

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 rates 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's occurrence. 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 a marker for the opportunity for reducing 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 in each geographic area who have received STI education, 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 has 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.

Inter-regional comparisons of influenza and pneumonia vaccination would also be valuable, but it is unclear where to source adequate data.

Suggested indicator:

3.1.1: Immunisation rates – 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 128.

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 BreastScreen Australia and the National Health Survey.

Suggested indicator:

3.1.2: *Breast cancer and cervical screening participation rate* – the percentage of women screened for breast cancer and by Pap smear test in the previous 2 years for the target age groups 50–69 years (breast cancer screening) and 20–69 years (Pap smear test). This indicator can be compared with estimates of breast and cervical cancer mortality (indicator 1.4.4 under the ‘Deaths’ dimension). See page 129.

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 57.

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 GP in each area.

Female GPs

Women may 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, or can require consultation with a male GP.

Suggested indicator:

3.2.1: Female GPs – the number of full-time equivalent (FTE) female GPs per 100,000 expected unreferral GP consultations with females (or per 1,000 standardised whole female patient equivalents (SWPEs), and the proportion of GPs who are female, in each area. See page 131.

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: Specialist hospital procedures – rate of hospital admission for a number of specific procedures: coronary artery bypass graft, angioplasty, hip replacement, lens insertion and the others (age-standardised). See page 133.

Specialist consultations

While Medicare and Department of Veterans' Affairs (DVA) data can be used to estimate the rate of specialist consultation, they fail 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 specialties also to 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 135.

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 in 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 137.

Public hospitals and their 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: Public hospitals – as described on pages 59, 162.

Waiting times for elective surgery

Suggested indicator:

3.4.1: Waiting times for elective surgery – as described in the 'Responsive' dimension on page 47.

Morbidity managed in general practice

It is important to know why people visit the doctor, what is actually 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 health conditions managed by GPs (e.g. depression, anxiety, mental health problems generally, immunisation, insomnia, etc.) for people who live in each area. See page 139.

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 presupposes that health care services are efficient in the everyday meaning of the term, i.e. that the best possible ratio of inputs to outputs has 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; and*
- 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; and*
- 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; and*
- 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 a field 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 is possible to some extent for patients in South Australia and for most patients in Queensland). 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 procedure. See page 143.

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 are 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 who 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: *GP bulk billing* – percentage of GP consultations that are bulk billed in each area. See page 144.

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, Aboriginal Medical Service, and a remote area nurse. Also the proportion who are within these distances of any combination of these services. See page 145.

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 with 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 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).

The description of services performed is also frequently problematic. For those services for which there are central payment systems (e.g. Medicare, Department of Veterans' Affairs (DVA) and the Pharmaceutical Benefits Scheme (PBS)), 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 are 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 are 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.

Supply 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 with the number of workers in each area would also be described.

Suggested indicator:

3.5.2: *Supply of health workers* – the number of major groups of health workers and their full-time equivalent working in each area. See page 148.

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 and bed days*—rate of hospital separation and consumption of bed days due to acute causes, non-acute causes and all causes, for patients from each area, and to hospitals in each area. See page 150.

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 (DVA) 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 with caution.

Suggested indicator:

3.5.4: *Primary care medical consultations*—the adjusted rate of consultation of medical practitioners in general practice settings and in hospital outpatient departments. See page 152.

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*—rate of, and reason for dental consultations. Reasons for visit include pain, other problem, check-up, and so on. See page 154.

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: *Morbidity managed in general practice* – as described under the ‘Appropriate’ dimension (see page 42).

Rate of prescription

Rate of prescription through community and hospital pharmacists can be partially 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.

Pharmaceuticals are also available through state health departments (e.g. through public hospitals) and from Aboriginal Medical Services (AMS); however, it is not currently possible to obtain information on the numbers of units of each pharmaceutical dispensed from these sources. It is possible that use of these outlets is greater in regional and remote areas than in Major Cities, consequently, use of PBS data alone to describe patterns of pharmaceutical use may bias inter-regional comparisons of rates of use in the population.

Inter-regional comparison of per capita usage of PBS (as opposed to per capita use of pharmaceuticals) would rely on description of rates relating to the more expensive pharmaceuticals, details of which would be recorded for concession holders and non-concession holders.

Suggested indicator:

3.5.6: *Prescription* – rate of prescription for selected groups of pharmaceuticals. See page 156.

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 the two most remote categories are not represented sufficiently to allow reporting (see page 12).

Until recently, data on the provision of service was available for location of the service, not for location of the client. However, all jurisdictions now collect service user postcode, which is then converted to ASGC Remoteness region. The most recent year for which data are now available is 2003–04.

Suggested indicator:

3.5.7: Access to disability services – the number of occasions of service of each major type, per 1,000 residents estimated to have a disability in each area. See page 158.

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

Medical/surgical misadventure

Medical/surgical misadventure refers to complications of medical care and 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 159.

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 available currently 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 Federal 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) for the population in each area. See page 160.

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 public hospitals that are accredited is also discussed under the 'Appropriate' dimension (see page 42); 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: Public hospitals – The distribution of public hospitals from each peer group, their size (in relation to number of beds) and the percentage that are accredited in each area. See page 162.

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 from each area enrolled in first-year studies of selected health disciplines. See page 163.

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 retention* – the number and percentage of general practitioners receiving rural retention payments. See page 165.

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, age and sex of 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 166.

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 worked) 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.