than where they are 'from'. See page 89.

#### **Employment**

Employment gives people a sense of function, of integration with the community, and of self-worth as well as the financial resources to provide for necessities. Information about those participating in the labour force and those employed (including those engaged in community development employment programs) is relevant. Employment opportunities and types of job are typically more restricted in non metropolitan areas, limiting the opportunities for people to find employment in rural communities and consequently forcing them to move to less remote centres or accept less favourable employment options.

Information about the both the quantity and type of employment would be useful, particularly:

- the proportion of the population who want to be employed (and the proportion who actually are and are not); and
- the type of work available or performed (type of industry, part time/full time).

Desirable measures of employment include:

- the percentage of the adult population who want to be employed;
- the percentage of these who are not employed;
- the percentage (relative to both dot points above) who are employed under Community Development Employment Programs (CDEP); and
- the percentage of the adult population who are employed.

Desirable measures of the type of employment include:

- the type of industry in which people are engaged (farming, other business, public sector, and so on). This information is dealt with by indicator 2.2.7 ('Sources of income');
- whether work is full time, part time, or seasonal (not currently possible); and
- whether people are self-employed or employees (not currently possible).

Employment (or unemployment) rates and type of work can be estimated from the ABS Census, once every five years. Although this allows quite some time between reporting periods, it does allow comparison of rates between regions (which are unlikely to change rapidly without a radical change in the rural/remote economy relative to that of the metropolitan economy).

While it is currently possible to identify people who are registered with CDEP, it is not possible to describe the number who are working.

**Suggested indicator:**

**2.2.4: Workforce and employment** – proportions of Indigenous and non-Indigenous people aged 15–64 or 15–54 years, by sex:

- a) in the labour force (participation rate);
- b) unemployed as a proportion of the labour force (unemployment rate);
- c) employed as a proportion of the population (employment/population ratio).

See page 90.

## **Income**

Income from employment (or other personal income such as investments or superannuation) or via social security provides for necessities such as food, clothing, shelter, security, education, transport, and health care. It also provides people with choice and power (self-determination) within their own lives. The 'less skilled' nature of work opportunities in more remote settings and the higher level of competition for jobs, as well as lower prevalence of employment, act to keep income at lower levels. Higher levels of fertility and larger families, along with greater prevalence of Indigenous people, who tend to have larger households, may require income to be assessed more cautiously than measures based merely on average 'household income'.

Income is relative; relative to the income of others and relative to the cost of goods and services. Indicators of income need to be interpreted in the light of information about the costs of goods and services across geographic areas.

There are several aspects of income that are important:

- the relative size of family incomes adjusted for family size (i.e. are the incomes of similar sized families the same in metropolitan and rural Australia?);
- a measure of the gap between the rich and poor (as there is some evidence that health relates to this gap as well as to absolute levels of poverty);
- the percentage of each region's income derived from each type of industry (farming, other business, public sector, social security, etc.). This measure allows an understanding of the weaknesses and strengths in the economy of each area, an important determinant of the opportunity for employment and to earn income; and

- the percentage of each region's income derived from the source of that income, i.e. from wage and salary, business income (sole proprietor, partnership), investments and government benefits). These measures give an insight into the income self-reliance and earning capacity of regions (an issue expanded further on page 29).

These details of income can be derived from ABS Census data and the ABS Survey of Income and Housing Costs (SHIC). More recently, estimates derived by the ABS from the Australian Taxation Office (ATO) Individual Income Tax Return Database have become available, but while these describe income in discrete areas, they cannot yet describe income for broad geographic areas (e.g. ABS Remoteness).

The Rural and Regional Statistics National Centre (RRSNC) within the ABS has produced estimates of the number of wage and salary earners and their average wage and salary income at regional levels from 1995-96 onwards using ATO Individual Income Return data. Data is available by age, sex and occupation. The intent is to provide this data annually thus providing an inter-censal measure of income and occupation at regional levels. While wage and salary data is currently available, estimates of all sources of income and average disposable income are yet to be produced. Full details will be available in the ABS Rural and Regional Statistics National Centre Information Development Plan when released in mid 2003.

Measures of total income less tax paid also provide information on average individual disposable income. The combination of wage and salary income measures, with occupation information in particular, provides a very good measure of regional labour market activity where employment measures may not be available or meaningful.

#### **Suggested indicators:**

**2.2.5: *Adjusted after-tax household income*** – average equivalised 'after-tax' household income, adjusted for household structure. See page 91.

**2.2.6: *Gap between rich and poor*** – the ratio of the income earned by the affluent to the income earned by the poor. See page 93.

**2.2.7: *Sources of income*** – the percentage of people reliant on each industry sector for their main income and the sources of personal income in each region. See page 95.

Measures of the number of people reliant on social security and the total dollar amounts paid in each area, while not currently available, are currently being developed by ABS RRSNC.

#### **A combined measure of education, income and employment**

SEIFA (Socioeconomic Index for Areas) provides a summary measure of the socioeconomic conditions in an area.

#### **Suggested indicator:**

**2.2.8: *SEIFA*** – the indexes of disadvantage, economic resources and of education and occupation. The proportion of the population in each area who live in census collectors district areas in each SEIFA quartile. See page 97.

## 2.3 Community capacity

*Community capacity incorporates information on characteristics of communities that can influence health, such as health literacy, quality housing, community support services, transport, community safety and social support. It also includes measures of local health services. Concepts and measures of community capacity are currently the focus of considerable research and development. Appropriate national performance indicators that relate health to community capacity will be developed.*

*Indicators could include:*

- *health services in the locality;*
- *trust in health professionals;*
- *health literacy; and*
- *community support services.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- demographic characteristics;
- social issues and social capital;
- services (including recreational and cultural activities/venues);
- health literacy;
- individuals perception of risk;
- housing;
- transport;
- cost of living; and
- health of the business/commercial sector.

### Demographic characteristics

The age and sex of the population as well as the proportion who are Indigenous are important issues, both in their own right and also for the interpretation of many of the other indicators.

#### **Suggested indicator:**

**2.3.1: Demography** – demographic characteristics of the population, including population size, growth rate, age and sex structure, and proportion of Indigenous persons. See page 98.

It is possible that mobility (i.e. migration to another area) masks important health differentials. The opportunity for, and pressure to, change residence so as to access education, a job or health services will see people move between areas. Mobility of the population between areas may affect the interpretation of other indicators. For example, migration of older people in poorer health to less remote areas, leaving those who are in good health to continue residing in remote areas, may hide poor health outcomes in remote areas and overstate them in other areas.

**Suggested indicators:**

**2.3.2: *Dependency ratio*** – the ratio of people aged 0–14 and 65+ to those between 15 and 64 years (working age). See page 100.

**2.3.3: *Internal migration*** – of the number who were present in each area in the year prior to the Census, the proportion remaining, and the proportion who moved to each other area (disaggregated by age group). See page 101.

Teenage pregnancy and larger numbers of children per family increase personal risk and financial stress, and reduce educational and employment opportunities for women and their families.

**Suggested indicator:**

**2.3.4: *Fertility*** – birth rates for females for each age group and all ages in each area. See page 103.

### **Social issues and social capital**

‘Social capital’ refers to the institutions, relationships, and norms that shape the quality and quantity of a society’s social interactions. Increasing evidence shows that social cohesion is important for societies to prosper economically and for development to be sustainable (World Bank 2002). Measuring social capital is difficult; however, a range of proxies such as measures of trust in government, voting trends, memberships in civic organisations, and hours spent volunteering has been used previously (World Bank 2002).

Social issues that would appear to be important indicators of the health of rural and remote populations include hours spent volunteering or engaged in community projects, levels of violence in the community and within the family, rates of property crime, membership of clubs, some measure of community empowerment, sole parenting, truancy rates, and so on.

Community and family harmony provide a safe and nurturing environment in which people can enjoy living. Community violence and child abuse or neglect can turn an otherwise healthy community environment into one where fear and aggression reduce the opportunities for health, education and mental wellbeing.

**Suggested indicator:**

**2.3.5: *Community safety*** – mortality of all people generally and of children under 5 years due to interpersonal violence. Reporting to attempt to differentiate between violence in the community and at home. See page 104.

### **Services**

Services such as post offices, banks, health services, community services (e.g. police, social workers, and so on), telephones, mobile phone coverage, Internet and emergency support services are important basic services for which there may be inequities in access across the spectrum of remote to metropolitan Australia.

These services are important for a number of reasons, either so as to provide health services, infrastructure to contribute to a safe and convenient environment, a means of enhancing communication and access to information, and emergency services in times of crisis.

During periods of crisis, people (frequently women and their children, but including homeless men of all ages and families in difficult circumstances) require emergency assistance. Assistance can be provided through a number of channels including friends, family, government agencies and non-government organisations.

In addition, recreational and cultural activities/venues are important on the basis of the beneficial effect they can have on people's life style. Apart from their impact on mental outlook and physical activity, these factors are likely to play an important part in the retention of health professionals. Activities/venues can be facilities (e.g. football fields, parks, libraries), natural features (e.g. accessible beaches and rivers) or groups of people (e.g. choral groups, churches, football clubs). There is some overlap here with social capital and also with the environmental dimension.

An indicator has not yet been developed.

### **Health literacy**

Health literacy is the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions (US Health Department 2002).

Health literacy means more than being able to read pamphlets and successfully make appointments. It represents the cognitive and social skills that determine the motivation and ability of individuals to gain access to, understand and use information in ways that promote and maintain good health. By improving people's access to health information and their capacity to use it effectively, health literacy is critical to empowerment.

As such, knowledge and understanding of health issues, services and opportunities provide people with greater power to influence their own level of health. For example, knowledge about the effects of tobacco smoking, excessive alcohol consumption, nutritional intake, cervical screening and so on are important so that individuals can make informed choices about healthy lifestyles. Additionally, people's knowledge, understanding and attitude about accessing services, about programs aimed at improving access to services and about their rights generally are likely to have an impact on people's use of services.

Indicators could assess issues such as ability to speak and read English (correlated to ability to access services and level of education), women's health screening issues (e.g. ever had a mammogram or Pap test), understanding of health risk factors (e.g. that smoking, excessive alcohol consumption, illicit drugs, lack of exercise, poor diet, etc., is bad for you), and level of private health insurance.

A suitable indicator requires further development and an appropriate data source has not yet been identified.

### **Individuals' perception of risk**

Are individuals' perceptions of risk to their own personal health or safety different in rural areas to those in metropolitan areas? The perception of risk relates to a range of practices and behaviours, from speeding, drink driving, smoking, sexual practices and seeking medical advice, to income and perhaps, to some extent, a measure of stoicism. Understanding whether perceptions of risk differ with geography could be an important element in altering the prevalence of risky behaviour in particular areas.

An appropriate indicator has yet to be developed; however, a possible proxy is suggested below.

**Suggested indicator:**

**2.3.6: *Individuals' perception of risk*** – the percentage of the population who report engaging in risky behaviour (e.g. driven, worked, swum, verbally or physically abused someone, etc.) while intoxicated with alcohol or an illicit drug. See page 106.

**Housing**

Housing provides people with personal security and protection against the elements. Its quality relates directly or indirectly to health through the effects of crowding and state of repair on education, personal hygiene, stress, depression, injury, and so on. Valuable comparisons would include:

- the quality of housing (including state of repair and function);
- levels of home ownership as opposed to tenancy;
- levels of crowding; and
- how well the housing suits the lifestyle of households.

Of these, the second and third issues can be described. Although some information is available for the other two, the data sources do not provide national coverage.

**Suggested indicators:**

**2.3.7: *Housing tenure*** – the proportion of households that are renting, purchasing or own their dwellings. See page 107.

**2.3.8: *Crowding in households*** – the proportion of dwellings that are considered crowded. See page 108.

## Transport

Information about transport should consider both access to local goods and services as well as access (when required) to health-related goods and services available only in metropolitan areas. Public transport is limited or is not available in rural and especially remote areas, so access to a car is important for accessing goods and services (including health services, education and work). Measures such as rates of car ownership are obvious, but other important issues include:

- whether a bus or train service operates locally and to major centres (including metropolitan centres);
- how frequently services run;
- the financial costs of using these services; and
- whether some form of government financial assistance for transport may be required to access health services, etc.

This level of information is not available nationally.

### **Suggested indicator:**

**2.3.9: *Transport*** – the average number of registered motor vehicles garaged per household per adult. See page 109.

## Cost of living

The capacity to be able to live a healthy life not only depends on income, but also on the cost of living. Clearly, if food is more expensive, there is less to spend on access to health services (and other goods and services directly and indirectly linked with health outcomes).

There is no available overall measure of cost of living in rural and remote areas (consumer price index (CPI) is calculated only on the basis of costs in metropolitan areas). Reporting the cost of food, petrol and housing prices (weekly expenditure of mortgage or rent) is currently possible.

### **Suggested indicator:**

**2.3.10: *Cost of living*** – in lieu of an overall cost of living statistic, prices of three fundamental groups of commodities (food, housing and petrol) can be compared across areas.

Cost of housing as expressed by the weekly cost of rents and mortgages recorded at each Census can be used to describe the cost of housing to residents in each geographic area. The cost of petrol is collected regularly by Informed Sources P/L for the Australian Competition and Consumer Commission (ACCC), but the cost of food is currently collected only by 'one-off' State surveys. See page 110.

## Health of businesses

The opportunity for deriving a livelihood through paid employment, with its inherent health benefits, depends on the health of the business sector and opportunities for employment in the public sector. This presupposes a buoyant regional economy. Contraction of the economy is likely to restrict employment opportunities and engender despondency; a healthy or expanding economy is likely to create job opportunities, attendant optimism and better health outcomes. Access to employment and goods and services is important for the maintenance of health and also assists in the retention of a health workforce in regional areas. Potentially valuable information could include the number or rate of business closure and openings, the types of businesses opening and closing, and the relative contribution of these to local employment (number of people employed) and income (dollars earned by people locally).

Under the New Tax System (TNTS) incorporating the introduction of the GST, the ABS is working in collaboration with the Australian Taxation Office to produce business activity statistics using the number of Australian Business Number (ABN) allocations, the number of businesses registered for GST and information provided in the Business Activity Statements. Regional statistics can be derived only from some, but not all, of these administrative processes. However, estimates have been produced on small business activity in regional Australia. Data for the number of businesses, total expenditure, total income and profit as well as the averages for expenditure, income and profit per Statistical Division have been estimated retrospectively from 1995-96 to 1999-00.

Other work has been done using the ATO Australian Business Register (see ABS 2001a). Data deal with the number of businesses registering for GST and whether these are employing, non-employing, single State or multi-State businesses. Industry breakdowns are also given. Limited regional data are available by postcode or groups of postcodes.

The ABS Rural and Regional Statistics National Centre can currently report counts of ABNs (i.e. businesses) and can report counts of regional small businesses, operating income, operating expenses, profit and the percentage change for these variables from year to year. Unfortunately, while it is possible to report these statistics for States or even for Statistical Divisions, it is not currently possible to report these (ABS 2002, ABS 2001a, ABS 2001b) for broad geographic areas such as ASGC remoteness, ARIA or RRMA.

### **Suggested indicator:**

**2.3.11: *Business activity*** – the economic health of a region measured by business growth or decline. See page 112. This indicator cannot currently be reported by ABS Remoteness structure (or similar geographic classification).

## 2.4 Health behaviours

*Poor health is strongly associated with, or caused by, certain health behaviours. Poor diet, insufficient physical activity, excess alcohol consumption and smoking are common risk factors for many diseases and conditions including cancers, diabetes, heart disease and stroke.*

*Possible indicators to monitor may include:*

- *tobacco use;*
- *excessive consumption of alcohol;*
- *illicit drug use;*
- *levels of physical activity; and*
- *nutritional intake.*

Source: *National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- smoking;
- hazardous and harmful alcohol consumption;
- illicit drug use;
- physical activity/inactivity;
- nutrition;
- sexual practices; and
- driving practices.

### Smoking

Smoking is the personal risk factor associated with the greatest burden of disease. It would be desirable to compare smoking rates in each area and for Indigenous and non-Indigenous people (including an assessment of the prevalence of children smoking). Comparison of individual and community attitudes to smoking as well as availability of cigarettes to young people would be more appropriately covered under the 'Community capacity' dimension.

#### **Suggested indicator:**

**2.4.1: Tobacco use** – the percentages of persons aged 14+ within each area who are regular smokers, occasional smokers, ex-smokers and those who have never smoked. See page 113.

### Hazardous and harmful alcohol consumption

Moderate alcohol consumption appears likely to provide some health benefits; however, consumption of larger amounts can have substantial harmful health and social effects. Useful information would include comparisons across areas of both rates and patterns of hazardous and harmful alcohol consumption.

#### **Suggested indicator:**

**2.4.2: Hazardous and harmful alcohol consumption** – the prevalence of hazardous and harmful alcohol consumption. See page 115.

### **Illicit drug use**

Illicit drug use can constitute a significant health risk and can feed property and personal crime rates (reducing opportunities for others). The rate of illicit drug use (including cannabis, injecting drugs, non-prescription use of prescribed drugs, petrol, and so on) may vary with remoteness. Relatively small sample sizes of the relevant data sources may restrict the opportunities for reporting in the more remote areas.

#### **Suggested indicator:**

**2.4.3: *Illicit drug use*** – the proportion of people who had recently used an illicit drug (all illicit drugs, cannabis and all illicit drugs other than cannabis). See page 117.

### **Physical activity/inactivity**

A certain level of physical activity is required to reduce the risk of cardiovascular diseases, the leading cause of death. Comparison of rates of physical inactivity across areas, with consideration given to the contribution of physical activity sustained both at work and during leisure time.

#### **Suggested indicator:**

**2.4.4: *Levels of physical activity*** – the percentage of persons aged 18+ years doing some physical activity and the percentage doing no physical activity; the percentage engaging in sufficient levels of exercise and the percentage doing insufficient levels of exercise. Additionally, from the National Health Survey, the percentage engaging in physical activity for leisure. See page 118.

### **Nutrition**

Food availability and price have been considered in the 'Environmental' and 'Community capacity' dimensions. Good nutrition with sufficient quantities of fruit and vegetables, appropriate quantities of dairy products and meat and lower quantities of fat, salt and refined sugars reduces the risk of a range of serious diseases and conditions. It would be useful to be able to report against all of these. From available data sources it is difficult to distinguish refined from unrefined sugars, and so sugars will not be reported.

#### **Suggested indicator:**

**2.4.5: *Nutritional intake*** – estimated mean and median intake of fat, energy and fibre, and a measure of intake of fruit and vegetables. See page 120.

### **Sexual practices**

The prevalence of sexually transmitted infections (STIs) in some communities in rural and remote communities is high. The effect on individuals, their sexual partners and their children is substantial from both a health and also a social perspective. An understanding of sexual practices, particularly the prevalence of unprotected sexual intercourse outside of a monogamous relationship, may assist in enhancing efforts to protect individuals from STIs in these areas.

#### **Suggested indicator:**

**2.4.6: *Sexual practices*** – the age-standardised percentage of males and females who self-report non-safe sexual practices in each area. See page 122.

### **Driving practices**

Motor vehicle accidents contribute substantially to the excess mortality in non-metropolitan areas. Comparison of driving practices such as speeding, drink driving and seat belt use across geographical areas may assist in targeting public health action.

A data source for this indicator has not been identified.

## 2.5 Person-related factors

*Person-related factors include age, genetic and biomedical characteristics. These are factors outside those normally influenced by individual behaviours or by the environment. Genetic factors determine predisposition to certain conditions.*

*Possible indicators for this dimension could include:*

- *rates of specific genetically determined diseases, e.g. Downs syndrome, muscular dystrophy, cystic fibrosis and haemophilia; and*
- *rates of specific birth defects, e.g. congenital anomalies of the heart.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- genetically determined diseases;
- specific birth defects caused by environmental factors;
- blood pressure;
- cholesterol; and
- overweight and obesity.

### Genetically determined diseases

Particular anomalies at birth sometimes occur as a result of genetic inheritance from parents (e.g. Down syndrome, cystic fibrosis). The prevalence of these conditions can be reduced by a number of strategies. Higher prevalence for population groups in particular geographic zones may initiate greater efforts to further reduce the future prevalence or to assist in the care of those already affected.

#### **Suggested indicator:**

**2.5.1: Genetically determined diseases**— report both the number and rate of births with genetically determined diseases, including:

- Inherited Genetic Disease (cystic fibrosis, muscular dystrophy) caused by abnormal genes and inherited generation to generation;
- Somatic Genetic Disease (cancer) caused by sudden appearance of a defective gene in a part of the body. Disposition to cancer is inherited through abnormal genes.
- Chromosomal Aberrations (Down syndrome) due to deviations in chromosomal structures or numbers. They are either inherited or perhaps associated with mother's age at conception. See page 123.

### **Specific birth defects caused by environmental factors**

Anomalies at birth (e.g. neural tube defect, including spina bifida) are influenced by environmental factors, and are not a result of genetic inheritance from parents. The prevalence of some of these conditions can be reduced (e.g. folic acid supplementation for pregnant women in order to reduce prevalence of spina bifida). Understanding of geographic variation for these conditions may help targeting of public health programs to reduce their prevalence.

#### **Suggested indicator:**

**2.5.2: *Specific birth defects*** – report both the number and rate of births with specific birth defects caused by environmental factors (e.g. pollution, radiation, drugs, sickness during pregnancy). See page 124.

### **Blood pressure**

High blood pressure is a major risk factor for coronary heart disease, stroke, peripheral vascular disease and renal failure. The likelihood of high blood pressure can be lowered by reducing excess body weight, exercising, and limiting alcohol and salt intake, while existing high blood pressure can be lowered through the use of medication. Information about variation in the prevalence of high blood pressure across geographic zones could be of use in either targeting public health action to reduce prevalence or in encouraging the greater use of medication.

Results of blood pressure measurements are not available nationally by geographic area. The AUSDIAB study measured (among other things) blood pressure from a national perspective, but the data are not capable of being used to describe blood pressure at a finer level.

Self-reported data from the National Health Survey may be of some use, but this self-reported data suffers because people who have not been tested are (de facto) not aware that they may have blood pressure outside the normal range. The subsequent statistic can reflect either the prevalence of high (or low) blood pressure, or the likelihood of being tested.

Hypertension is described using National Health Survey data under indicator 1.1.1 (The prevalence of chronic diseases).

#### **Suggested indicator:**

**1.1.1: *The prevalence of chronic diseases*** – hypertension as described on page 8.

### **Cholesterol**

High blood cholesterol is a major risk factor for coronary heart disease and peripheral vascular disease. Lifestyle changes that prevent or reduce high blood cholesterol include a diet low in saturated fat, physical exercise and losing weight. Identification of greater prevalence of high blood cholesterol levels in some geographic zones may suggest public health action.

Results of biochemistry tests are not available nationally by geographic area. The AUSDIAB study measured (among other things) cholesterol levels from a national perspective, but the data are not capable of being used to describe cholesterol levels at a finer level. Self-reported data (e.g. from the National Health Survey) underestimates prevalence because people who have not been tested are (de facto) unaware that they may have elevated cholesterol levels.

### **Overweight and obesity**

People who are overweight or obese have a higher risk of ill health including coronary heart disease, stroke, congestive heart failure and Type 2 diabetes. Lifestyle changes at the population level can reduce the prevalence of people who are overweight and consequently there is value in attempting to identify geographic zones with higher prevalence of overweight for intervention.

#### **Suggested indicator:**

**2.5.3: *Overweight and obesity***— proportion of persons aged 18 years and over with a body mass index (BMI) in the overweight and obese ranges. See page 125.

## **Health system performance (Tier 3)**

The nine dimensions of this tier are:

- 3.1 Effective (intervention achieves desired outcome)
- 3.2 Appropriate (care is relevant to the client's needs and based on established standards)
- 3.3 Efficient (desired results achieved cost effectively)
- 3.4 Responsive (service has respect for people and is client orientated)
- 3.5 Accessible (ability of people to obtain health care at the right place and right time irrespective of income, cultural background or physical location)
- 3.6 Safe (avoidance or reduction of harm associated with health care management)
- 3.7 Continuous (service can provide uninterrupted, coordinated care)
- 3.8 Capable (skilled and knowledgeable workforce)
- 3.9 Sustainable (capacity to provide ongoing workforce, and other infrastructure, engage in research and monitoring)

### **3.1 Effective**

*The definition proposed for effective in the framework is 'care/intervention/action achieves the desired result in an appropriate timeframe'. In framing a question related to effectiveness, it could be:*

- *Is the care/intervention/action achieving the desired outcome?*

*In the Fourth Report on Health Sector Performance Indicators, the term effectiveness includes the concepts of quality, appropriateness, accessibility and equity. In the new framework, the term effective will be used to evaluate whether health interventions are primarily achieving the desired results in the timeframe expected, for example, if radiotherapy is effective in reducing the size of tumours or immunisation reduces the prevalence of the disease in the community.*

*Indicators for effective could be drawn from:*

- *immunisation rates and prevalence of disease;*
- *HIV education and the practice of safe sex;*
- *SIDS education and the prevalence of sudden death in infants; and*
- *breast screening and detection of small size cancers.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the effectiveness of each of the following was considered:

- the ambulance service in getting people with coronary and injury trauma to care where they can be stabilised in an appropriate time period;
- STI education in promoting the practice of safe sex;
- immunisation in reducing the incidence of childhood infectious diseases;
- breast cancer screening and cervical screening in reducing mortality due to breast and cervical cancer; and
- medical and surgical treatment in producing good health outcomes (or conversely rate of medical and surgical misadventure).

### **Retrieval for victims of trauma**

Large travel distances in rural and remote areas can increase the time between the onset of trauma (heart attack, motor vehicle accident, overdose etc.) and arrival at an intensive care unit. It is important for victims of trauma to arrive at a suitable intensive care unit within an hour of the trauma occurring. Delays can occur because time is required:

- to locate the patient (i.e. time from onset of trauma to alerting and informing the retrieval team);
- for the retrieval team to travel to the location, collect the patient and then transport them to the closest medical facility; and
- to transfer the patient to an optimal care facility for that form of trauma.

It is important to know whether victims of trauma in more remote areas have to wait longer periods before they can access appropriate medical care, and whether this makes any difference to mortality for those people. It is also important to assess the contribution of each of the listed points above to the total time taken.

Development of appropriate indicators requires identification of a source of data for the following:

- time taken by the retrieval team to arrive following the event;
- retrieval and delivery times to initial hospital for trauma cases. Ambulance Service data (if available);
- the time taken to transfer the patient from the initial hospital to the most appropriate hospital;
- the status of the patient on arrival and discharge; and
- what emergency skills (e.g. craniotomy, intubation) exist at the local level in rural and remote areas.

Analysis would assess the relationship between the initial severity of trauma, the time taken to get to appropriate care and the outcome for the patient, in each geographic zone.

Currently, it is unclear whether such information is available. This important indicator requires investigation and development.

### **STI education in promoting the practice of safe sex**

The incidence of sexually transmitted infections (STIs) is particularly high in some rural and remote populations. As such, and as a marker for the opportunity for the spread of HIV, there is value in evaluating the effectiveness of STI education on the prevalence of safe sex practices.

Important considerations are:

- for those who have received STI education in each geographic area, whether and how their understanding and sexual practice has changed;
- the incidence of STIs in each geographic zone (see indicator 1.1.5);
- the prevalence of safe as opposed to unsafe sex in each geographic zone (see indicator 2.4.6); and
- the proportion of the population that has received STI education in each geographic zone.

A suitable indicator may either:

- compare the 'efficiency', or impact, of STI education on the sexual practices of individuals who have been surveyed; or
- compare the proportion of the population who have received STI education, the prevalence of safe and unsafe sex, and the incidence of STIs across geographic areas.

A data source has not been identified and a suitable indicator requires investigation and development.

### **Immunisation in reducing the incidence of childhood infectious diseases**

The value of immunisation lies in preventing communicable diseases such as measles and pertussis, by providing individual children with immunity and by providing those who are not immune with a measure of protection through herd immunity (the protective effect whereby immunised children prevent the spread of the disease to un-immunised children). As a result of vaccination, potentially fatal or debilitating childhood infectious diseases are now much less common than they previously were. Because of the current rarity of cases, the potential impact of these diseases can frequently be trivialised by some parents who may then leave their children unvaccinated.

Important issues are:

- immunisation rates (e.g. for pertussis); and
- the incidence of infectious diseases (e.g. for pertussis)

A suitable indicator may compare immunisation rates (or estimated numbers of un-immunised children) with rates (or numbers of cases) of notified disease across geographical areas.

Immunisation data from the ACIR provides an essentially complete picture of childhood immunisation.

#### **Suggested indicator:**

**3.1.1: *Immunisation*** – proportion of children who are fully immunised against vaccine-preventable diseases according to NHMRC recommendations at the ages of 12–15 months and 24–27 months as recorded in the Australian Childhood Immunisation Register (ACIR). See page 126.

This statistic can be compared against the incidence of pertussis in each area, reported as indicator 1.1.5 under the 'Health conditions' dimension.

### **Breast cancer and cervical screening in reducing mortality due to cancer**

Breast cancer and cervical screening provide women with an opportunity to reduce, or (in the case of cervical screening) greatly reduce, the risk from breast and cervical cancer.

Use of the change in cancer mortality rates over time to assess the effectiveness of screening programs suffers from two difficulties. The first is that changes in mortality over time may reflect other factors in addition to screening. The second is that changes in the mortality rates may not be apparent for a number of years following the commencement of a screening program. Accordingly, mortality needs to be viewed over the long-term and interpreted with caution. An alternative indicator to the mortality rate is the participation rate.

Data sources include Breast Screen Australia and the National Health Survey.

#### **Suggested indicator:**

**3.1.2: *Breast cancer and cervical screening participation rate*** – the proportions of women in the target age groups who have had mammography and Pap smear tests in each area. This indicator can be compared with estimates of breast and cervical cancer mortality (indicator 1.4.5 under the 'Deaths' dimension). See page 127.

### **Medical and surgical treatment in producing good health outcomes**

#### **Suggested indicator:**

**3.6.1: *Surgical and medical misadventure*** – as described under the 'Safe' dimension. See page 58.

### 3.2 Appropriate

*Appropriate care is considered to be 'relevant to the client's needs and based on established standards'. The questions to be asked for this dimension could be:*

- *Is the care/intervention/action provided relevant to the client's needs?*
- *Is the care/intervention/action based on established standards?*

*Appropriate care is also effective care, but the treatment is considered in relation to the patient's particular needs, requests and prognosis. Treatments for similar conditions may vary according to the patient's needs and this may take into account factors such as:*

- *allergies or adverse reactions;*
- *a person's preference for treatment at home or in a medical facility;*
- *a choice between aggressive treatment versus palliative care;*
- *elective versus emergency procedures;*
- *the stage of the disease process or severity of injury; and*
- *cultural influences and religious beliefs.*

*Appropriate care or treatment should be based on established and accepted standards, such as evidence-based clinical guidelines.*

*In evaluating how appropriate an intervention is, or how well the system is delivering appropriate care, it may be possible to evaluate treatments provided for the disease and injuries associated with the greatest burden of disease. The treatments given could be compared to recommended approaches from evidence-based guidelines or accepted clinical practice and whether the treatment chosen was most appropriate for the patient's needs.*

*Appropriate may overlap with effective but the main differentiation is that several interventions for a health condition may be effective and available, but one of the treatments may be more relevant or appropriate to the person's needs or community objectives. Furthermore, a particular intervention may be considered to be effective but inappropriate.*

*An indicator to report on appropriate care could include:*

- *proportion of hospitals and available beds that have Australian Council on Healthcare Standards (ACHS) accreditation status.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- whether women have adequate access to female GPs. This may involve the review of the numbers of male and female GPs in general practice or perhaps more appropriately, the number of hours male and female GPs work in general practice;
- whether rates of surgical procedure are similar in metropolitan and non-metropolitan areas;
- whether rates of service delivery by specialists are similar in all areas;
- whether the health system is providing the same level of care after surgical intervention (e.g. after cardiac surgery) that assists the patient towards the best recovery possible;
- whether the options for aged care are similar (i.e. does an aged person have the same degree of choice in their mode of care across geographic areas);
- whether the level of accreditation is similar for hospitals across geographic areas;

- whether people from the various areas have to wait similar lengths of time for surgery; and
- for what reasons people visit a general practitioner in each area.

### **Female GPs**

Women can frequently prefer to visit a female rather than a male GP. Lack of access to a female GP may necessitate a long trip to a location where one is available.

#### **Suggested indicator:**

**3.2.1: Female GPs** – the number of full time equivalent female GPs per 100,000 expected consultations with female patients or per 1000 standardised whole female patient equivalents, and the proportion of GPs who are female in each area. See page 128.

### **Surgical procedure**

People who live in non-metropolitan areas will frequently have to travel a substantial distance from their home for surgery. This, and physical access to specialists for consultation, may reduce the opportunity for people to undergo a surgical procedure.

Comparison of the rate of surgical procedure for people in each area provides an indication of the relative provision of service to residents of rural and remote areas. However, without reference to the rates of disease related to the procedures, it would be unclear whether higher rates of procedure reflected greater access to services or greater need for services. Reporting of procedures for coronary artery bypass graft, angioplasty, hip replacement, lens insertion, kidney transplant and for tonsillectomy, hysterectomy and myringotomy may be useful.

#### **Suggested indicator:**

**3.2.2: Hospital procedures** – rate of hospital admission for a number of key procedures: coronary artery bypass graft, angioplasty, hip replacement, lens insertion and the others (age-standardised). Reference where possible to rates of related disease is important in interpreting statistics for this indicator. See page 130.

### Specialist consultations

While Medicare and DVA data can be used to estimate the rate of specialist consultation, it fails to include hospital procedures for public patients when they are undertaken in public hospitals. A more valid comparison of specialist services across the various areas may involve the use of Medicare and DVA data to compare rates of non-hospital consultation (i.e. in private rooms) and the use of hospital morbidity data (public and private) to compare the rates of service provided by specialists in hospitals across areas (as in indicator 3.2.2).

The indicator would seek to describe the rate of consultation for residents of each area. The consultations would be those performed by doctors working in the major specialties. Minor specialities to also be included, but treated as a group (i.e. 'others').

#### Suggested indicator:

**3.2.3: *Specialist consultations*** – non-hospital consultations with specialists from each of the major specialties. See page 132.

Use of this indicator and indicator 3.2.2, especially with reference to indicators of prevalence and mortality due to chronic disease, would indicate areas for investigation or action.

### Care after surgery

Better quality of care after surgery improves outcomes for the patient.

A data source has not been identified.

### Aged care

Care and accommodation of the aged is provided in a number of ways, with the pattern of use changing with remoteness. Residential aged care services, hospitals, residential care packages and HACC programs each make their contribution to the care of the aged, with hospitals taking on a more important role in more remote areas where the provision of nursing home places is limited.

#### Suggested indicator:

**3.2.4: *Aged care*** – the number of places provided for the care and accommodation of older people through residential aged care services and hospitals, as well as packages (e.g. EACH and CACP) and HACC provided to assist continued living within the community. See page 133.

### Hospital accreditation

Accredited hospitals are likely to provide better service and outcomes.

The indicator would describe the proportion of hospitals within each area that are accredited.

#### Suggested indicator:

**3.8.1: *Hospital accreditation*** – as described on page 60.

### Waiting times for elective surgery

#### Suggested indicator:

**3.4.1: *Waiting times for elective surgery*** – as described in the 'Responsive' dimension on page 48.

### **Morbidity managed in general practice**

It is important to know why people visit the doctor, what is really wrong with them and whether this varies substantially with remoteness.

Data from the BEACH rolling survey of GP activity by itself cannot easily be used to generate rates of consultation, but it can be used to describe the most common problems managed by GPs. Rates can be estimated when combined with adjusted Medicare/DVA data.

In BEACH data, recording by the GP of the patient's expressed reason for encounter is believed to be considerably less reliable than the GP's coding of the problem managed. Further, the patient reason for encounter is often vague (such as 'need my scripts' and could be less informative regarding population morbidity patterns.

#### **Suggested indicator:**

**3.2.5: *Morbidity managed in general practice*** – the most common problems managed by GPs (e.g. depression, anxiety, mental health problems generally, immunisation, insomnia, etc.) for people who live in each area. See page 135.

### 3.3 Efficient

*The definition proposed for an efficient system is 'achieve desired results with most cost effective use of resources'. The question to be answered from this dimension could be:*

- *What outputs and outcomes can be achieved with the available resources?*

*It is important when evaluating the performance of the health system that efficiency is not considered at the expense of quality or equity. In reporting efficiency, both technical and allocative efficiency are included.*

*Technical efficiency is the degree to which the least cost combination of resource inputs occurs in production of a particular service. A more technically efficient system will provide more outputs for the same inputs. For example, efficiency gains may be achieved by the amalgamation of several sole practices into a central practice. Savings are gained through the reduction of fixed costs for each practice (inputs), without reduction in the number of treatments per service provider (outputs).*

*Allocative efficiency is the degree to which maximum benefit (or outcomes) is obtained from available resources. A system that is allocatively efficient will provide improved outcomes for the same or less cost. Achieving allocative efficiency pre-supposes that health care services are efficient in the everyday meaning of the term, i.e. that the best possible ratio of inputs to outputs have been achieved.*

*Efficiency of the health system has been traditionally measured by comparing inputs to outputs and has been defined as 'the rate of translation of inputs into outputs'. However, definitions can vary depending on the perspective taken and efficiency is a concept which can be applied in different contexts, i.e. in production, in the mix of products and in consumption.*

*In the context of this report, technical efficiency will refer to the production of an output with the least cost inputs and allocative efficiency will refer to the least cost mix of outputs that delivers a desired outcome. Cost-effectiveness of the system compares the outputs and inputs of the system to the outcomes.*

*Cost-effectiveness is measured by comparing the cost of inputs to outcomes. A more cost-effective outcome will require less resources to achieve the same result. For example, effective preventative approaches such as immunisation or the use of protective equipment are less costly than the treatment and rehabilitation costs for related injury or illness, with better outcomes for the people at risk.*

*Allocative efficiency is related to cost-effectiveness and appropriateness as it is concerned with how services are integrated and combined to deliver the most effective and appropriate care with the least cost.*

*Examples of efficiency indicators could include:*

- *cost per casemix adjusted separation in public hospitals*
- *average cost per DRG/average benefit per DRG*
- *cost per GP visit*
- *cost per woman screened for breast cancer.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- the per-capita cost of providing GP, community health and hospital services in rural and remote areas (adjusted, e.g. hospitals casemix-adjusted);
- the per-capita cost of providing the same GP, community health and hospital services to people from rural and remote areas (adjusted, e.g. hospitals casemix-adjusted);
- how the cost of screening compares across geographic areas; and
- the ratio of expenditure to positive outcomes, For example the cost per life saved in intensive care, both for rural hospital intensive care departments and for residents of rural areas. Apart from the potential ethical questions raised, an indicator of this issue would be influenced by the effectiveness of intensive care (itself influenced by the difficulties imposed by large distances and retrieval time).

No indicators for this dimension have yet been developed.

### 3.4 Responsive

*Responsiveness is the dimension that evaluates consumer and community experience and expectations of the health system. The World Health Report 2000 presents a definition of responsiveness as 'a service that provides respect for persons and is client orientated'. This definition has been adopted for the framework.*

*The questions for this dimension could be:*

- Do the clients of the service feel respected and that the service is orientated to their needs?*
- Is the health system meeting expressed needs and concerns of patients and their carers/families?*

*In considering responsiveness of the health system, the WHO report distinguishes between elements related to respect for human beings as persons, and more objective elements of how a system meets certain commonly expressed concerns of patients and their families as clients of health systems. The two categories were subdivided into seven distinct elements or aspects of responsiveness.*

*Respect for persons includes:*

- respect for the dignity of the person*
- confidentiality, or the right to determine who has access to one's personal health information*
- autonomy to participate in choices about one's health. This includes helping to choose what treatment to receive or not to receive.*

*Client orientation includes:*

- prompt attention: immediate attention in emergencies, and reasonable waiting times for non-emergencies*
- amenities of adequate quality, such as cleanliness, space and hospital food*
- access to social support networks—family and friends—for people receiving care.*
- choice of provider, or freedom to select which individual or organisation delivers one's care.*

*A measure of commitment in Australia to improving the responsiveness of the system is the participation of consumers in the planning and management of health service delivery. This process to ensure the consumer voice is reflected in decision making is incorporated in several accreditation processes, is used in national mental health reporting and is being developed within some jurisdictions. Some states, like Victoria, have mandatory establishment of consumer advisory committees to metropolitan health service boards while others have voluntary establishment of mechanisms to ensure consumer participation. A performance indicator for national reporting of this process measure could be developed.*

*Other indicators could include:*

- the degree of reporting to consumers*
- the handling of complaints from consumers*
- participation of consumers in decision making and advisory processes.*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- whether health services are culturally appropriate for Indigenous people and whether Indigenous people feel intimidated, suspicious, or otherwise reluctant to use these services;
- whether confidentiality regarding personal health information is maintained. In small communities, this may be particularly effective in developing the community's sense of trust in the service, itself an important factor affecting usage of the health service;
- how many GPs are locally available for people to choose from (choice of provider);
- how long public patients have to wait for elective surgery;
- the response time to emergencies in hospital emergency departments. How long non-emergency patients have to wait in emergency waiting rooms to seek attention;
- the proportion of GP consultations that are bulk billed and the proportion of GPs in a locality who bulk bill (as distinct from the proportion of GPs in each geographic zone who bulk bill);
- how long people have to wait for an appointment with allied health workers such as speech pathologists, podiatrists, physiotherapists, etc.;
- how long public and private patients have to wait for pathology, radiography results, etc.;
- the percentage of GPs at any locality who have closed books; and
- whether residents of each area are generally satisfied with the health service available to them. Additionally, whether patients of the health service are satisfied with the service they have encountered.

#### **Acceptance of health services by Indigenous people**

The indicator would seek to describe the degree to which Indigenous people feel welcome and happy to use mainstream health services in each area.

An appropriate data source has not been identified.

#### **Confidentiality**

Inadequate confidentiality, or perceptions of this, may force people to access health services further afield and would certainly taint their perception of and dealings with the service.

An appropriate data source has not yet been identified.

### **Waiting times by public patients for elective surgery**

Currently it is not possible to describe waiting times for public patients from each area nationally (although it is possible for patients of 7 hospitals in South Australia and about 30 hospitals in Queensland, but these are big and predominantly in the cities or major rural centres). This capacity may possibly be expanded in the future so that reporting of waiting times for public patients who live in each area can be described, if/when other States provide waiting-time data linked to morbidity data.

However, a close approximation is to describe waiting times for elective surgery for public patients accessing services in public hospitals located in each of the areas (i.e. reporting of waiting times for patients at hospitals in each area as opposed to waiting times for patients from each area).

#### **Suggested indicator:**

**3.4.1: *Waiting times for elective surgery*** – the mean, median, 25th and 75th percentiles of the number of days public patients have to wait for elective surgery in public hospitals located in each geographic area, by type of surgery. See page 139.

### **Response time in emergency departments**

The ability to report response times is currently being developed, at least for metropolitan areas and for larger rural hospitals, but data is not yet available.

A suitable indicator may describe the mean, median, 25th and 75th percentiles of the time spent waiting for treatment in emergency waiting rooms for each of a number of conditions (of varying severity).

### **Bulk billing**

Bulk billing provides all people with ready access to medical services provided by general practitioners. People who live in regional and remote areas, where choice is frequently limited (e.g. to a single doctor in the town), may find it impossible to access a bulk billing GP unless they travel a considerable distance.

A number of statistics are likely to be useful. These include the proportion of:

- GP consultations that are bulk billed in each geographic area;
- GPs in each geographic area that bulk bill;
- GP consultations that are bulk billed in each locality; and
- GPs in a locality who bulk bill.

Indicators of bulk billing in each area (i.e. first two points) would simply report the proportion of consultations that were bulk billed and the total number of consultations.

Indicators of bulk billing in each locality would attempt to describe the likelihood of bulk billing being available for a person living in a community within each broad area. A suitable indicator has not yet been developed.

#### **Suggested indicator:**

**3.4.2: *Bulk billing*** – percentage of GP consultations that are bulk billed in each area. See page 140.

### **Waiting times for allied health workers**

Low supply and uneven distribution can result in very long delays for access to services provided by allied health workers in some areas.

A suitable indicator would seek to describe the mean, median, 25th and 75th percentiles of the time from request for service to provision of service, for people from each area.

An appropriate data source has not been identified.

### **Waiting time for results of diagnostic tests**

The potential for reduced access to pathology and radiography services for people from rural and remote areas may result in delayed access to diagnostic testing and to the results of the tests.

A suitable indicator may describe the time from request for diagnostic service to provision of results.

An appropriate data source has not been identified.

### **Closed books**

Supply of GPs in rural and remote areas can be such that GPs have to refuse access for 'new' patients for 'non-urgent' service. A suitable indicator would seek to describe the proportion of GPs for whom demand is so great (in relation to the desired or acceptable workload) that they have closed their books. This indicator would provide a measure of the pressure on GPs and of insufficient numbers of GPs in these areas.

An appropriate data source has not been identified.

### **Satisfaction**

Irrespective of the absolute levels of service available to people, and of the imperfect ability to measure these, a potentially useful measure is the general level of satisfaction people have with the health service available to them.

An appropriate data source has not been identified.

### 3.5 Accessible

*Accessible health care is defined by the 'ability of people to obtain health care at the right place and right time irrespective of income, cultural background or physical location'. This dimension is related to how readily people are able to access care without barriers of distance, discrimination, affordability and restriction of service. It encompasses the objective of equity. A fair health system should provide appropriate care to people without bias.*

*The questions for this dimension could be:*

- Is appropriate health care available for all people at locations that are within reasonable travelling distance from their home?*
- Is there reasonable access to emergency health care if required?*
- Is the service available at appropriate hours and provided with sufficient frequency to meet the needs of people?*
- Is cost of travel or care a barrier for people accessing appropriate care?*
- Is care community focused and sensitive to cultural and religious customs and beliefs?*

*Distance and physical location can limit access to health services, particularly for people who live in rural and remote areas of Australia. People either travel long distances to obtain care or a service may be taken to them, for example 'fly-in, fly-out medical services'. Emergency care when needed is critical.*

*For acute services, several performance indicators used to date include:*

- emergency department waiting times to service delivery;*
- elective surgery waiting times;*
- separations per thousand target group of population; and*
- general practitioner services per thousand population living in rural, remote and metropolitan areas.*

*Indicators for equity of access could be utilisation rates by target group compared to national average, e.g. health care service use by Aboriginal and Torres Strait Islander peoples, rural populations etc.*

*Source: National Health Performance Framework Report, August 2001.*

Accessibility is defined in terms of distance, discrimination, affordability and restriction of service.

Under this dimension in the framework, the following issues were considered:

- How far is it to a primary health care provider, an emergency department, chemist, hospital or nursing home?
- How common is it that people do not access a service or are denied access because of discrimination (race, social class, ages, sex, disability)?
- How common is it that people do not access a service because they cannot afford it?
- Is there a sufficient supply of health facilities and health professionals to meet the needs of the population in the general area?
- How does the rate of service usage compare across geographic areas?
- At what times during the week is access to doctors, emergency departments, chemists, hospitals not possible?

## Distance

Distance to a service could be expressed in kilometres. Roads are of varying quality, however, and in wet weather and for some time afterwards, can be impassable. Additionally, 20 km of winding dirt road is likely to take longer to negotiate than 20 km of sealed highway. It would be preferable to use travel time and a measure of how frequently roads are impassable or difficult/dangerous to negotiate.

Information is not currently available on road conditions, travel time or the frequency and duration of periods when roads are impassable.

### Suggested indicator:

**3.5.1: Distance to medical services** – the proportion of people who are within 20, 40, 60 and 80 km by road of a GP, a GP service, hospital, AMS, and a remote area nurse. Also the proportion who are within these distances of any combination of these services. See page 141.

## Discrimination

Access to health services can be affected because of discrimination on the basis of race, social class, age, sex or disability. This is a potential issue especially for Indigenous people, for whom health status is a major issue.

A data source has not been identified and the indicator needs development.

## Financial constraints

Even though people may not be able to afford a service, they may indeed pay for it, but then be unable to afford other essential goods or services. Perhaps a reasonable measure is one comparing the out-of-pocket cost of the service (including travel and accommodation) with a measure of ability to pay (e.g. median or mean income for the geographic zone).

In addition to the out-of-pocket cost of the service itself, other very significant costs include:

- the cost of travelling to where the service can be accessed;
- the costs associated with disruption as a result of the need for family members to accompany the sick person;
- the costs associated with accommodation for the patient or accompanying family member when undergoing treatment; and
- the costs of accessing rehabilitation services after treatment.

Some schemes are available to assist with the costs of travel and accommodation of rural and remote patients. It would be useful to know something about the availability of these and their impact on covering the incurred costs.

Median or mean income for the population is one potential measure of people's ability to pay, but people who are least likely to be able to afford access would not be well represented in such a measure. An option is to use the value for income that is the 25th percentile.

Currently it is unclear where to obtain information about the additional (and frequently intangible) costs incurred by people. However, it is possible to describe income (see the 'Socioeconomic factors' dimension). If information on costs were available, a measure of the out-of-pocket cost to a person from each area accessing treatment compared to the weekly income level of the 'average' lower income earner would be possible.

The indicator has yet to be developed.

## **Health facilities and health professionals**

Access to health workers and facilities could be described via the numbers of these available or through the number of services that they perform. Both of these options are considered here.

The numbers of GPs, nurses, allied health workers and Indigenous health workers, and the numbers of hospitals (and acute hospital beds), aged care facilities (and nursing home or hostel places) and pharmacies clearly affect the opportunities for people to access services. Typically there tends to be an under-supply of facilities and professionals in rural and remote areas (although this may not always be the case). An under-supply can mean longer waiting time until a service is accessed.

As some workers are part time and facilities are of different sizes (and function), there may be some benefit in seeking to report the prevalence of health workers in terms of 'full time equivalents' and the prevalence of hospitals and nursing homes in terms of establishments with different levels of function, beds and places.

Additionally, the need for some workers (especially allied health workers) to travel so as to access patients in more remote locations can reduce the time that these workers can spend with their patients. Consequently allowance should be made for time spent travelling for any comparison of numbers of health workers to population.

In many cases, older populations will require higher levels of access. Direct comparison of numbers of workers with numbers of people in the population may be misleading. One possible way of allowing for different population age and sex structures is to predict the number of occasions of service that would be required if age-specific national rates of utilisation applied to the populations of each area. In this way, the observed number of workers could be compared to the number of services estimated to be necessary. The resultant ratio may indicate where there are more or fewer workers than required, but this statistic would make no allowance whatever for different levels of need as a result of different levels of health (it would only allow for differences in age and sex). A decision about whether there is an under- or over-supply would also have to include an assessment of the general level of health in the population (for example, whether death rates and other measures of health status, such as childhood infectious diseases, indicated a greater need for services).

Description of services performed is also frequently problematic. For those services for which there are central payment systems (e.g. Medicare, DVA and the Pharmaceutical Benefits Scheme), only a (large) proportion of services are recorded, with other services being performed outside the system or under other systems. Different patterns of service provision in non-metropolitan settings could make inter-regional comparison using only data from these systems misleading. For those services where data is available through population-based surveys, coverage is frequently poor in remote areas and precision blunted by the quality of recall. In some cases there is very little data available, or data is only available from multiple sources (i.e. has not been aggregated nationally).

Workers and facilities considered here include:

- numbers of a range of health workers;
- numbers of hospitals providing various levels of service and available beds;
- hospital use (separations);
- general practitioner consultation rates;
- dentist consultation rates;
- use of mental health services;
- rate of prescription as a proxy for access to pharmacist; and
- prevalence of disability services outlets.

Waiting times for elective surgery and waiting times in emergency departments are covered under the 'Responsive' dimension of this tier.

#### *Numbers of health workers*

Estimates of the numbers of health workers can be based on responses to AIHW's health labour force surveys and on the ABS Census. Because some workers work in several locations, some are part time and the length of the working week varies, health worker numbers may best be expressed as 'full time equivalents' as well as head counts (full time and part time workers).

A measure of the proportion of time health workers (particularly allied health workers) spend travelling between locations (which is likely to reduce the actual time spent with their patients) is currently not available from the labour force surveys.

Because the ratio of health workers to population is a crude measure (but easily visualised), an additional statistic of the predicted or expected number of services in each area (based on national age-specific rates of service provision) compared to the number of workers in each area would also be described.

#### **Suggested indicator:**

**3.5.2: *Numbers of health workers*** – the number of major groups of health workers and their full time equivalent working in each area. See page 144.

This indicator does not describe the number of communities without access to various types of health workers, nor does it describe the combination of various types of health workers (e.g. medical practitioners, nurses, allied health workers, Indigenous health workers, etc.) in localities within each geographic area. Development of an indicator that describes the 'typical' availability of each type of health worker within communities within each area would be useful. An indicator such as this is partially catered for by indicator 3.5.1 (Distance to medical services) described earlier in this dimension.

#### *Level of hospital service*

Physical closeness to a hospital can be important for a number of reasons, including access to emergency care, intensive care, rehabilitation and general care when unwell or recuperating from surgery. Hospitals are of various sizes and types and offer different ranges of services.

A potential indicator would aim to describe the proportion of the population who had a hospital nearby that provided certain levels of service, as well as the ratio of people to hospitals offering each level of service in each area. The former may be possible (with development) using GIS methodology (e.g. used and developed by GISCA). The latter may be possible, with development of an appropriate measure of level of service that could be

used to compare between areas (for example, based on DRGs and using AIHW hospital morbidity data).

While it is possible to describe the number of hospital beds in hospitals in each area, people from remote areas requiring major operations and specialist treatment have to use hospital beds in less remote and often metropolitan hospitals, while a large proportion of rural, and especially remote area, hospital beds accommodate the aged.

An indicator has yet to be developed.

#### *Hospital use*

Admission to hospital depends on demand and on hospital admission policies (and on the availability of beds). Policy and need may vary across areas, with hospitals in remote areas more likely to admit patients. Simple comparison of admissions across areas is unlikely to be entirely valid, with the need to take into consideration nursing home type patients, admissions for dialysis and chemotherapy, other non-acute admissions, and so on. Additionally, for serious conditions, patients from remote areas will frequently be admitted to a hospital in a less remote area.

#### **Suggested indicator:**

**3.5.3: *Hospital separations*** – rate of hospital separation and consumption of bed days due to acute, non-acute and all causes, for patients from each area, to hospitals in each area. See page 146.

#### *Rate of GP consultation*

The access issue is complicated by the fact that health services are provided by a range of workers and institutions. For example, primary health care is provided in some form or other by GPs, salaried medical officers working out of hospitals, and a range of staff in Aboriginal Medical Services (AMS), community health centres and clinics. There is little or no data available on AMS and community health centres and their work.

Medicare/Department of Veterans' Affairs data can be used to partially describe GP consultation. However the greater use of medical services provided from outpatients departments, use of AMS services (a proportion of which do not bill to Medicare or DVA) and lower rates of billing to Medicare/DVA in non-metropolitan areas make simple comparison difficult. Some of these issues can be taken into consideration by use of outpatients and BEACH data in addition to Medicare/DVA data. Interpretation needs to be undertaken cautiously.

#### **Suggested indicator:**

**3.5.4: *Primary care medical consultations*** – the adjusted rate of consultation of medical practitioners in general practice and in hospital outpatient department settings. See page 148.

#### *Rate of and reason for dental consultation*

Dental services are likely to be less well distributed than GP services, and for those on lower incomes living in remote areas, access may be affected by their ability to pay. It is important to know whether residents of rural and remote areas consult a dentist less frequently than people from metropolitan areas.

#### **Suggested indicator:**

**3.5.5: *Dental consultations*** – number of dental consultations per 100,000 population per year by reason for visit (pain, other problem, check-up, and so on). See page 150.

### *Access to mental health services*

Mental health services are available through a range of providers including GPs, as well as psychologists, psychiatrists and other mental health workers in both the public and private sectors. The ratio of psychologists and psychiatrists to population, in addition to a measure of the number of mental health consultations with the GPs and the number of GPs providing these mental health consultations, may provide a measure of access to services.

While it is possible to count the number of services provided by psychiatrists, it is not yet possible to describe the number (and types) of services provided by community mental health workers and psychologists in private practice. It is expected, however, that data describing community mental health occasions of service will be available in the future.

However, the number of GP mental health consultations per 100,000 population can be estimated. Use of specific Medicare item numbers for mental health consultation is apparently not yet widespread, and so it is not yet valid to use this indicator. However, using Medicare and BEACH data, it is possible to estimate the number of consultations with GPs for mental health purposes.

#### **Suggested indicator:**

**3.2.5: *Reasons for visiting a GP*** – as described under the ‘Appropriate’ dimension (see page 43).

### *Rate of prescription*

Rate of prescription through community and hospital pharmacists can be described using Pharmaceutical Benefits Scheme (PBS) data. PBS data describes details of pharmaceuticals received by concession holders and also details of certain pharmaceuticals with greater than a certain retail price. The total number of units of pharmaceuticals received by the population could be modelled from the number received by concession holders, and usage of some of the more expensive pharmaceuticals can be described directly from PBS data.

#### **Suggested indicator:**

**3.5.6: *Prescription*** – rate of prescription for all pharmaceuticals, and also for major groups of pharmaceuticals. See page 152.

## **Disability services**

Access to disability services may be poorer in more remote areas because of the relatively low population density.

From the ABS surveys of Disability, Ageing and Carers it is possible to describe the prevalence of disability, although it may be necessary to aggregate data from the two most remote categories (see page 12).

AIHW disability services data can be used to describe the number of occasions of service (and the type of service) delivered from each office and reported for each area. This service data does not strictly describe the number of services provided to residents of each area (disability service data is available for location of service, not location of client). Information on geographic location of client's residence may be included in the disability services database in the future. It would then be possible to report the ratio of services delivered to population with a disability in each area.

### **Suggested indicator:**

**3.5.7: Access to disability services** – the number of occasions of service of each major type, for residents of each area, per 1,000 population estimated to have a disability in each area. See page 154.

## **Continuity**

Although a service may be available, it may not be available all the time. Services in smaller communities may be less likely to be accessible 24 hours a day. Clearly, if facilities are not available during part of the day, people cannot access the service. For some services, this will generate inconvenience (at least); for others (e.g. emergency departments), it may be more serious.

Data describing opening hours for health services is not currently available.

### 3.6 Safe

*The definition proposed for the safe dimension is 'the avoidance or reduction to acceptable levels of actual or potential harm from health care management or the environment in which health care is delivered'. This aspect of performance relates to prevention or minimisation of causes of adverse events associated with the delivery of health actions.*

*The question for this dimension could be:*

- Are the risks associated with the delivery of health actions identified and managed?*

*In reporting under this dimension, it would be necessary to report on the spectrum of health care settings and include acute and primary care settings, as well as the community and the home. Data is available on hospital-based adverse events, but it may be difficult getting information from primary care settings and home and community-based care.*

*Comprehensive reporting on safety would need to include information on adverse events and include aspects of risk identification and risk management.*

*It may be possible to collect information on whether a health facility or provider has developed a risk management plan where risks have been identified for the action/intervention, as well as for the environment. The prevalence of adverse events relevant to the health action could then be used to assess the effectiveness of the risk management plans. It would be important for the aspects of safety and risk management to be tied to accreditation.*

*Possible performance indicators for safety could be presented in relation to the setting, e.g. acute care, primary care etc. Also it will be important to link with other safety reporting by the Australian Council for Safety and Quality in Health Care (ACSQHC).*

*The existing indicators address the identification of adverse events in the system, but they do not address how well the system deals with the management of the risk and improvement in safety. Performance indicators related to the system need to be developed and should be done in consultation with the ACSQHC. Indicators for other health settings will need to be identified and possibly developed.*

*A relevant indicator could be:*

- number of approved products withdrawn from the market or requiring a change to conditions of approval for safety-related reasons.*

*Source: National Health Performance Framework Report, August 2001.*

*Under this dimension in the framework, the following issues were considered:*

- whether the rate of medical surgical misadventure is similar in hospitals across geographic categories and similar for people from different geographic categories; and*
- whether survival rates of people admitted to intensive care are similar in hospitals from different geographic zones (adjusted for seriousness of condition).*

### **Medical/surgical misadventure**

Medical/surgical misadventure refers to complications of medical care and of surgery that result in an adverse health outcome (e.g. that can result in hospital admission or death).

Adverse events can occur because of infection, poor response to treatment, mishaps during surgery, and so on.

Because of the difficulty in differentiating between medical and surgical misadventure, misadventure will be considered as an aggregated group. With some development, it may be possible to differentiate between various types of misadventure.

#### **Suggested indicator:**

**3.6.1: *Surgical and medical misadventure*** – the rates of death and hospital admission as a result of surgical and medical misadventure, using the number of admissions requiring a procedure (as a measure of exposure to medical and surgical intervention) as the denominator. See page 155.

### **Survival rates in intensive care units**

The likelihood of surviving admission to an intensive care unit (ICU) depends on a number of factors, including the severity of the condition, the chances of getting to an ICU before death occurs, treatment before arriving at the ICU and the effectiveness of the ICU. The closest proxy that seems to be currently available is a measure of the discharge status for patients who are admitted for a procedure called 'mechanical ventilation in ICU'.

A valid and robust indicator has not yet been developed.

### 3.7 Continuous

*Continuous care is defined as the 'ability to provide uninterrupted, coordinated care/ intervention/action across programs, practitioners, organisations and levels over time'. The question for this dimension could be:*

- *Is the delivery of health care actions provided in a coordinated and continuous manner across the continuum of care?*

*The focus of this dimension is to evaluate whether there is integration of services for the individual, with the aim of improved care resulting from improved communication between individual care providers and between facilities where care may be provided. It has been identified that communication and care planning between acute care providers/facilities, primary care providers and community health workers can be improved to provide less fragmented services.*

*The Commonwealth Government recently introduced Medicare Benefit Schedule (MBS) items to address this issue. Care planning and case conference items are available for older Australians and people with chronic and complex needs with the aim of improving the coordination of care. Coordinated Care Trials are also being conducted in Australia to evaluate the effect of more coordinated approaches to dealing with patients with complex health care needs, including coordination between various parts of the health system, from primary to continuing care.*

*At a program level, performance may be evaluated using the Coordinated Care Trials as an example. At a system level, it may be possible to evaluate the use of the new MBS items for care planning and case conferencing and patient outcomes.*

*A relevant indicator could be:*

- *usage of Medicare Benefit Schedule item 720 for care planning.*

*Source: National Health Performance Framework Report, August 2001.*

In line with the National Health Performance Framework in describing the delivery of health in a coordinated and continuous manner across the continuum of care, the major thrust of an indicator for this dimension is to describe the degree of coordination of care across geographic areas.

#### **Care planning and case conferencing**

In late 1999, as part of the Enhanced Primary Care Package, the Government introduced a range of new Medicare services, including health assessments, multidisciplinary care plans and case conferences. The suggested indicator is to use the MBS item numbers for care planning and case conferencing to assess the level of coordinated care in each area.

#### **Suggested indicator:**

**3.7.1: Care planning and case conferencing** – rate of care planning and case conferencing (i.e. care of a patient coordinated between health professionals) as expressed by the ratio of Medicare claims for MBS item numbers 720–730 (care planning) and 734–779 (case conferencing) to the population in each area. See page 156.

### 3.8 Capable

*The definition proposed for capable relates to 'an individual or service's capacity to provide a health care/service/intervention based on skills and knowledge'. The questions related to this dimension could be:*

- *Do the people providing the care, service or intervention have the relevant qualifications, skills and experience?*
- *Are the facilities for the provision of care appropriate?*

*The primary focus for this dimension relates to the training of health professionals and other staff involved in the delivery of care. Standards for undergraduate and postgraduate education can be evaluated across the spectrum and may involve academic institutions, medical colleges and registration boards.*

*In regard to the capability of the facilities, this may involve the application of standards developed by organisations such as the Royal Australian College of General Practitioners, Australian Physiotherapy Association, Australian Council on Healthcare Standards and Standards Australia. Accreditation bodies have a wealth of information about the compliance with standards developed by the professions.*

*Performance measures for assessment of capability could relate to the skill, knowledge and education of health workers. This could include measures such as the total number of professionals registered to work in Australia, their level of education, postgraduate training etc. Performance measures could include the proportion of General Practitioners as those who have completed the RACGP training course and those practising who are not vocationally registered. This principle could also apply to medical specialists, allied health professionals and nurses.*

*Capability of facilities providing care could be evaluated using accreditation status through an industry recognised assessor.*

*Performance measures could include:*

- *the proportion of accredited practices/facilities for general practice, physiotherapy and hospitals.*

*Source: National Health Performance Framework Report, August 2001.*

A range of issues describing the capability of the health system has already been described under other dimensions:

- the proportion of accredited hospitals is also covered under the 'Appropriate' dimension; and
- capability is also inferred by rates of admission for surgical/medical misadventure (covered under the 'Safe' dimension).

Ultimately, the proportion of health worker diagnoses and treatments that are appropriate (as expressed by health outcomes, adjusted for seriousness of the condition and access to appropriate care) may be the best measure of the level of competence of health workers and the adequacy of infrastructure in each area, although this is likely to be difficult.

Accreditation may or may not in itself be a measure of the capacity of health workers; it may simply be a measure of the 'need' for accreditation of the health worker in each area.

Accreditation of hospitals is likely to be a reasonable measure of compliance with standards.

#### **Suggested indicator:**

**3.8.1: Hospital accreditation**— The percentage of hospitals and hospital beds that are accredited in each hospital peer group in each area. See page 157.

### 3.9 Sustainable

*A health system that is sustainable will 'provide infrastructure such as workforce, facilities and equipment, be innovative and respond to emerging needs (research, monitoring)'.*

*Questions to be asked to assess the sustainability of the health system could include:*

- Is there sufficient funding allocated to provide an appropriately trained workforce?*
- Is there sufficient funding allocated to the building and maintenance of facilities?*
- Is there sufficient funding and provision of appropriate equipment for health care?*
- Is innovation and research supported and funded adequately?*

*Source: National Health Performance Framework Report, August 2001.*

Under this dimension in the framework, the following issues were considered:

- training of the health workforce for rural areas;
- recruitment of the health workforce in rural areas; and
- retention of the health workforce in rural areas.

For many professions, there is a lack of personnel working in rural areas. This implies a need to recruit more health professionals to work in rural and remote areas and for recruited professionals to continue to work in these areas. Potential strategies have included:

- encouraging rural youth to seek a career in health in the expectation that people from rural areas are more likely to return to those areas to work;
- bonded scholarships requiring graduates to work for a (specified) period in rural areas;
- granting overseas-trained doctors the right to practise if they choose to work in rural/remote areas;
- allocating provider numbers for use in rural remote areas, requiring doctors to work in certain locations; and
- payment of grants and incentives to doctors to encourage them to move to, and work in, a rural area.

Ultimately, whether a health professional chooses to remain working in an area relies on a number of factors including remuneration, work satisfaction, professional support, opportunity for time off work, work and educational opportunities for spouse and children, recreational and cultural opportunities, and the interaction between their personal attributes and those of their community.

#### **Training of the rural health workforce**

It would be useful to describe the numbers of students from rural areas who have enrolled in or completed specific health courses.

While it is currently possible to report the numbers of students from rural areas who have commenced a health course, the number from rural areas who have completed a course is not currently available. Even if the completions data were to contain a field for geographic location of the home address, by the time students have completed a health course, it is quite possible that their home (or mailing) address would have changed to reflect where they currently live, rather than where they were from. If it were possible to link completions data to commencements data, it may be possible to report on completions and also to report on pass rates for rural versus metropolitan students.

**Suggested indicator:**

**3.9.1: *Workforce in training***— number of commencements of students enrolled in first year studies of selected health disciplines, by remoteness class, based on home address. See page 158.

**Recruitment and retention of the rural health workforce**

It would be useful to describe, for specific professions, the number required, the number working, the number who have left and arrived in the past year, and the length of time that workers remain in each area.

There are considerable difficulties in providing this issue with an indicator. Currently the best indicator of duration in rural practice is the number of general practitioners receiving rural retention payments. No data source that documents the duration at a given work location has been identified. Even for GPs, it is difficult to accurately describe commencement, duration and completion of service in rural and remote locations using Medicare data, particularly for GPs who stay only a short time in rural areas.

**Suggested indicator:**

**3.9.2: *GP recruitment and retention***— the number and percentage of general practitioners receiving rural retention payments. See page 160.

**Hours worked and age of health workers**

A potential proxy indicator likely to influence future retention is the number of hours worked and age of health workers.

If some health workers are working longer hours than others, they may also become more discontented and leave. The age of health workers may suggest future shortages.

**Suggested indicator:**

**3.9.3: *Hours worked and age of health workers***— hours worked and age of male and female health workers, including general practitioners, other primary care medical practitioners, selected specialist medical practitioners, enrolled and registered nurses, selected allied health workers, dentists and pharmacists working in each area. See page 161.

**On-call work**

Health workers, particularly GPs, in more remote locations have limited opportunities for nights and weekends off. Sharing of workload (especially out-of-hours work) is either not possible or opportunity is limited in many rural and remote locations. Constant exposure to conditions such as these may contribute to fatigue and dissatisfaction resulting in relocation to an area where the workload is more reasonable.

A source of data for an indicator describing the level of weekend and after-hours work for GPs (and other health workers) has yet to be identified. A potential indicator would preferably describe the mean and median number of weekends each year on call and the number of nights each week on call.

A potential alternative involves reporting the number of hours on call (but not working) each week as well as the number of hours worked each week. Such an alternative would provide an indication of any substantial change in workload over time and has been included in indicator 3.9.3 above.