

Stroke Care Strategy for Victoria



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Foreword

Stroke is a debilitating condition that often results in ongoing disability or death.

In most cases, the effects of stroke are greater than just the medical condition – it is complex and challenging and has a significant impact on individuals, carers and our wider community. Victorian hospitals treat more than 14,000 people for stroke and related conditions every year. The number of people requiring stroke care will continue to grow as the population ages.

Improving health outcomes for all Victorians has been the major driving force behind the achievements of the health sector and the Victorian Government. The *Stroke care strategy for Victoria* provides a framework for how stroke services should be organised to enhance the delivery of stroke care.

The strategy outlines how we are improving the way we care for people who have had a stroke and change our approach to the management of stroke care so that the health system is more responsive to patients' needs and the needs of their carers.

The establishment and implementation of the framework now means Victorians will receive more consistent stroke care with better linkages between stroke care providers and improved access to new treatments. As well as enhanced stroke prevention strategies, a better skilled stroke care workforce and improved community support mechanisms.

The *Stroke care strategy for Victoria* is another example of the Victorian Government's excellence in healthcare programs and will result in a more streamlined and effective system for the delivery of stroke care during the next five to 10 years.



Hon Bronwyn Pike MP
Minister for Health

Acknowledgments

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Executive summary and recommendations

Stroke care is complex and challenging for both care providers and consumers. Most people who have a stroke are seen by many health professionals within and across multiple health settings and across different health sectors. Stroke represents a significant burden to patients and their families, the health system and the community.

The need for improved delivery of stroke care services and improved outcomes for patients and their carers has been identified by all stakeholders, including the government, clinicians, consumers and health services. This is driven by:

- an increasingly ageing population, leading to an increase in stroke incidence
- the increasing complexity in the diagnosis and treatment of stroke
- the increasing cost of stroke treatment
- new and better treatments resulting in improved outcomes
- the nationwide shortage of skilled medical, nursing and allied health expertise
- the impact that stroke has on individuals, their carers and families and the community.

Evidence-based clinical practice guidelines for the management of acute and sub-acute stroke exist, but stroke care varies between settings, between sectors and even between providers operating within the same health service. There is no clear guidance for Victorian health services for providing optimal stroke care.

Purpose

The Stroke Care Strategy for Victoria (the strategy) provides a framework for the delivery of public acute and sub-acute stroke services in Victoria for the next five to 10 years. The strategy aims to guide the future provision of care, both in the design of stroke care service organisation, the delivery of stroke services and the development of an appropriate workforce to support it. The strategy also aims to address long-standing and emerging issues for the delivery of stroke services.

Background

Stroke is a debilitating condition that affects people mainly aged over 45 years, and often results in ongoing disability (depending on the complexity of the event) or death. In Victoria each year, more than 14,000 people were reported to have a stroke or transient ischaemic attack (TIA). One thousand people die within one month of the stroke and one third die within 12 months. Seventy-eight per cent of all deaths from stroke occur in those aged 75 years or over.

Stroke is the third leading cause of disease burden in Victoria, and is the second largest cause of years of life lost in women (fourth for men). Deaths attributable to stroke and stroke incidence are decreasing, although the prevalence of stroke is increasing.

The Victorian Department of Human Services (department) convened the Stroke Expert Advisory Group, which had representation from key stakeholder groups, to oversee the development of this strategy. The strategy, including recommendations to enhance stroke care and a plan for implementing the recommendations, was informed by the stroke expert advisory group, *Development of a stroke care strategy for Victoria—discussion paper* (DHS 2005d) and *Stakeholder consultation report on the development of a stroke care strategy for Victoria* (PricewaterhouseCoopers 2006).

Stroke services in Victoria

In 2005-06, 173 public and private health services (67 in Melbourne and 106 in rural areas) provided acute stroke care in Victoria. Of these, 117 were public health services (28 in Melbourne and 89 in rural areas) and 56 were private health services (39 in Melbourne and 17 in rural areas).

Victorian public health services treat 12,000, or more than 80 per cent of, people presenting with acute strokes and TIAs (these are also known as mini-strokes) at Victorian hospitals every year. The scope of acute stroke care includes presentation to emergency departments (EDs) with possible admission to an inpatient ward. In Victoria, the incidence of acute stroke is forecast to grow at an annual rate of 2.7 per cent, which directly correlates with the ageing population.

Sub-acute care for stroke survivors in Victoria comprises inpatient and ambulatory care, which is provided in a hospital bed, a person's home, a hospital outpatient clinic, a community rehabilitation centre, a residential care setting or other environment. Sub-acute stroke care is increasingly being delivered in the community through centre-based or home-based services. Paediatric rehabilitation also commenced in 2005 at the Royal Children's Hospital.

In 2005-06, there were 62 public providers of sub-acute stroke care in Victoria (35 in Melbourne and 27 in rural areas). More than 70 per cent of all public sector sub-acute stroke episodes of care are referred from metropolitan services.

Providing stroke care—the continuum

Responding to stroke

Awareness of stroke symptoms

Complying with medications and managing known risk factors for stroke reduces stroke incidence and stroke-related hospital admissions, but this is poorly understood by the community and commonly poorly managed. Stroke and TIAs also increase the risk of having a new or subsequent stroke. Evidence-based clinical practice guidelines have been developed to guide clinician care in the treatment of people who have had a stroke or who have risk factors for stroke.

Prompt treatment of stroke improves outcomes, but many people in the community do not recognise stroke symptoms, which is a barrier to timely access to stroke services. Public education about stroke symptoms is crucial. The National Stroke Foundation, the national peak body for stroke in Australia, plays an important role in ensuring that the provision of stroke care in Australia is evidence-based, and that people who have a stroke, and their carers/family members, have access to appropriate information about stroke.

Recommendation 1

Health services and general practitioners should manage TIAs and secondary prevention of stroke in accordance with existing evidence-based clinical practice guidelines.

Recommendation 2

The Department of Human Services should support the National Stroke Foundation to deliver public education campaigns that increase public awareness of stroke symptoms.

Outpatient TIA/neurovascular clinics

TIA is a risk factor for stroke; it increases the risk of having a stroke by 10 per cent within two weeks and by 20 per cent at four weeks. TIA/neurovascular clinics provide the best setting for investigating people at risk of having a new or subsequent stroke without the need for hospital admission. Evidence-based clinical practice guidelines recommend that patients diagnosed with TIA, or who have had a stroke and have made a good immediate recovery, should be referred to a TIA/neurovascular clinic within 14 days for prompt assessment and investigations. Establishing outpatient TIA/neurovascular clinics at major metropolitan and regional health services should reduce stroke-related hospital presentations and admissions.

Recommendation 3

Assessment/follow-up of people at risk of having a new or subsequent stroke should be undertaken at TIA/neurovascular clinics. Unless already in place, public health services treating more than 200 acute strokes a year should establish TIA/neurovascular clinics. Access criteria, protocols and requirements to monitor and evaluate the practice and activity of TIA clinics should be developed.

Stroke is a medical emergency

Stroke should be treated as a medical emergency. New interventions, care paradigms and evidence-based clinical practice guidelines are being implemented, all of which demonstrate improved outcomes when treatment is provided in the immediate hours following a stroke. All stroke care providers should treat stroke as a medical emergency.

Ambulance retrieval

The Metropolitan Ambulance Service (MAS) and Rural Ambulance Victoria (RAV) have procedures to ensure prompt emergency care of people with stroke symptoms, and their transport to the nearest appropriate hospital as quickly as possible. This is particularly important for rural patients who may live close to hospitals that do not provide emergency stroke care or thrombolysis.

A person with stroke symptoms should be transported to the nearest health service providing the most appropriate investigations and acute stroke care. Transferring a patient back to the health service nearest their residence is strongly encouraged to ensure contact with family and friends; however, health services bear the cost of ambulance transfers, which can be substantial. Following a review of trauma outcomes in Victoria (DHS 1999a), an incentive scheme was established in Victoria to facilitate patient access to appropriate trauma care at designated trauma centres. Introducing a similar scheme could facilitate patient transfer to more appropriate health services providing emergency stroke care.

Recommendation 4

The Department of Human Services should undertake work to examine options that provide appropriate mechanisms for health services to transfer people who have a stroke to ensure they receive appropriate emergency stroke care.

Emergency management of acute stroke

Practice varies across Victoria's EDs, although evidence-based clinical practice guidelines for the emergency management of stroke exist. Some health services have developed structures and implemented relevant protocols to support emergency management of acute stroke (for example, referring patients to another hospital with appropriate clinical services, rapid brain imaging to accurately diagnose stroke type, notifying a hospital's 'stroke team'), which are particularly important for providing thrombolysis to treat acute stroke, but this is not consistent across the health system.

All public health services with the capacity and capability to provide emergency management of acute stroke should do so. At the very least, this should include rapid triage of all people presenting to EDs with stroke symptoms, brain imaging for accurate diagnosis, consideration of thrombolysis where appropriate and notifying the appropriate clinical team responsible for providing inpatient stroke care as early as possible.

Recommendation 5

Health services should treat all patients with stroke symptoms as a medical emergency and in accordance with existing evidence-based clinical practice guidelines, which includes but is not limited to:

- rapid triage of patients presenting with stroke symptoms
- rapid brain imaging of patients presenting with stroke symptoms.

Thrombolysis

Thrombolysis to treat acute ischaemic stroke has become available in recent years, with evidence it improves outcomes. Although some clinicians do not support thrombolysis for the emergency management of stroke, its use is increasing, particularly in rural areas. Victorian health services should provide thrombolysis in accordance with the minimum level of clinical services required to support its use.

Recommendation 6

Acute health services should provide thrombolysis in accordance with role delineation for acute stroke services and internationally recognised clinical criteria, with appropriate neurology support, and provide information on these patients to the international SITS (Safe Treatment of Thrombolysis in Stroke) registry.

Management of acute stroke

In Australia, the National Stroke Foundation (2003a) produced the evidence-based *National clinical guidelines for acute stroke management*. All acute stroke care providers across Victoria should provide acute stroke care based on these guidelines. In addition, all health services treating acute stroke should establish stroke teams with responsibility for providing appropriate and ongoing stroke care.

Although the incidence of paediatric stroke is small compared with adult strokes, diagnosis and treatment is usually the same as that for adult acute stroke. Despite limited evidence for treating paediatric acute stroke, clinical practice guidelines for its management were recently developed internationally, and should be considered where appropriate.

Interdisciplinary care, where team members from different disciplines collectively set goals and share resources and responsibilities, better reflects the person-centred model of care. This provides optimal stroke care, is preferred over the traditional multidisciplinary approach and should be incorporated into existing models of stroke care.

Recommendation 7

Health services should provide acute stroke care in accordance with existing evidence-based clinical practice guidelines. Care should address:

- appropriate treatment of acute stroke
- accessing specialist acute services (for example, neurosurgery, interventional neuroradiology, specialist allied health)
- interdisciplinary care
- commencement of rehabilitation within the acute setting and prior to transfer
- transition between acute and sub-acute services
- inpatient discharge planning
- liaising with community providers
- ongoing care in the community.

Management of sub-acute stroke

The National Stroke Foundation produced the evidence-based *Clinical guidelines for stroke rehabilitation and recovery* (2005a). All acute stroke care providers across Victoria should provide appropriate sub-acute stroke care in accordance with these guidelines, which are designed to assist health professionals in delivering optimal sub-acute stroke care. Of note, patients admitted for acute stroke should commence their rehabilitation within the acute setting before they are transferred to other settings.

Sub-acute stroke care should be provided as near as possible to a patient's home, whether it is through inpatient or ambulatory sub-acute care, to allow carers/family members to interact and participate in providing ongoing care.

Recommendation 8

Sub-acute stroke care should be provided in accordance with existing evidence-based clinical practice guidelines. Care should address:

- accessing specialist sub-acute services (for example, specialist medical, nursing and allied health)
- interdisciplinary care
- provision of sub-acute care across the care continuum
- transition between inpatient and ambulatory care
- discharge planning
- ongoing care in the community.

Palliative care

For some people who have a stroke, palliative care is an appropriate choice of treatment, but many providers and carers/family members are not necessarily aware of palliative care options and services available, particularly in rural areas. High quality palliative services should be available and appropriate support should be provided to less experienced providers, especially those working in isolated environments in rural areas.

Recommendation 9

Appropriate and culturally sensitive palliative care should be provided and communication with carers/family members undertaken in accordance with existing national guidelines and *Strengthening palliative care—a policy for health and community care providers 2004-09*.

Measuring performance

A defined stroke-specific minimum dataset or key performance indicators (KPIs) for providing or reporting acute or sub-acute stroke care would lead to continuous improvement and improved patient outcomes. Although several agencies have developed stroke-specific KPIs, and there are efforts to collect data, there is no agreed stroke-specific performance measurement system in Victoria or nationally.

KPIs that measure and monitor stroke-related processes of care and care outcomes in the acute and sub-acute settings should be developed and implemented by all public health services. These should:

- be based on existing and validated work
- be quantifiable
- integrate with current health service information management systems.

Recommendation 10

The Department of Human Services, in consultation with key stakeholders, should develop and implement a statewide performance monitoring system for stroke care management and patient outcomes.

Clinical support in the community following a stroke

The general practitioner (GP) has a pivotal role supporting people who have had a stroke following hospital discharge. This includes monitoring and treating known risk factors for stroke, referring patients for appropriate sub-acute services or other specialist clinical services, participating in self-management programs to better manage individual care and improve quality of life and collaborating with health services to develop and implement models of shared care around secondary prevention of stroke. GPs should be engaged in the care of stroke survivors as early as possible following diagnosis to ensure ongoing and appropriate clinical care and support.

Recommendation 11

General practitioners should be engaged in the care of stroke survivors as early as possible following diagnosis to ensure ongoing and appropriate clinical care and support, which should include:

- managing known risk factors for stroke
- referring to, and linking with, community rehabilitation and self-management programs
- referring to appropriate specialist clinical services.

Organisation of stroke services

Organised stroke care improves outcomes. In both acute and sub-acute settings, treating patients in a stroke unit provides the best stroke care; however, organisation of stroke services must take into account optimal stroke care provision within existing physical infrastructure and other resources. Role delineation of stroke services provides a framework that can assist health services in guiding how best to organise stroke services because this takes such factors into account.

Acute stroke service organisation

Stroke units provide the best stroke care and improve patient outcomes because processes of care have been established and structures have been put into place that support these processes. The factors that are essential to facilitate such processes and stroke care quality include but are not limited to:

- health services committing to reorganise stroke services in a more efficient and centralised manner
- identifying a champion to lead stroke care within a health service
- co-locating stroke patients within the same inpatient ward
- reallocating medical, nursing and allied health expertise to provide assessment and treatment to contribute to ongoing stroke care as part of an interdisciplinary team.

Staffing of stroke units varies between health services, although it is generally agreed that patients should be able to access the appropriate expertise at the appropriate time to ensure optimal outcomes. Regardless of how health services allocate clinical resources for acute stroke care provision, early access to sub-acute care within the acute episode of care should be provided because this has been demonstrated to improve outcomes.

Recommendation 12

Acute stroke care should be provided by stroke units that are led by a physician with an interest and experience in stroke treatment and supported by an interdisciplinary team.

Sub-acute stroke service organisation

The differing health care needs of patients who have a stroke will determine the most appropriate service for their ongoing care. The treating team should determine the care required based on a comprehensive assessment of the patient's capacity for functional improvement.

Sub-acute inpatient care

Sub-acute inpatient care in Victoria is provided through designated rehabilitation and geriatric evaluation and management programs. Rehabilitation is the provision of a coordinated program by a specialist interdisciplinary team of health professionals involving a combined and coordinated use of clinical expertise and services to provide individual assessment, treatment, regular review, discharge planning and follow-up.

Whether rehabilitation occurs in the hospital or the home, the environment should be structured to support independence and self practice. Sub-acute stroke services must take into account the ability of a stroke survivor to actively participate in a rehabilitation program and the need for an interdisciplinary approach to rehabilitative care. They must also be able to provide the appropriate physical environment, equipment and skilled staffing resources. In addition, the designation of rehabilitation services in Victoria, which was developed in 1995, should be reviewed to reflect changing practices in sub-acute care in recent years.

Recommendation 13

People with stroke and who are assessed as requiring rehabilitation and other sub-acute services should receive those in a program that has the following features:

- an interdisciplinary approach to care with a full range of medical, nursing and allied health professionals
- a physical environment that facilitates the rehabilitation process, is enabling for ongoing recovery and is easy to navigate for people who have mobility problems, visual deficits or cognitive impairment
- equipment necessary to facilitate the provision of a quality rehabilitation program.

Recommendation 14

The Department of Human Services should review the current designation of sub-acute services.

Recommendation 15

Sub-acute inpatient care should be led by a physician with an interest and experience in rehabilitation, supported by an interdisciplinary team and collocated within the appropriate inpatient environment.

Sub-acute ambulatory care

Sub-acute *ambulatory* care in Victoria encompasses community rehabilitation (centre-based and home-based) and non-acute specialist assessment and management services. Following a stroke, survivors discharged from an inpatient setting can continue to access comprehensive rehabilitation services through sub-acute ambulatory care services (SACS). SACS are provided in either a centre-based or home-based setting, depending on the person's needs and preferences, enabling them to maximise their functioning and reintegration into the community.

Existing extended care centres and major sub-acute facilities are being refocused into Centres promoting health independence (CPHI), which will encompass tertiary sub-acute service provision and will provide a core suite of services from a single site. CPHI will be collocated, or will develop strong links, with community services providing facilities that support people—particularly older people—in remaining in their community. The refocusing and further development of these sites will promote the integration of appropriate services. CPHI form part of the health care continuum.

Recommendation 16

People with stroke receiving sub-acute care should have access to the full range of medical, nursing and allied health care in an appropriate environment with access to appropriate evidence-based rehabilitation interventions, which is supported by the role delineation of sub-acute services.

Role delineation of stroke services

Role delineation of stroke services will guide individual health service delivery and future planning. It guides equitable and efficient care delivery in relation to geographic and demographic factors, encourages linked, rather than stand-alone, services and facilitates strong links between health services through continuing education, research and other identified initiatives, and generally considers the continuum of care.

Role delineation underpins the delivery of clinical services in rural and regional areas in Victoria through *capability-based planning frameworks*, which provide guidance for sustaining a contemporary health system that provides high quality and appropriate health services in the best setting, as close as possible to where people live.

Underpinning role delineation for public sector stroke services is the recognition and acceptance that:

- all health services are responsible for providing care for people who have a stroke in accordance with evidence-based best practice standards
- the level of the general or specialist stroke service provided depends on the overall capacity of the individual health service, its geographic location, the different levels of skills and expertise that exist and the population it serves.

Role delineation of acute stroke services

Role delineation of acute stroke services provides a four-level framework for health service planning by identifying the necessary components and supports for providing a specific complexity of stroke care. All health services should identify the appropriate level of stroke care in accordance with existing infrastructure and resources. As with medical services, the higher the classification, the more comprehensive the level of care provided. For example:

- a level 1 acute stroke service would provide limited stroke care
- levels 2 and 3 acute stroke services would provide more comprehensive care than level 1
- only level 4 acute stroke services would provide neurosurgical and interventional neuroradiology services.

To ensure there is appropriate geographic focus for acute stroke services in rural areas, there should be at least one level 3 acute stroke service within each rural Department of Human Services region (DHS region). This is important given the time criterion around thrombolysis. Tables ES1 and ES2 on pages 18 and 19 illustrate role delineation of acute stroke services in Victoria and a summary of role delineation level classifications.

Recommendation 17

All health services should implement role delineation for acute stroke services to guide service delivery and future planning and ensure provision of the appropriate level of acute stroke care and expertise in accordance with infrastructure and resources. Role delineation will also ensure health services establish appropriate linkages and referral processes to ensure people with stroke have access to appropriate expertise and resources as required.

Role delineation of sub-acute stroke services

Because sub-acute stroke services are provided through the existing sub-acute service structure, role delineation of sub-acute stroke cannot be considered or developed in isolation, but should align with role delineation for overall sub-acute services. Role delineation for sub-acute services in Victoria—which will address role delineation for sub-acute stroke care—should be developed. This work will be informed by a review of the designation of rehabilitation services in Victoria, as per recommendation 14.

Recommendation 18

The Department of Human Services should develop role delineation to guide service delivery and future planning of all sub-acute services, including sub-acute stroke services.

Linkages and referral relationships between health services

Access to acute and sub-acute stroke care varies between health services because many health services do not provide all components of either acute or sub-acute care, especially in rural areas. Establishing formal linkages or referral relationships between acute and sub-acute stroke care providers is critical to ensure that optimal stroke care is provided by the appropriately resourced provider at the right time.

Such linkages/referral relationships should exist to connect metropolitan and rural health services to ensure they can access the full range of stroke care, up to and including the most complex level of care proposed in role delineation. Linkages and referral relationships between health services are also important to ensure that patients receive their care as close to home as possible, particularly if they receive complex care at another health service.

Recommendation 19

Health services should transfer/refer patients to appropriate acute stroke services for accurate diagnosis of stroke, and transfer patients—when clinically appropriate—back to acute or sub-acute settings close to where they reside.

Recommendation 20

Health services should establish linkages and develop referral pathways and protocols with hospitals that receive their patient transfers and/or referrals to facilitate timely and smooth patient transition.

Telemedicine

Telemedicine facilities range from a telephone to video-conferencing equipment. Facilities can exist at health services, in GP clinics, in specialists' consulting rooms and in homes. Telemedicine is used in a number of countries to facilitate diagnosis and treatment of acute stroke, including thrombolysis, particularly for patients residing in rural areas. Effective use of telemedicine is, however, underpinned by factors such as access to appropriate telemedicine equipment, medical, nursing and allied health expertise, timely diagnostic images and effective bandwidth. The latter is particularly important because physicians are often consulted on the basis of emailed computer tomography (CT) images.

Telemedicine should facilitate effective diagnosis and treatment of acute stroke, and should also support the delivery of sub-acute stroke services, particularly in rural areas. This requires a telemedicine requirements assessment, including infrastructure, and consideration of standards and processes, health services and other stroke care providers. In addition, funding the use of telemedicine for secondary consultation with acute health services should be investigated.

Recommendation 21

To facilitate the use of telemedicine by health services in the diagnosis and treatment of stroke—particularly for improving access to clinical expertise and quality of care for rural patients—the Department of Human Services should:

- assess telemedicine requirements and current infrastructure for public health services across Victoria
- review the funding model to facilitate secondary consultation.

Patient and carer/family support

People admitted to hospital following a stroke often have an overload of information that is not easily understood. It can be some time before there is any understanding of what has happened, then questions are asked and detailed information sought about why a stroke has happened, treatment options and relevant clinical and non-clinical support structures, particularly following hospital discharge. Communicating an accurate prognosis following a stroke is difficult and carers/family members should understand that, while recovery from a stroke has improved, recovery from a stroke is often not complete, and that having a stroke can be fatal.

High quality written information about stroke

People who have had a stroke, and their carers/family members, want consistent and high quality written information about stroke and available treatment options, including associated risks, provided early in the care episode to assist in shared decision making. They also want information about clinical and non-clinical community-based services and supports they can access to assist in dealing with post-stroke issues. This is because the reality of having a stroke, and dealing with the disabilities often associated with a stroke, often surface after someone is discharged from hospital and returns to living in the community.

Recommendation 22

Information about stroke and treatment options should be provided to patients and their carers/family members throughout the care continuum to allow participation in decision making, and ensure that personal choices, values and beliefs are considered in accordance with evidence-based guidelines.

Care coordination throughout the continuum of care

Many stroke patients and their carers are confused about what is happening due the complexity of stroke care provided and the setting in which it is provided. This, along with information overload, may inhibit people in seeking answers from busy health care workers.

A number of health services have nominated one stroke team member as the single point of contact for the patient, carer/family member and clinicians providing stroke care. This team member would effectively navigate the health system with the patient and carer/family member and would also be responsible for ensuring ongoing communication between the stroke care providers, the patients and their carers/family members. This role would also coordinate other needs of patients and their carers/family members as required, including access to information and non-clinical support staff and services. This system should lead to a connected and coherent episode of care.

In addition to providing a single point of contact for patients, stroke services should provide coordinated stroke care that is delivered in a logical and timely fashion, and is consistent with the patient's medical and personal needs. This requires a system-wide approach that considers all care elements, and includes non-clinical and administrative components. To assist health services provide coordinated stroke care, the department should develop measures to ensure that people with stroke have timely access to high quality services and treatment options and coordinated care, and that the social and emotional needs of patients and carers/family members are met.

Recommendation 23

Health services should identify for each patient and their carer/family member a single point of contact who will be responsible for ensuring ongoing communication between the stroke care team for that patient and their carer. This role would also coordinate other needs of patients and their carers as required.

Recommendation 24

The Department of Human Services should undertake work that will guide health services in the implementation of coordinated stroke care.

Returning to the community

Stroke survivors and their carers often experience an intense and difficult period of lifestyle adjustment when they return to living in the community following hospital discharge because of the deficits induced by the stroke. Community-based services and programs can provide support for the grief and fear associated with disability, lifestyle change, loss of roles and loss of independence following stroke, which can lead to depression. Information about these should be provided prior to being discharged from hospital.

State stroke associations, such as the Stroke Association of Victoria, provide support to stroke survivors and their carers/family members, particularly through community-based stroke support/recovery groups, whose primary role is to provide support for stroke survivors and their carers/family members to participate in all aspects of community life. Information about, and access to, such support, however, is somewhat fragmented and inconsistent. Measures should be developed to ensure that stroke survivors and their carers/family members can access well-supported and sustainable peer support.

Self-management programs are being developed for stroke survivors who wish to become more actively involved in their own health care by encouraging them, their carers, service providers and the health system to work together to achieve better health outcomes. Stroke survivors and their carers/family members require information about such programs.

Stroke survivors depend on carers, who themselves require support at different times (for example, respite care and Meals on Wheels). Organisations, such as Carers Australia, provide education programs, information and skill development for carers to provide effective care and look after their own wellbeing. All levels of government fund community-based services and programs to assist stroke survivors and their carers to return to the community following hospital discharge. Carers require information about such support services and programs.

Recommendation 25

Guidelines for providing peer support to inpatients, establishing community-based stroke support groups, promoting self-management programs for long-term care and accessing community-based services should be developed and implemented in accordance with evidence-based guidelines.

Stroke care workforce/training and education

An adequate supply of appropriately qualified medical, nursing and allied health stroke care personnel is fundamental to providing optimal stroke care. The health care sector faces shortages in clinical expertise and recruitment and retention issues at a time when health services are facing increased activity associated with stroke.

Stakeholders have identified that the following themes impact directly on safe and high quality stroke services provision by the health care workforce in Victoria:

- limited stroke component in undergraduate curricula
- nationwide shortage of skilled medical, nursing and allied health expertise
- enhancing the capability of the existing workforce
- ongoing education, training and professional development.

The strategy presents a number of strategies designed to address these themes and enhance the capability of the workforce and improve overall stroke care.

Recommendation 26

The capacity of the system should be increased, in accordance with the role delineation of stroke services, to provide safe and high quality stroke care, enhance workforce capability and provide for future demand. This should be done by:

- better use of existing workforce recruitment and retention strategies
- developing stroke-specific education programs targeted at both specialist and general stroke care workforce
- encouraging and supporting staff providing stroke care to undertake appropriate education, training and research.

Implementing the strategy

The strategy provides direction for all public health services across Victoria to provide optimal acute and sub-acute stroke care. The plan for implementing the recommendations specifies, for each recommendation, relevant responsibilities, timeframes and measures of success.

An implementation steering group will oversee the implementation of the recommendations.

A number of health services have already developed and implemented services (for example, TIA clinics) and/or protocols (for example, rapid triage and CT) identified in this document as being essential to ensure optimal stroke care provision. Many health services, however, in both metropolitan and rural settings, have not done so.

Implementing the strategy depends on the support of health services, which will be fundamental in ensuring that the recommendations are implemented. It is proposed that health service strategic plans/statements of priorities will be modified to reflect the importance of this work, which will enhance stroke care and improve patient outcomes across the state.

Recommendation 27

Clinical facilitators should be appointed on a time-limited basis to:

- develop protocols identified in the recommendations above
- oversee the implementation of protocols by stroke care providers
- facilitate appropriate/relevant education, training and support
- contribute to the development of stroke-specific education programs.

Recommendation 28

A statewide stroke project manager should be appointed on a time-limited basis to:

- coordinate the implementation of the strategy recommendations for Victoria
- oversee the work of the clinical facilitators
- mainstream the implementation of the strategy for Victoria.

Table ES1 Role delineation of acute stroke services in Victoria

Characteristic	Element	Level 1*	Level 2	Level 3	Level 4
Services					
<i>Medical/nursing</i>	Neurosurgery services	-	-	-	+
	Interventional neuroradiology	-	-	-	+
	Stroke physician	-	±	+	+
	Stroke nursing	-	±	+	+
<i>Allied health</i>	Neuropsychology	-	-	+	+
	Occupational therapy, speech pathology and dietitian	-	+	+	+
	Physiotherapy and social work*	±	+	+	+
Specialised diagnosis/treatment					
	Rapid triage of stroke/TIA	+	+	+	+
	Computerised tomography	-	+	+	+
	Magnetic resonance imaging or digital subtraction angiography	-	-	±	+
	Capacity to deliver stroke thrombolysis	-	±	+	+
	Outpatient TIA/neurovascular clinic	-	-	+	+
Service/care organisation and physical facilities					
	Acute stroke care collocated in an inpatient ward	-	±	+	+
	Interdisciplinary team	-	+	+	+
	Specified director, stroke services	-	-	+	+
	Intensive care/high dependency unit	-	±	+	+
	Stroke care facilitator	-	-	+	+
	Telemedicine facilities for clinical and professional support	+	+	+	+
Education and research					
	Leading education and research initiatives	-	-	+	+
	Participating in education and research initiatives	+	+	-	-

*It is suggested that these services could be provided in a community setting rather than in level 1 facilities.

*While level 1 facilities are unlikely to provide accurate diagnosis or high-level acute stroke care, they can provide acute stroke care in appropriate circumstances

Key:
 + Onsite access
 - Offsite access
 ± Could have onsite access
 + Yes
 - No
 ± Could have

Table ES2 Summary of role delineation level classifications for acute stroke services

Service classification	Descriptor
Level 1	• Would not be capable of providing emergency or high-level acute stroke care because they do not have the necessary infrastructure to support such care. • Would only be capable of providing acute stroke care when it is appropriate to do so (for example, palliative care close to home, informed choice of a patient wishing to remain close to home). • Would not have access computerised tomography (CT), magnetic resonance imaging (MRI) or digital subtraction angiography services to support quick and accurate diagnosis of stroke. • Would have protocols for the rapid triage of patients to ensure rapid access to emergency stroke care. • Would not provide public outpatient TIA/neurovascular clinic. • Would be able to access relevant medical, nursing and allied health expertise via telemedicine. • Would generally participate in education and research initiatives. • Would have links with higher-level services to meet other requirements in the continuum of acute stroke care.
Level 2	As for level 1 services plus: • Would be capable of providing emergency or high-level acute stroke care because they would have some of the necessary infrastructure to support such care. • Could have access to medical, nursing and allied health stroke expertise. • Would have CT on site to support quick and accurate diagnosis of stroke. • Could provide thrombolysis if the appropriate links and support were in place. • Could collocate patients within an inpatient ward. • Care would be provided by an interdisciplinary team. • Would provide all elements of allied health care except neuropsychology. • Could have access to intensive care unit (ICU)/high dependency unit (HDU).
Level 3	As for level 2 services plus: • Would have the necessary infrastructure to support emergency or high-level acute stroke care provision. • Could have MRI or digital subtraction angiography services on site. • Would have access to medical, nursing and allied health stroke expertise. • Would provide thrombolysis. • Would have access to ICU/HDU. • Would be able to provide public outpatient TIA/neurovascular clinic. • Would generally lead education and research initiatives.
Level 4	As for level 3 services plus: • Interventional neuroradiology services would be available on site. • Neurosurgical services would be available on site.

1.0 Introduction

1.1 Purpose

This Stroke Care Strategy for Victoria (the strategy) provides a planning framework for delivering public acute and sub-acute stroke services in Victoria for the next five to 10 years. The strategy aims to guide the future provision of care in the organisation and delivery of stroke care services and the development of an appropriate workforce to support it. The strategy also aims to address long-standing and emerging issues for the delivery of stroke services.

1.2 Definitions of stroke

Stroke is a debilitating condition. It mainly affects people aged over 45 years, and often results in ongoing disability, depending on the complexity of the event, or death. The World Health Organization (WHO) defined stroke as:

...a clinical syndrome typified by rapidly developing signs of focal or global disturbance of cerebral functions, lasting more than 24 hours or leading to death, with no apparent causes other than of vascular origin. (WHO 2005)

Stroke is increasingly referred to as a *brain attack*, analogous to a *heart attack*, in an effort to educate people about the immediacy required in getting suspected stroke patients to treatment. Stroke is caused by either a thrombus (that is, a blood clot) or an embolus (that is, a blockage) within an artery supplying the brain, or a haemorrhage (that is, a bleeding blood vessel) in or on the surface of the brain. Regardless of the cause, stroke results in reduced oxygen supply (that is, ischaemia) to brain tissue. This causes cell death in the brain, often resulting in disability or death.

There are several ways to classify stroke beyond the broad definitions of *thrombotic*, *embolic* and *haemorrhagic*. These definitions are important for the accurate diagnosis of stroke type and consequent appropriate treatment.

Thrombotic and embolic strokes account for more than 80 per cent of all strokes and are usually classified into one of the following two types:

1. Thrombotic stroke, also known as large artery stroke, accounts for approximately 60 per cent of all strokes and occurs over time when an artery to the brain is blocked by a thrombus, or blood clot. It also includes lacunar stroke, which causes clumsiness and weakness, and can serve as a warning sign of a major stroke.
2. Embolic stroke accounts for approximately 20 per cent of all strokes and is caused by a blood clot that has dislodged from elsewhere in the circulatory system and travelled through blood vessels to become wedged in a cerebral artery. This can be due to:
 - atrial fibrillation—where clots forming in the atrium of the heart break off
 - clots forming due to artificial heart valves or heart valve disorders
 - clots forming after a heart attack or in association with heart failure
 - emboli caused by fat particles, tumour cells or air bubbles.

Haemorrhagic stroke accounts for more than 15 per cent of all strokes and is usually classified according to how and where it occurs:

- Parenchymal (or cerebral) stroke occurs within the brain and accounts for approximately 10 per cent of all strokes. High blood pressure is the usual cause.
- Subarachnoid stroke accounts for approximately five per cent of all strokes and occurs when a blood vessel on the surface of the brain bursts and blood leaks into the subarachnoid space, an area between the brain and the skull. An aneurysm is the usual cause of this type of stroke.
- Arteriovenous malformations are characterised by abnormal connections between arteries and veins, and can cause a haemorrhagic stroke.

Transient Ischaemic Attacks (TIAs) are miniature thrombotic/embolic strokes usually caused by microscopic emboli lodging in very small blood vessels in the brain. They typically disintegrate quickly following temporary blockage of the blood supply to the brain. Consequently, symptoms are transient and clear within 24 hours. TIAs often serve as a warning sign for a stroke, similar to angina serving as a warning sign for a heart attack. Approximately five per cent of those with TIA have a full stroke within a month.

1.3 Incidence and prevalence of stroke

Up to 48,000 Australians have a stroke each year, with around 70 per cent of these being first ever strokes. Thirty per cent of people who have a stroke have another stroke within a year. More than 9,000 people each year in Australia die as a result of stroke within one month of its occurrence, and one third die within 12 months. Seventy-eight per cent of all deaths from stroke occur in those aged 75 years or over.

The Victorian Burden of Disease studies (DHS 1999b, 2005a) indicate that stroke is now the third leading cause of disease burden in Victoria, and is the second largest cause of years of life lost in women, and fourth for men in Victoria. Results from these studies, summarised in table 1.1 below, indicate that deaths attributable to stroke and stroke incidence are decreasing, although prevalence of stroke is increasing. In addition, there was a decrease of approximately 1.2 years of life lost per 1,000 of the Victorian population. For more detailed information on stroke in the Victorian Burden of Disease studies, please refer to appendix B.

Table 1.1 Stroke incidence, prevalence and deaths: 1996 and 2001

	Year	Men	Women	Total
Deaths	1996	1,273	1,863	3,136
	2001	1,187	1,782	2,970
Incidence	1996	3,567	3,350	6,917
	2001	3,466	3,471	6,937
Prevalence	1996	12,016	8,067	20,084
	2001	14,049	19,615	33,664

Source: (DHS 1999b, 2005a)

One interpretation of these data is that more people are now surviving stroke. Some consider that stroke incidence, prevalence and disease burden will increase due to the ageing population (Australian Government 2003).

1.4 Policy context for the future directions of stroke services

This strategy has its foundation in work undertaken and in policy developed in recent years by the department. The following policies and frameworks have informed this work:

- *Growing Victoria Together* (DPC 2001)
- *Emergency demand management* (DHS 2001)
- *Directions for your health system: Metropolitan Health Strategy* (DHS 2003a)
- *Directions for your health system: Metropolitan Health Strategy: ambulatory care services* (DHS 2003b)
- *Improving care for older people: a policy for health services* (DHS 2003c)
- *Departmental plan 2005-06* (DHS 2005c)
- *Rural directions for a better state of health* (DHS 2005e)
- *Care in your community—a planning framework for integrated health care* (DHS 2006a).

1.5 Stroke initiatives

There have been a number of stroke-specific initiatives undertaken by government and non-government organisations to improve awareness of stroke symptoms, reduce stroke admissions to hospital and improve access to services. These initiatives, summarised below, have informed the development of this strategy.

Victorian Stroke Strategy

In 1997, the Stroke Care Outcomes: Providing Effective Services (SCOPES) study (National Stroke Foundation 2002) was undertaken to inform the development and implementation of the Victorian Stroke Strategy (VSS). The VSS was completed in 2001, identifying priorities for implementation in stroke prevention, acute stroke care, sub-acute stroke care, community care and training and education for health professionals and carers. The department identified acute stroke care as its priority.

The VSS was not formally implemented due to additional work on stroke services being undertaken by the National Stroke Foundation. Many VSS recommendations have since been implemented or are addressed within this strategy.

The National Stroke Foundation

The National Stroke Foundation is the peak body for stroke in Australia and works with the public, government, health professionals, patients, carers and stroke survivors to reduce the impact of stroke on the Australian community. It has participated in a range of activities that have informed policy and practice around stroke care delivery.

The National Stroke Foundation has developed, for the National Stroke Unit Program (NSUP), evidence-based clinical practice guidelines for the management of acute stroke (National Stroke Foundation 2003a), acute stroke performance indicators (NSUP 2003b) and a policy document for Australian stroke services for the National Stroke Unit Program (NSUP 2002). This work was sponsored by the National Health Priorities Action Council.

The National Stroke Foundation has since produced the following work:

- a report on the outcomes of a consumer workshop for the National Heart, Stroke and Vascular Health Strategies Group (2003b)
- an evaluation report trialling the stroke service model (2003a)
- an evaluation of the Greater Metropolitan Transition Taskforce Stroke Unit Initiative in New South Wales (2004)
- a national survey of public hospital stroke services (2005b)
- clinical guidelines for stroke rehabilitation and recovery (2005a)
- consumer guidance for carers of people with stroke (2006b).

National Service Improvement Framework for Heart, Stroke and Vascular Disease

Developed under the auspice of the Australian Health Ministers' Advisory Council (AHMAC), this is one of five frameworks that outline opportunities for improving prevention and care in relation to the national health priority areas, while not prescribing the detail of services funded by the jurisdictions. This framework was endorsed by AHMAC in November 2005.

Stroke Care Pathway

In 2004-05, the AHMAC Care of Older Australians Working Group (COAWG) and the Australian Government Department of Health and Ageing contracted the National Stroke Foundation to develop evidence-based care pathways for stroke patients. These reflect best practice for the delivery of stroke care in major phases of treatment, including acute and sub-acute stroke care. These care pathways are a practical resource to support service providers and health professionals in providing a streamlined and coordinated continuum of care for older Australians.

The pathway has been endorsed by COAWG and AHMAC and is available in hard copy from the Australian Government Department of Health and Ageing or electronically from the department (2006b).

1.6 Methodology

A number of recommendations aimed at enhancing stroke services in Victoria are presented in this strategy. These were informed by:

- the Stroke Expert Advisory Group, which represented key stakeholder groups
- *Development of a stroke care strategy for Victoria—discussion paper* (DHS 2005d)
- *Stakeholder consultation report* (PricewaterhouseCoopers 2006).

The discussion paper provided a basis for analysis and consideration of acute and sub-acute stroke service provision in Victoria. It drew on the analysis of datasets regarding acute and sub-acute public and private sector separations, data from a national survey of acute stroke services undertaken by the National Stroke Foundation, modelled forecasts of acute stroke separations and a review of the literature. Its aim was to identify and consider key current and future issues affecting acute and sub-acute stroke care practice in Victoria. The discussion paper was widely circulated to stakeholders, including all public and private sector health services and relevant consumer and professional bodies.

The department engaged PricewaterhouseCoopers to undertake stakeholder consultation to determine stakeholder views on issues pertinent to the delivery of acute and sub-acute stroke services, which was undertaken through face-to-face interviews, workshops/focus groups, public forums and an online survey. At the conclusion of the stakeholder consultation process:

- 33 individuals from 14 organisations had been interviewed
- seven workshops/focus groups had been undertaken
- eight provider forums had been advertised and held publicly across Victoria
- two consumer forums had been advertised and held publicly across Victoria
- 49 written submissions had been received
- 52 responses had been submitted through an online survey tool.

The discussion paper and Stakeholder Consultation Report are both available at www.health.vic.gov.au/strokecare. The key findings from the Stakeholder Consultation Report, which are about stroke care in the acute and sub-acute sectors and organisation of stroke care, are summarised in appendices C and D.

1.7 Scope and definitions

This strategy addresses the organisation and delivery of public sector acute and sub-acute stroke services. Although the private sector participated in the stakeholder consultation, the stroke services it provides are not considered by the strategy, but it is hoped that the strategy will aid the improved delivery of stroke services within the sector, and links between the public and private sectors.

The following were not considered in the development of the strategy:

- a cost analysis of acute and sub-acute stroke services
- a comprehensive analysis of acute and sub-acute stroke care in the private sector
- a comprehensive analysis of ambulance services, primary care, aged care services and non-government organisations in the delivery of acute and sub-acute stroke care
- workforce ratios for clinicians providing acute and sub-acute stroke care.

The Department of Human Services has divided the state into eight geographic (five rural and three metropolitan) regions (DHS regions), which are based on local government areas. Figures 1.1 and 1.2 illustrate the location of public hospitals within metropolitan and rural regions.

Figure 1.1 Metropolitan regions and the location of public hospitals reporting >40 acute stroke separations in 2005–06



Figure 1.2 Rural regions and the location of public hospitals reporting >40 acute stroke separations in 2005–06



2.0 Stroke services in Victoria

2.1 Current stroke service provision

The distribution and activity of acute and sub-acute stroke services in Victoria for 2000-01 to 2003-04 are described in the discussion paper. Key activity data for acute stroke service provision (in 2005-06) and sub-acute stroke service provision (in 2004-05), are summarised below and in tables 2.1–2.5. Further details are in appendices E and F.

2.1.1 Acute stroke services

The scope of acute stroke care includes presentation to emergency departments (EDs) with possible admission to an inpatient ward. There are 173 public and private health services that provided acute stroke care in Victoria in 2005-06: 67 are in Melbourne and 106 are in rural areas (table 2.1). Of these, 117 are public health services (28 in Melbourne and 89 in rural areas) and 56 are private health services (39 in Melbourne and 17 in rural areas).

Table 2.1 Number of health services treating acute stroke in Victoria in 2005-06

	Public	Private	Total
Metropolitan	28	39	67
Regional/rural	89	17	106
Total	117	56	173

Victorian public and private health services reported more than 14,500 episodes of acute stroke and transient ischaemic attack (TIA) care in 2005-06. More than 11,600—or 83 per cent—of these were undertaken by public health services (table 2.2).

Table 2.2 Summary of acute stroke separations in Victoria in 2005-06

Setting	Public sector			Private sector		Total	
	Seps	% public Seps	% Seps	Seps	% Seps	Seps	% Seps
Metropolitan	7,946	66	55	2,091	14	10,037	69
Rural	4,026	34	28	470	3	4,496	31
Total	11,972	100	83	2,561	17	14,533	100

Seps=separations reported from an acute setting

Almost 8,000 people with stroke were treated at metropolitan public health services. Nine public health services (eight metropolitan, one regional) treat more than 500 strokes each year, six (four metropolitan, two regional) treat 200-500 strokes each year, ten (four metropolitan, six rural) treat 100-200 strokes each year and 92 (12 metropolitan, 80 rural) treat 100-200 strokes each year (an average of less than two acute stroke cases per week; table 2.3).

Table 2.3 Victorian public health services treating acute stroke in 2005–06, by DHS region, separations and percentage of statewide separations

DHS region	Separations per year							
	<100		100–200		200–500		>500	
Metropolitan								
North and West	n=8 (238)				Northern (404) Sunshine (247)		Alfred (730) Austin (854) Royal Melbourne (1,182) St Vincent’s (685) Western (818)	
Eastern	n=1 (4)		Angliss (136)		Maroondah (340)		Box Hill (760) Monash Medical Centre (Clayton) (797)	
Southern	n=3 (26)		Casey (108) Rosebud (190) Sandringham (132)		Dandenong (346)		Frankston (751)	
Rural								
Barwon South Western	n=14 (223)		Warrnambool (130)				Geelong (586)	
Grampians	n=17 (130)		Horsham (108)		Ballarat (240)			
Loddon Mallee	n=21 (296)		Mildura (123)		Bendigo (246)			
Hume	n=18 (280)		Shepparton (169) Wangaratta (130)					
Gippsland	n=10 (392) Bairnsdale (95) Sale (77)		Traralgon (171)					
	Seps	% Seps	Seps	% Seps	Seps	% Seps	Seps	% Seps
Metro total Seps	268	2.2	566	4.7	1,337	11.2	6,577	54.9
Rural total Seps	1,321	11.0	831	6.9	486	4.0	586	4.8
Victoria total Seps	1,589	13.2	1,397	11.6	1,823	15.2	7,163	59.7

n=the number of hospitals in each region with <40 acute stroke separations in 2005-06

Seps=separations reported from an acute setting

NB: most health services reporting <100 acute stroke separations are not identified

Geelong Hospital was the only regional/rural hospital to treat more than 500 acute strokes a year. This is 13 per cent of all regional/rural, and five per cent of all Victorian public, acute strokes.

From 2000-01 to 2005-06, acute stroke activity increased across the state by 6.4 per cent, public sector acute stroke activity increased 15.0 per cent in metropolitan health services and in rural regions, private sector acute stroke activity decreased more than 21 per cent in both metropolitan and rural areas.

In 2005-06, public and private health services treated more than 3,000 people with TIAs (table 2.4), which is more than 23 per cent of all strokes treated in Victorian health services. Public health services treated more than 84 per cent of all people with TIAs, of which 55 and 30 per cent were treated in metropolitan and regional/rural health services, respectively.

Table 2.4 Summary of TIAs reported in Victoria in 2005-06

Setting	Public sector			Private sector		Total	
	Seps	% public Seps	% Seps	Seps	% Seps	Seps	% Seps
Metropolitan	1,862	64.8	54.8	419	12.3	2,281	67.1
Rural	1,009	35.2	29.7	109	3.2	1,118	32.9
Total	2,871	100.0	84.5	528	15.5	3,399	100.0

Seps = separations reported from an acute setting with TIA as the principal diagnosis

2.1.2 Sub-acute stroke services

Sub-acute care is specialised health care delivered to patients who need time and a mix of clinical and professional skills rather than management by a single or principal specialty. The central aim of sub-acute care is to provide goal oriented, time-limited interventions aimed at assessing, treating and managing people with complex conditions to maximise their independence.

Sub-acute care is provided on the basis most appropriate to each patient's individual needs, whether that is a hospital bed, the person's own home, hospital outpatient clinic or other environment. Care that has previously been delivered in a hospital environment is increasingly being delivered in the community through centre-based or home-based services.

Sub-acute care in Victoria comprises inpatient and ambulatory care. It is provided by specialist medical and allied health professionals and comprises the following expertise: rehabilitation, geriatric medicine, physiotherapy, speech pathology, occupational therapy, psychology, neuropsychology, nursing, social work and dietetics.

Sub-acute inpatient services comprise rehabilitation and geriatric evaluation and management (GEM). Sub-acute ambulatory care services (SACS) comprise centre-based (through community rehabilitation centres) and home-based care. From 2005-06, centres promoting health independence, which are in each region, will provide access to the complete range of inpatient and ambulatory sub-acute care services. Within health services, sites other than centres promoting health independence also deliver sub-acute services.

Sub-acute inpatient care

Rehabilitation is a specialist area of health care that targets people with loss of function or ability from any cause, either congenital or acquired. The aim of rehabilitation is to improve or restore function and/or prevent deterioration of function, to bring about the highest possible level of independence physically, psychologically, socially and economically (Queensland Health 2005).

The WHO's International classification of functioning, disability and health (2006) considered rehabilitation within the context of impairment, activity limitations and participation restrictions. Basic requirements of rehabilitation included:

- access to an extended range of allied health staff and therapy facilities, including a comprehensive rehabilitation gymnasium, hydrotherapy and outdoor treatment areas
- access to facilities which enable normal activities of daily living, mobility and functioning to be assessed
- access to orthotic and prosthetic services where applicable
- established links and protocols with community-based support services to permit prompt discharge with continuity of care.

Rehabilitation requires the provision of a coordinated program by a specialist interdisciplinary team of health professionals. It involves the combined and coordinated use of medical, nursing and allied health skills, along with social, educational and vocational services, to provide individual assessment, treatment, regular review, discharge planning and follow-up.

Rehabilitation is an active, educational, goal-oriented *time-defined* intervention. The problem solving process that is rehabilitation is focused on engaging the patient in the recovery process in order to maximise functional outcome. The components of rehabilitation include (Wade & de Jong 2000):

- assessment—the identification of the nature and extent of the patient's problem and the factors relevant to their resolution
- goal setting
- intervention, which may include any or all of (a) treatments, which affect the process of change; (b) support, which maintains the patient's quality of life and his or her safety; (c) environmental adaptation
- evaluation of the effect of intervention.

Whether rehabilitation occurs in the hospital or in the home or other community-based setting, the environment should be structured to support independence and self practice. This is an important factor in influencing rehabilitation outcomes (Mackey et al. 1996).

Geriatric evaluation and management services provide care for older people who have complex co-morbidities and who require an extended period of care, usually following an acute episode. GEM provides intensive input from a multidisciplinary team for a defined episode of care with the aim of maximising the person's health and functional ability. The target group for GEM services is older people who have complex and/or multiple health care conditions requiring a range of treatment interventions and care planning.

Sub-Acute Ambulatory Care Services

SACS are provided in an *outpatient*, or *ambulatory*, setting and comprise centre-based and home-based care. SACS provide a person and family-centred interdisciplinary model of care supported by flexible service delivery in a range of settings, and are directed at improving and maintaining a person's functional capacity and maximising their independence. The SACS model of care is underpinned by six core principles, summarised in table 2.5, that reflect the key values central to delivering services for people requiring therapy and sub-acute specialist assessment in the community.

Table 2.5 Definitions of sub-acute ambulatory care services

Person-centred care	People and their carers and families needing sub-acute ambulatory care receive services that place the client at the centre of their care.
Practice based on best evidence	People and their carers and families needing sub-acute ambulatory care receive services in which practice is based on the best available evidence.
Interdisciplinary approach	People and their carers and families needing sub-acute ambulatory care receive services that are based on an interdisciplinary approach.
Appropriate setting	People and their carers and families needing sub-acute ambulatory care receive services that are delivered in the most clinically appropriate setting.
Coordination and integration	People and their carers and families needing sub-acute ambulatory care receive services that are coordinated and integrated across all settings.
Promoting health independence	People and their carers and families needing sub-acute ambulatory care receive services that promote health independence.

The role of SACS includes:

- supporting optimal transition from acute and sub-acute hospital stays
- improving integration of services across the continuum of care
- reducing the time spent in hospital for a person by providing them with the option of completing their therapeutic treatment in their own home
- extending a person's treatment program following a hospital stay to assist them in achieving the maximum level of reintegration into their community
- avoiding a hospital stay by providing people with therapeutic interventions in the community setting
- preventing a hospital stay through early diagnosis, evaluation, treatment, and appropriate referral that may improve a person's function or prevent the deterioration of an existing condition
- advising on strategies for people to help maintain their independence, dignity and self-esteem
- supporting the development of information and referral networks for carers and health service providers
- educating the general public to improve awareness of issues and to promote the importance of self-management.

Centres promoting health independence

Older people, and people who have multiple and complex needs, often require access to specialist assessment and treatment and a variety of support services to be able to maintain their independence. Health services provide a number of programs that support the independence of older people, including inpatient services, centre-based and home-based rehabilitation and specialist assessment and management. Services such as multidisciplinary clinics provide assessment and treatment for conditions affecting older people (for example, the cognitive, dementia and memory services, continence clinics, falls and mobility clinics).

Existing extended care centres and major sub-acute facilities are being refocused into centres promoting health independence (CPHI), with at least one designated centre in each metropolitan health service and in each rural region. This is a new and evolving concept, and it encompasses tertiary sub-acute service provision. Where possible, each CPHI will provide a core suite of services from the single site and will form part of the health care continuum.

To enable greater access to programs, CPHI will be colocated, or will develop strong links, with community services such as programs providing aids and equipment, aged care assessment services, aged psychiatric and mental health services and community support programs (such as community aged care packages) to provide a recognisable facility that supports people in remaining in their community. The refocusing and further development of these sites will promote the integration of appropriate services.

CPHI are a focus for the development of statewide specialist services that provide health care professionals with additional skill levels and access to a wider support network for the management of people with complex needs. CPHI work collaboratively with all health services in their region to support the delivery of quality services and are a resource to enable people to receive the treatment and care they require in the community. CPHI will assist in strengthening people's health independence from two perspectives:

1. They will reduce the need for hospital admission by providing people with community-based therapeutic interventions that may improve function and/or prevent the deterioration of existing conditions (for example, by enabling an arthritis support group to use the hydrotherapy pool and providing healthy ageing information).
2. People who have experienced an inpatient episode will be supported in achieving the maximum level of reintegration into the community.

Sub-acute stroke services in Victoria

There were 62 public providers of sub-acute stroke care in Victoria in 2005-06: 35 in Melbourne and 27 in rural areas (table 2.6). Appendix F details major providers of both inpatient and ambulatory sub-acute services across metropolitan and rural Victoria. Approximately 74 per cent of public sector sub-acute inpatient separations and 71 per cent of public sector ambulatory stroke separations are from metropolitan services, which mirror the split between public metropolitan and rural acute stroke separations.

Table 2.6 Location of metropolitan and rural public sector sub-acute services in 2005-06

DHS region	CPHI	Inpatient		Ambulatory	
		Rehabilitation	GEM	Centre-based	Home-based
North and West	6	7	7	14	6
Eastern	1	4	6	3	2
Southern	3	5	6	13	4
Metro total	10	16	19	30	12
Barwon South Western	1	2	1	6	2
Grampians	1	1	3	2	1
Loddon-Mallee	1	3	3	6	1
Hume	4	3	2	4	3
Gippsland	1	2	7	6	1
Rural total	8	11	16	24	8
Total in Victoria	18	27	35	54	20

Rehabilitation of people diagnosed with a stroke is a significant component of the work of public inpatient and community-based sub-acute services. Approximately 68 per cent of sub-acute inpatient stroke care is delivered under the rehabilitation program stream, with approximately 19 per cent delivered under the GEM program stream. There is an increase in delivery of these services in the home-based setting.

A significant proportion of people are referred to GEM following stroke, but no information is available to suggest why some clients would receive their care under the rehabilitation stream and others under the GEM stream. As indicated previously (DHS 2005d), incidence of referral to GEM following a stroke has been suggested to increase with age. The assumption is that older people will have a greater range of co-morbidities that require assessment and management by a multidisciplinary GEM team.

In 2005-06, 2,215 metropolitan and 891 rural sub-acute inpatient episodes were attributable directly to stroke (appendix F). This represents an increase in activity by 23 and 21 per cent from 2000-01 to 2005-06 in metropolitan and rural areas, respectively. In rural Victoria, sub-acute inpatient stroke care is largely delivered in the major regional centres.

Regional activity in public sub-acute inpatient stroke care varies significantly. Reasons for this are not known, but the following factors may influence activity:

- changes in inter-regional referral patterns
- changes in service delivery, such as increased use of ambulatory rehabilitation services
- reconfiguration of inpatient sub-acute services within health services
- general decline in referrals to particular services.

The average length of stay for public sub-acute inpatients is 31 days. The average length of stay appears to remain reasonably consistent from the age of 55 years. The main exception to this is the 45-49 year age group, with a 40-day average length of stay.

The majority (62 per cent) of stroke inpatients receiving sub-acute care returns to independent living at the conclusion of their rehabilitation episode. Ten per cent of patients are referred to nursing home- or hostel-level of care and approximately two per cent of patients die during their sub-acute care episode. Approximately 26 per cent of patients are either transferred to another form of care or transferred to another facility (for example, transfer from a metropolitan hospital to a rural hospital).

In both rural and metropolitan areas, patients with a principal diagnosis of stroke form a significant proportion of all community rehabilitation clients (CRC), although the actual proportion can vary substantially from site to site. Many factors contribute to this variance, including differences in catchment demographics and differences in service systems between regions. The number of metropolitan and rural CRC clients with a principal diagnosis of stroke from 2000-01 to 2005-06 are summarised in appendix F.

Issues around the reporting of sub-acute ambulatory care activity are detailed elsewhere (DHS 2005d). Over the past three years, SACS have increasingly been providing more intensive services to more acutely ill clients, as substitution and diversion from inpatient services have been emphasised. New service delivery models for SACS will lead to improved access for patients and better outcomes. In 2005-06, a new minimum dataset was introduced, now known as the Victorian Integrated Non-Admitted Health (VINAH) MDS. VINAH provides a consistent reporting platform for all SACS services, and will provide improved data on client complexity and referral patterns. However, due to the transition of reporting systems, statewide data for 2005-06 is not yet available for analysis.

2.2 Predicted changes to acute stroke activity

2.2.1 Victorian inpatient stroke forecasts

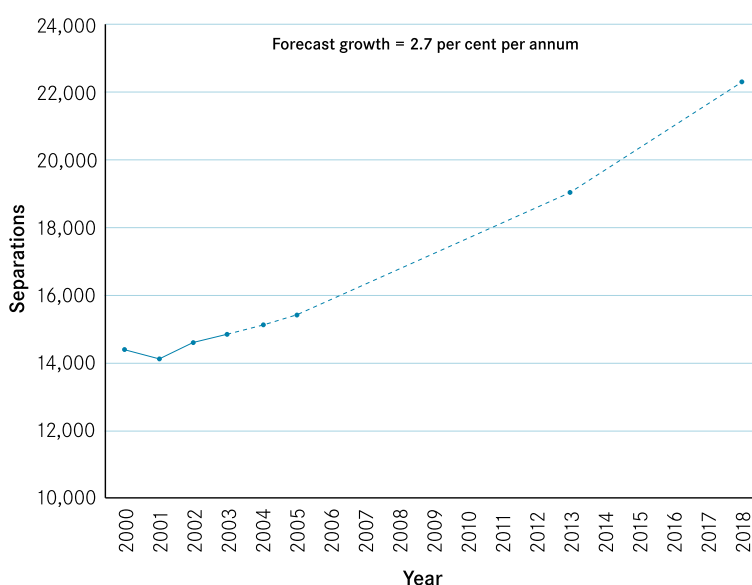
Service demand forecasting was developed by the department for the purpose of estimating future service demand in both the public and private sectors. A methodology was adopted that incorporates both trend and seasonality into a time series projection of historical Victorian Admitted Episode Dataset (VAED) to 2003-04, and computes future estimates of both separations and average length of stay to 2018-19 for acute stroke. Essentially, use patterns of acute stroke demand are incorporated with current and future population data (appendix G) into the forecasting model to produce service demand projections. The forecasts can be produced for any combination of the following forecast variables:

- age group (0-30, 30-44, 45-69, 75-84, 85+)
- sex
- stroke diagnosis (see appendix H for groupings)
- hospital.

Separations for acute stroke and TIA are forecast to grow from 14,887 in 2003-04 to more than 22,000 in 2018-19. This is an increase of approximately 7,500 separations, or an annual growth rate of 2.7 per cent (figure 2.1).

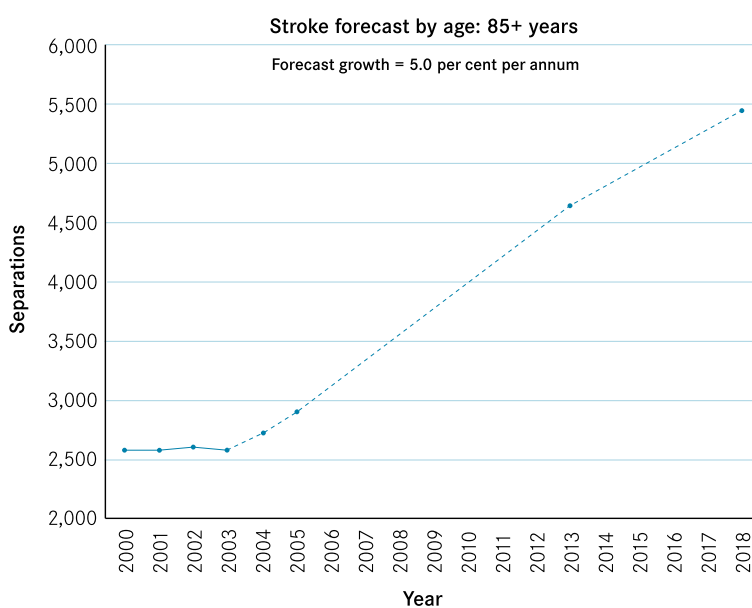
Acute stroke service utilisation (that is, separations per 1,000 of an age group population) and forecast growth are directly correlated to age. In Victoria, acute stroke activity is growing fastest in the 85+ age group, even though the absolute number of separations in this age group is less than 40 per cent of those aged 70-84 years (figure 2.2).

Figure 2.1 Forecast growth in acute stroke and TIA separations: 2003-04 to 2018-19



Eighty per cent of all acute stroke activity is currently attributable to those aged 45–84 years, with men having more strokes than women. The average length of stay for acute stroke is forecast to decrease from 8.7 days in 2003-04 to 6.9 days in 2018-19. Further details on stroke forecasts in relation to separations and patient residence are detailed in appendix I.

Figure 2.2 Forecast growth in acute stroke and TIA separations for people aged 85+ years: 2003-04 to 2018-19



2.2.2 Future trends in stroke care

In addition to using historical demand data to project estimates of future acute and sub-acute stroke activity, research and stakeholder consultation identified the following trends in the provision of stroke care:

- more emphasis on preventive models of care, including the establishment of outpatient TIA/neurovascular clinics, which would lead to improved risk reduction, decreased admissions and increased demand for surgery
- an increase in acute admissions in both acute inpatient and sub-acute inpatient and ambulatory service provision
- a greater focus on interdisciplinary collaboration
- holistic disease management models
- the need to provide patients and their carers/family members with high quality and consistent information to inform shared decision making
- the ability of providers to accurately diagnose stroke subtype to provide accurate information to inform appropriate treatment options and prognosis
- increased use of highly specialised equipment/technology for both diagnostic and therapeutic purposes (for example, MRI, thrombolysis)
- greater participation by GPs in stroke risk prevention and post-stroke management.

3.0 Continuum of stroke care

Key findings

Responding to stroke

- Symptoms of stroke are generally not well recognised. This is a barrier to timely access to stroke services.
- Where they exist, outpatient neurovascular/TIA clinics have led to improved access to services and reduced hospital admissions.

Stroke is a medical emergency

- Metropolitan and rural ambulance services have developed time critical guidelines recognising stroke as a medical emergency and requiring that patients be immediately transported to the nearest appropriate hospital.
- Many health services already treat stroke as a medical emergency.

Emergency management of acute stroke

- Implementing protocols for treating stroke as a medical emergency improves clinical, functional and patient outcomes.
- Thrombolysis is an appropriate treatment for some patients.

Management of acute and sub-acute stroke

- Evidence-based clinical practice guidelines have been developed for the management of adult acute stroke, paediatric acute stroke and sub-acute stroke. Compliance with these improves clinical, functional and patient-relevant outcomes.
- Optimum stroke care is provided by an interdisciplinary team.

Palliative care

- Palliative care is an appropriate choice of treatment for some people who have a stroke, but many providers and carers/family members are not aware of palliative care options and services available, particularly in rural areas.
- Specialist palliative care services are available across Victoria. They provide services to address specific issues such as the management of pain and symptoms associated with a terminal illness, and provide psychological, social and spiritual support.
- National evidence-based guidelines and Victorian policy exist for the provision of palliative services.

Measuring performance

- There are no stroke-specific minimum dataset or key performance indicators (KPIs) for reporting health service performance or patient-related outcomes in Victoria.
- Several organisations have developed and implemented stroke-specific minimum datasets and KPIs.

Clinical support in the community following a stroke

- Management of stroke risk factors reduces the incidence of first and subsequent strokes and reduces hospital admissions.
- GPs are best positioned to monitor and treat risk factors for stroke, review self-management programs for people who have had a stroke, refer patients to specialist stroke services (for example, TIA/neurovascular clinics, community-based rehabilitation services) and, in some places, collaborate with hospital clinicians in a shared model of stroke care.

3.1 Responding to stroke

3.1.1 Awareness of stroke symptoms

The symptoms of a heart attack are generally well recognised, with most people calling an ambulance or attending an ED. Prompt treatment of heart attack improves outcomes. The same approach should be undertaken for stroke.

Because stroke symptoms are not always recognised, optimal early treatment is not always available; for example, there are reports of people waiting days, and even months, after experiencing stroke symptoms before seeking medical care. Despite evidence that prompt treatment of stroke leads to improved outcomes, there are often delays in people accessing appropriate and timely treatment.

Stakeholder consultation indicated that consumers, and some general practitioners (GPs) and ED physicians, have inadequate knowledge of stroke symptoms and that stroke care is a health issue that does not receive adequate attention in the broader context of health promotion from government or other agencies.

Stakeholder consultation also indicated that consumers have a poor understanding of the need for medication compliance; for example, warfarin to manage atrial fibrillation and blood pressure lowering drugs to manage hypertension, both of which are recognised risk factors for stroke. Conversely, specialist physicians have suggested, and a recent technology assessment demonstrated (Hobbs et al. 2005), that adequate monitoring of stroke risk factors reduces stroke incidence and stroke-related hospital admissions.

Stroke and TIAs increase the risk of having a new or subsequent stroke. Many providers have implemented protocols to prevent another stroke (that is, secondary prevention), such as commencing aspirin.

The National Stroke Foundation has taken the lead in educating the community about stroke symptoms. Recently, it launched the *Strokesafe* public health campaign, featured on television, radio and posters, to help Australians recognise signs of stroke. Research conducted by the National Stroke Foundation indicated that awareness and knowledge of stroke has grown in the past three years. The *Stroke awareness survey* (National Stroke Foundation 2006a), for example, demonstrated that half of those surveyed could identify the correct signs of a stroke and 77 per cent could identify at least one risk factor for stroke.

Public education is important in informing the community about stroke symptoms. Continuing to increase community understanding about stroke symptoms, and the importance of compliance with preventive therapy, is important in reducing stroke incidence. Clinician awareness of stroke symptoms should be enhanced through appropriate communication mechanisms of professional bodies and health services.

Recommendation 1

Health services and general practitioners should manage TIAs and secondary prevention of stroke in accordance with existing evidence-based clinical practice guidelines.

Recommendation 2

The Department of Human Services should support the National Stroke Foundation to deliver public education campaigns that increase public awareness of stroke symptoms.

3.1.2 Outpatient TIA/neurovascular clinics

TIA is a recognised risk factor for stroke. The risk of having a stroke within two weeks of a diagnosed TIA is up to 10 per cent, increasing to 20 per cent at four weeks. Further diagnostic assessment when a TIA is diagnosed has been shown to prevent additional strokes. TIA/neurovascular clinics provide the best setting for further investigation of people at risk of having a new or subsequent stroke without the need for hospital admission.

A TIA/neurovascular clinic (also called a TIA clinic, stroke prevention clinic or stroke clinic) undertakes investigation of specific risk factors for stroke, such as carotid artery stenosis and cerebral aneurysms. Timely diagnosis allows immediate specific preventative measures, such as a referral to a clinical specialist (for example, a vascular surgeon or interventional neuroradiologist).

TIA/neurovascular clinics provide a number of services, including:

- assessment of known risk factors (for example, high blood pressure, atrial fibrillation)
- diagnostic assessment (for example, electrocardiograph, blood tests)
- diagnostic imaging (for example, computer tomography (CT), magnetic resonance imaging (MRI), angiography, carotid artery ultrasound)
- commencement of, or referral for, early surgical/neuroradiology intervention
- follow up to ensure all appropriate tests have been ordered and investigations have been performed and referrals made.

TIA clinics have been established in a number of countries, including the United Kingdom and Canada, and also in some hospitals in Australia. Evidence-based clinical practice guidelines recommend that patients diagnosed with TIA, or who have had a stroke and have made a good immediate recovery, should be referred to a TIA/neurovascular clinic *within 14 days* for prompt assessment and investigations to minimise the chance of having a new or subsequent stroke. Health services that refer patients to outpatient TIA/neurovascular clinics indicate that access to services has improved and hospital admissions are reduced.

A number of Victorian public hospitals have established outpatient TIA/neurovascular clinics (for example, Box Hill Hospital, Royal Melbourne Hospital, The Alfred, Austin Hospital), but access to these is limited due to resourcing constraints. Private TIA/neurovascular clinics also exist in both metropolitan and rural areas, and are usually operated by neurologists or stroke physicians (that is, a physician with expertise or an interest in treating acute stroke). Some public health services refer patients to private clinics where access to public outpatient clinics is limited and local providers could provide this service. Informal advice from stroke clinicians has indicated that GP referral to these clinics is not common.

Analysis of separations data from the VAED indicates that 2,871 acute hospital separations were due to TIAs in 2005–06. This is a growth of 3.6 per cent a year since 2000–01 (see table 2.4 and appendix H). Analysis of data from the 2005–06 Victorian Emergency Minimum Database (VEMD) indicates there were 3,564 ED presentations attributable to TIAs during that time. Around 2,200 of these were admitted for acute stroke care. Around 1,300 people were discharged from the ED, of which only 161 were referred to an outpatient neurovascular clinic.

Because GPs are unlikely to refer patients to TIA/neurovascular clinics, the incidence of TIA is likely to be higher than is currently reported by health services. Establishing additional outpatient TIA/neurovascular clinics at major metropolitan and regional health services where they do not already exist would benefit people who are at risk of having a new or subsequent stroke.

Case study: A TIA clinic at The Alfred

An outpatient TIA clinic was established at The Alfred in February 2005. The clinic is run as a registrar clinic within the neurology clinic, with the general neurologist consultant supervising. In May 2006, a second consultant neurologist will commence duties at The Alfred, which will increase the availability of staff for the clinic. The clinic runs once a week on a Friday afternoon. Twenty clinics were not booked in the last calendar year because of staffing/resourcing issues and public holidays. This is unlikely to be a recurring problem now the clinic has been established. Sixty-three patients were seen in 35 clinics that were open during this time.

Approximately two thirds of clinic patients are referred from The Alfred's ED following triage, with the remainder referred by Bayside Health's satellite acute hospital, Sandringham and District Memorial Hospital (SDMH) or GPs. Referrals have increased since the clinic opened and the registrar usually sees three new patients each clinic. At least 45 minutes is assigned for a new patient. If required, patients can be admitted to Medihotel beds in the week following referral for intensive work up. There are no data on outcomes following clinic review, but a protocol for referral/follow-up is being developed.

The Alfred is aiming to see patients at the TIA clinic within one week of referral. Patient referred from the Alfred ED would have undergone some initial investigations, such as basic blood tests, ECG and brain CT scan. A process is being considered comprising an overnight referral to the neurology registrar, who would screen The Alfred history and, if possible, arrange further basic investigations such as carotid duplex/MRI/echocardiogram before the patient is seen in the clinic. This would allow an efficient 'one-stop' process.

It is considered that increasing the referral base from SDMH, where there is no neurologist available, and GPs is feasible and would lead to improved outcomes. A stroke nurse practitioner role could facilitate existing and proposed activities. A database would assist in monitoring and reporting outcomes.

Establishing additional TIA/neurovascular clinics would improve interdisciplinary communication, timely referral of people at risk of a new or subsequent stroke and encourage referral by ED clinicians, medical specialists and GPs. In addition, the development and implementation of standardised referral, a standardised protocol for subsequent referral for appropriate intervention/prevention/follow-up and agreed performance and outcome indicators to monitor and evaluate clinic performance would improve health service performance and benefit patient outcomes.

Considerations regarding establishment of, and practice at, outpatient TIA/neurovascular clinics should include, but not be limited to:

- checking credentials and expertise of clinic staff
- access to existing information (for example, CT from ED presentation)
- equipment (for example, carotid duplex ultrasound)
- referrals from GPs and other regions/areas
- agreed service model of care and recurrent funding requirements
- estimated activity (for example, UK clinical practice guidelines recommend two sessions a week for every 250,000 population, RCP 2004a).

Recommendation 3

Assessment/follow-up of people at risk of having a new or subsequent stroke should be undertaken at TIA/neurovascular clinics. Unless already in place, public health services treating more than 200 acute strokes a year should establish TIA/neurovascular clinics. Access criteria, protocols and requirements to monitor and evaluate the practice and activity of TIA clinics should be developed.

3.2 Stroke is a medical emergency

Stroke should be treated as a medical emergency. New interventions, models of care and evidence-based clinical practice guidelines are being implemented, all of which are demonstrating improved outcomes when treatment is provided early following a stroke. All providers of stroke care should treat stroke as a medical emergency, and developing and implementing protocols for the emergency management of stroke will aid and enhance patient outcomes.

3.2.1 Ambulance retrieval

The Metropolitan Ambulance Service (MAS) and Rural Ambulance Victoria (RAV) have policies and procedures in place to ensure prompt emergency care of people with stroke symptoms, and their transport to the nearest appropriate hospital as quickly as possible. In addition, MAS/RAV *Clinical practice guidelines* specify that a receiving hospital must be notified to ensure an appropriate reception team and facilities are available on presentation (MAS/RAV 2006). The MAS also has *senior clinicians*: senior paramedics that provide advice to paramedics on the road when they request an appropriate course of action or advice regarding patient transport to an appropriate health service.

MAS/RAV transport of people with stroke symptoms should align with role delineation of acute stroke services, as detailed in chapter 4. This is particularly important for people in rural areas, especially as more health services are considering providing thrombolysis for acute stroke, which is time-dependent.

A number of health services have structures in place to ensure that their stroke care team responds promptly to patients presenting to the ED with stroke symptoms. This includes the ED notifying the stroke team that a potential stroke patient is *en route* to, or has arrived in, the ED. In some health services, the stroke care team—not the ED physicians—meets the patient in the ED and assists in providing the relevant care. Anecdotal feedback from health services with such systems in place indicates that ED physicians are comfortable with this approach. Health services capable of treating acute stroke should implement systems to ensure that appropriate emergency medical treatment of acute stroke is provided.

Ambulance transfers to other health services

A person with stroke symptoms should be transferred to the nearest health service providing appropriate investigations and acute stroke care (further details in Chapter 4). If a person with stroke symptoms presents to an ED without rapid access to CT, for example, they should be transferred to a health service with rapid access to CT to ensure that appropriate emergency stroke care is commenced on the basis of accurate diagnosis. Similarly, if the ambulance service is attending to someone with stroke symptoms, the patient should be taken to the nearest health service with rapid access to CT.

Some health services have implemented protocols for transferring patients for appropriate acute stroke care (for example, to a health service providing neurosurgical services following CT diagnosis of haemorrhagic stroke). This process is common in rural areas because all neurosurgical services in Victoria are located at metropolitan health services. After appropriate acute stroke care is provided and the patient is medically stable, their transfer back to the hospital nearest to where they reside is strongly encouraged.

Stakeholder consultation indicated that costs for transferring patients between health services can be substantial. An incentive scheme was established in Victoria to ensure that trauma patients are transported to designated trauma centres, which has improved patient access to appropriate trauma care. The department should examine options that provide appropriate mechanisms to facilitate health service transfer of patients to health services providing emergency stroke care.

Recommendation 4

The Department of Human Services should undertake work to examine options that provide appropriate mechanisms for health services to transfer people who have a stroke to ensure they receive appropriate emergency stroke care.

3.2.2 Emergency management of acute stroke

Time critical emergency care is best provided within the ED. Evidence-based clinical practice guidelines for the emergency management of stroke have been implemented at a number of Victorian EDs (National Stroke Foundation 2003a). Some health services have implemented such protocols (for example, referred patients to another hospital with appropriate clinical services, rapid brain imaging to accurately diagnose stroke type, notified a hospital's stroke team) to ensure that accurate diagnosis informs appropriate emergency treatment, such as thrombolysis to treat acute stroke.

All public health services with the capacity and capability to provide emergency management of acute stroke should implement evidence-based clinical practice guidelines and protocols to ensure that stroke is treated as a medical emergency.

Rapid triage

Timely access to appropriate stroke care can improve patient outcomes. Some EDs have developed and implemented protocols for rapid triage of patients presenting to the ED with stroke or TIA symptoms, which can facilitate fast tracking of patients to brain imaging and appropriate clinical care. All public hospitals in Victoria should develop and implement protocols for rapid triage of patients presenting to the ED with stroke symptoms. In addition, for all cases of acute stroke presentations at the ED, the relevant clinical team responsible for providing appropriate stroke care should be notified as early as possible.

Brain imaging

Timely and accurate diagnosis of stroke aetiology is paramount in determining appropriate treatment. For example, CT diagnosis of haemorrhagic stroke will inform physicians that thrombolysis is contraindicated and that they should consider referring the patient for neurosurgical consultation, which would be facilitated by implementing rapid stroke transfer protocols. Timely and accurate diagnosis of an ischaemic stroke can inform decisions to provide thrombolysis. Accurate diagnosis can also hasten hospital admission. Many EDs have implemented protocols for rapid brain imaging by CT within hours of ED presentation. Evidence-based clinical practice guidelines for the management of acute stroke (National Stroke Foundation 2003a) recommend accurate CT diagnosis within 24 hours of symptom onset, but should be performed sooner if it is considered that thrombolysis may be appropriate.

Recommendation 5

Health services should treat all patients with stroke symptoms as a medical emergency and in accordance with existing evidence-based clinical practice guidelines, which includes but is not limited to:

- rapid triage of patients presenting with stroke symptoms
- rapid brain imaging of patients presenting with stroke symptoms.

3.3 Thrombolysis

Thrombolysis with the clot-dissolving agent tissue plasminogen activator (tPA; currently the only drug approved in Australia for thrombolytic treatment of acute stroke) has only become available in recent years. A Cochrane Review reported that thrombolysis with tPA improves outcomes following stroke (Wardlaw et al. 2003).

Hospitals overseas and in Australia that provide thrombolysis for acute stroke contribute data to an international registry, the Safe Implementation of Thrombolysis in Stroke (SITS), that reports and monitors tPA use as part of an international effort in gathering evidence about its clinical effectiveness. Australian health services that contribute to the SITS registry indicate that the accumulating data supports the use of thrombolysis in appropriately identified patients as resulting in better outcomes.

In Victoria, access to thrombolysis for acute stroke is generally limited to centres with appropriate facilities and expertise, and most are in metropolitan health services. Consequently, patients residing in regional and rural areas are considered less likely to receive thrombolysis because access to a health service providing this service within the three-hour therapeutic window of treatment is limited.

Case study: Thrombolysis at Box Hill Hospital

Box Hill Hospital is a metropolitan teaching hospital with a catchment of approximately 800,000 people in the eastern metropolitan region, of whom 13 per cent are aged over 65 years. It has a four-bed Stroke Care Unit located within the Neurosciences inpatient ward. The Stroke Care Unit admits approximately 480 acute stroke patients a year.

Box Hill Hospital and the Metropolitan Ambulance Service collaborated in a study to transport people having a stroke to the ED as quickly as possible and to develop and implement protocols for rapid triage, rapid brain imaging and thrombolysis (if appropriate). Since these protocols were implemented, informal advice from Box Hill Hospital indicates that:

- door (that is, ED presentation) to CT time is 25 mins
- door to tPA/needle time is under 70 mins
- approximately 12 per cent of all patients with ischaemic stroke receive tPA.

Box Hill Hospital reported that the protocols have enhanced access to appropriate care and improved patient outcomes. A digital imaging system (PACS) has facilitated accurate diagnosis and thrombolysis outside normal work hours because the neurology consultant can access digital images from home and discuss diagnosis and treatment options over the phone.

Stakeholder consultation identified that some EDs have not implemented thrombolysis for acute stroke for a number of reasons, including:

- a belief that emergency management of stroke will not make difference to prognosis if appropriate additional resources are not in place
- a lack of understanding that early stroke care results in better outcomes
- a view that there is insufficient evidence regarding its effectiveness
- lack of health service support for new treatment options
- lack of willingness to generate change that will impact on practice patterns across a number of hospital departments.

In Victoria, a number of regional and rural health services participating in the Rural Organisation of Australian Stroke Teams (ROAST) Program (see chapter 4) currently provide, or are considering providing, thrombolysis. Where this occurs, existing resources have been reallocated to ensure appropriate diagnosis, clinical support and care. Stakeholder consultation also indicated that some rural health services are eager to provide thrombolysis once appropriate clinical support structures are established. The following factors are paramount to ensure thrombolysis is provided in a safe and appropriate service:

- capacity and infrastructure to provide thrombolysis (that is, role delineation)
- agreement with ambulance services to transport stroke patients to an appropriate regional/rural health service with trained/credentialed expertise
- access to clinical (that is, neurology) support from tertiary centres providing thrombolysis
- electronic support to assist with decision making (for example, telemedicine facilities).

Victorian health services classified as level 3 and 4 in the role delineation of acute stroke services (see chapter 4) should provide thrombolysis in accordance with agreed criteria. Health services classified as level 1 or 2 can provide thrombolysis, but it is expected that the criteria detailed above will be met and that appropriate resources are enabled to ensure a safe and high quality practice.

If thrombolysis is an appropriate treatment option, and the nearest health service does not provide thrombolysis, rapid patient transfer protocols to the nearest hospital providing thrombolysis should be implemented to ensure patients have access to this treatment within the clinical treatment time window. In addition, providers of thrombolysis must contribute to the international SITS register to allow ongoing monitoring of outcomes of Australian patients.

Recommendation 6

Acute health services should provide thrombolysis in accordance with role delineation for acute stroke services and internationally recognised clinical criteria, with appropriate neurology support, and provide information on these patients to the international SITS registry.

3.4 Management of acute stroke

3.4.1 Acute stroke care

Stroke care within the acute hospital setting has undergone substantial changes in the past 30 years, with the advent of coordinated stroke management. Much of this is attributed to the stroke care unit, or stroke unit; although these are usually located in most metropolitan public tertiary health services, they are not established in many other health services, particularly in rural areas.

Key characteristics of quality acute stroke care are:

- patients colocated within a designated ward within the inpatient setting
- the presence of a coordinated multidisciplinary team
- stroke team led by a physician with expertise and experience in acute stroke care
- standardised diagnostic *work-up*
- care provided according to agreed protocols
- access to neurosurgical and vascular expertise and management
- teams meeting regularly to discuss management and discharge planning
- early access to rehabilitation within the acute setting before transfer to sub-acute care
- access to rehabilitation experts
- family and carer involvement in acute rehabilitation
- continuing education and training programs for staff
- discharge planning, which considers the role of carers/family members.

In Australia, the National Stroke Foundation (2003a) has produced evidence-based *National clinical guidelines for acute stroke management* in consultation with providers of stroke care across Australia. The National Stroke Foundation has indicated it will update these guidelines in 2006-07 to incorporate new evidence, and that this work has been included on the Australian Government's Health Advisory Committee work plan for consideration by the National Health and Medical Research Council. All providers of acute stroke care across Victoria should be providing care based on these guidelines.

3.4.2 Paediatric acute stroke care

According to the VAED, there were 101 reported cases of acute stroke in children aged <18 years in 2005-06. This is 0.8 per cent of all public sector acute stroke separations. Causes of stroke in children are often different from adults but diagnosis and treatment is similar. Almost 70 per cent of 2005-06 paediatric acute stroke cases were treated at the Royal Children's Hospital, and ten per cent were treated at Monash Medical Centre.

Clinical practice guidelines for the management of stroke in children were reviewed recently by the Royal College of Physicians (RCP 2004b). Protocols for management of childhood stroke that take these guidelines and the Victorian Paediatric Rehabilitation Service (currently under development) into account should be implemented (see below).

3.4.3 Interdisciplinary care

Stroke care providers and policy makers agree that health professionals from different disciplines working as an interdisciplinary team provide optimal stroke care. Interdisciplinary teams are defined as having an approach in which team members from different disciplines collectively set goals and share resources and responsibilities. The shift towards an interdisciplinary approach to care better reflects the person-centred model of care because the interdisciplinary team is accountable for the provision of care, including the physical, psychosocial, spiritual and bereavement needs, of both the patient and the carer/family, to ensure that appropriate care is provided at the appropriate time across all care settings.

An interdisciplinary approach to acute and sub-acute stroke care is preferred over the traditional multidisciplinary approach, and should be incorporated into existing models of stroke care because it ensures that care protocols are adhered to, encourages professional education and training and supports ongoing communication between care providers and the patient and their carer/family to promote shared decision making, resulting in enhanced care provision and improved patient outcomes. Characteristics of the interdisciplinary approach include:

- clients receiving effective and efficient care from the health team member with expertise specific to the person's individual problem
- optimised care planning as the goals of the person, and their carers where appropriate, become the focus of the care plan, with the health care team working together to plan for care that meets this goal
- improved collaboration and quality of care as a result of individual disciplines using knowledge of other disciplines
- teamwork providing coordination to ensure all aspects of the person's care are addressed
- reductions in delays in care provision and elimination of duplication due to the provision of well-integrated and coordinated care based around the person's needs.

Interdisciplinary care contributes to the provision of optimal stroke care, regardless of whether care is provided in a stroke unit in an inpatient ward or in an ambulatory setting. Stroke care providers should implement this approach to stroke care.

Recommendation 7

Health services should provide acute stroke care in accordance with existing evidence-based clinical practice guidelines. Care should address:

- appropriate treatment of acute stroke
- accessing specialist acute services
(for example, neurosurgery, interventional neuroradiology, specialist allied health)
- interdisciplinary care
- commencement of rehabilitation within the acute setting and prior to transfer
- transition between acute and sub-acute services
- inpatient discharge planning
- liaising with community providers
- ongoing care in the community.

3.5 Management of sub-acute stroke

3.5.1 Evidence-based clinical practice guidelines

There is good evidence that application of stroke rehabilitation guidelines can improve implementation of core components of the rehabilitation process, which is likely to result in improvements in service delivery and outcomes (Cadilhac et al. 2004). In particular, rehabilitation clinicians should have early access to patients admitted for acute stroke, with patients ideally commencing their rehabilitation within the acute setting.

The National Stroke Foundation recently published evidence-based *Clinical guidelines for stroke rehabilitation and recovery* (2005a). Produced in consultation with stroke care providers and endorsed by the National Health and Medical Research Council, these guidelines will be revised by 2010. They present recommendations designed to assist health professionals in delivering best care and are organised into four broad categories:

1. organisation of care
2. discharge planning, transfer of care and coordinated community care
3. management of the consequences of stroke
4. living with stroke.

Table 3.1 Organisations that have developed guidelines for management of sub-acute stroke

Region/ country	Organisation	Title of guideline	Year
Europe			
Scotland	Scottish Intercollegiate Guidelines Network	Management of patients with stroke: rehabilitation, prevention and management of complications, and discharge planning – a national clinical guideline	2002
United Kingdom	Royal College of Physicians	National clinical guidelines for stroke	2004a
North America			
Canada	Heart and Stroke Foundation of Ontario	Rehabilitation management	2003
USA	Department of Veterans Affairs and Defence	Stroke rehabilitation: clinical practice guidelines	2003
Asia Pacific			
New Zealand	New Zealand Guideline Group	Life after stroke: New Zealand guideline for stroke management	2003

Providers of sub-acute stroke care should be providing care in accordance with these evidence-based guidelines. A number of overseas organisations have also developed guidelines for sub-acute stroke care. Some of these are listed in table 3.1 above.

3.5.2 National Stroke Care Pathway

As discussed in chapter 1, the National Stroke Foundation has developed an evidence-based care pathway for stroke to guide the care of stroke survivors through the service sectors during their recovery. The care pathway for sub-acute care, or ongoing rehabilitation as it is described in the care pathway, identifies six major areas of activity in the delivery of sub-acute stroke care:

1. assessment: encompassing multidisciplinary assessment with an emphasis on functional independence and achievement of the patient's own goals
2. consultations/referrals: to a range of health providers as determined by the outcomes of the multidisciplinary assessments
3. coordination/review: coordination of the patient's care and multidisciplinary team review of the patient's progress
4. management: provision of multidisciplinary interventions to manage the consequences of stroke relevant to the goals set by the patient and their carer and the development of further management strategies
5. information and support: provision of relevant information and support to the patient and carer including regular communication, information and education, as well as family and team meetings
6. discharge planning: early discharge planning including the consideration of available support services and the goals of the patient and carer.

3.5.3 Paediatric rehabilitation

The Victorian Paediatric Rehabilitation Service was established in 2005-06. Prior to this, children in Victoria who required rehabilitation received care as part of an acute episode of care or within an adult facility. Services were fragmented and uncoordinated, with considerable unmet need. Other jurisdictions, by contrast, have specialist paediatric rehabilitation service providers, which provide inpatient and outpatient services, as well as outreach, training and mentoring programs.

The development of statewide specialist paediatric services for Victoria was a key recommendation of the *Review of Victorian paediatric services* (DHS 2003d). Programs Branch, within the Metropolitan Health and Aged Care Services Division of the department, has been working to establish statewide specialist paediatric rehabilitation services for Victoria. This has involved considerable policy development work in collaboration with a reference group comprising experts and stakeholders in the area.

The vision articulated for the development of Victorian specialist paediatric rehabilitation services is that Victorian children who require specialist rehabilitation will be able to get the level of service they need, when they need it, in the most appropriate location, no matter where in the state they and their families live. This vision is based on the principles of:

- child and adolescent-centred and family-focused clinical care
- evidence-based best practice
- integrated continuum of care from hospital to community
- appropriate links with other services.

The service model will encompass inpatient services and community-based services, including centre-based, outreach and home-based specialist paediatric rehabilitation services. In 2005–06, a Model of Care Working Group was convened to develop practical approaches to implementing this vision within the service system.

In the 2005–06 Victorian Budget, \$1.2 million was allocated for seeding funding for Victorian Paediatric Rehabilitation Services. In 2005–06, these funds established initial inpatient and ambulatory specialist rehabilitation services at the Royal Children’s Hospital and provided a program development grant to facilitate the establishment of a Victorian service involving multiple health care providers.

In the 2006–07 Victorian Budget, a further \$2 million of growth funding was allocated to the Victorian Paediatric Rehabilitation Services. This has enabled the establishment of further beds and ambulatory care at the Royal Children’s Hospital, new beds and ambulatory services at the Monash Medical Centre and the development of specialist ambulatory services at Eastern Health and the Bendigo Health Care Group.

In the longer term, specialist paediatric rehabilitation ambulatory services will also be developed at additional hubs in metropolitan Melbourne and rural Victoria (based at the major public hospital provider and/or CPHI). Significant capacity building of paediatric ambulatory rehabilitation service providers will need to be undertaken over the coming years.

Recommendation 8

Sub-acute stroke care should be provided in accordance with existing evidence-based clinical practice guidelines. Care should address:

- accessing specialist sub-acute services (for example, specialist medical, nursing and allied health)
- interdisciplinary care
- provision of sub-acute care across the care continuum
- transition between inpatient and ambulatory care
- discharge planning
- ongoing care in the community.

3.6 Transition care services

From 2006-07, transition care services will target older people at the conclusion of a hospital admission who require more time and support in a non-hospital environment to complete their restorative process, optimise their functional capacity and finalise and access their longer-term care arrangements.

The aim of transition care services is to minimise the number of older people experiencing inappropriate extended hospital lengths of stay and/or being prematurely admitted to residential aged care. Transition care services will be delivered in an older person's home or within a facility able to provide bed-based services (for example, residential aged care facility, supported residential service or appropriate setting on a hospital campus).

Prior to accessing transition care services, patients must be assessed by an aged care assessment service for transition care and considered eligible to receive permanent residential aged care at least at the low level of care. The average length of stay for people in transition care services in Victoria is expected to be between six and eight weeks. The maximum period for which an older person can be in receipt of transition care services is 12 weeks.

The target groups for transition care services in Victoria are:

- older people who, via participation in the program, may achieve further improvements to their physical, cognitive and psychosocial functioning and an improved capacity for them to live independently
- older people for whom the focus will be on actively maintaining their functioning while assisting them and their family/carer to make appropriate long-term care arrangements.

In Victoria, transition care services will be operated by each major public metropolitan health service. The primary focus will be eligible older people discharged from public hospitals. It is expected that the major regional health services will also operate some services. Transition care services are being implemented in stages, with metropolitan health services commencing service delivery in 2006-07.

The transition care services will be subject to a national evaluation. It is anticipated that some of the people who access transition care services as part of their care episode will have had a stroke. Guidelines detailing the operating parameters for transition care services are available (DHA 2005).

3.7 Palliative care

A palliative approach aims to improve the quality of life for people with a life-limiting illness and their families, by reducing suffering through early identification, assessment and treatment of pain, physical, cultural, psychological, social and spiritual needs. For some people who have had a stroke, palliative care is an appropriate choice of treatment.

The department funds specialist palliative care services across the state. While health services are often involved in the care of people with a terminal illness, the Palliative Care Program provides specialist services that address specific issues such as the management of pain and other symptoms associated with a terminal illness and to provide psychological, social and spiritual support where required or if requested. The Palliative Care Program aims to achieve an integrated service across all aspects of care.

This is supported by the underlying seven principles of the Palliative Care Program:

1. people with a life-threatening illness and their carers and families have information about options for their future care and are actively involved in those decisions in the way that they wish
2. carers of people with a life-threatening illness are supported by health and community care providers
3. people with a life-threatening illness and their carers and families have care that is underpinned by the palliative approach
4. people with a life-threatening illness and their carers and families have access to specialist palliative care services when required
5. people with a life-threatening illness and their carers and families have treatment and care that is coordinated and integrated across all settings
6. people with a life-threatening illness and their carers and families have access to quality services and skilled staff to meet their needs
7. people with a life-threatening illness and their carers and families are supported by their communities.

The department released a major policy document, *Strengthening palliative care—a policy for health and community care providers 2004–09* (2004b). This document provided the framework for palliative care service delivery in Victoria. It stressed that integration of services is fundamental to achieving the ideal service system. Changes to palliative care over 2004–09 include integrating the palliative approach into the practice of all health and community care services as well as strengthening access to specialist palliative care providers. Details are at www.health.vic.gov.au/palliativecare.

The Australian Government Department of Health and Ageing (2004) has released evidence-based *Guidelines for a palliative approach in residential aged care*, which aim to provide support and guidance for delivery of a palliative approach in residential aged care facilities across Australia. The *Clinical guidelines for stroke rehabilitation and recovery* (National Stroke Foundation 2005a) also has recommendations specific to palliative care following a stroke.

Palliative care should be considered for people who have had a stroke if they are unlikely to recover and who are likely to survive less than one year. Palliative care should also be available for people with diverse cultural needs and requirements. An appropriate palliative approach should be provided to people who have had a stroke and who require palliative care, which is consistent with existing guidelines and *Strengthening palliative care—a policy for health and community care providers 2004–09* (DHS 2004b).

Recommendation 9

Appropriate and culturally sensitive palliative care should be provided and communication with carers/family members undertaken in accordance with existing national guidelines and *Strengthening palliative care—policy for health and community care providers 2004–09* (DHS 2004b).

3.8 Measuring performance

Stroke care providers practise across different settings, which results in variation in the type and quality of care provided. Key performance indicators (KPIs), supported by a minimum dataset, measure standards of care that are evidence-based, quantifiable and lead to continuous improvement in care. There are no agreed or defined stroke-specific minimum dataset or KPIs, nor are there KPIs for patient-related outcomes.

Stakeholder consultation indicated that monitoring the performance of stroke care services and patient-specific outcomes is important because it would lead to continuous improvement and improved patient outcomes. Some organisations/agencies have independently developed stroke-specific KPIs for monitoring and measuring health service performance. These mainly focus on processes of care related to the treatment of acute stroke. Examples are provided in appendix J.

3.8.1 Indicators for acute stroke care

A number of agencies have developed KPIs to quantify acute stroke care delivery and some patient-relevant outcomes. Although there is no agreed stroke-specific performance measurement system in Australia, implementation of such would be expected to increase adherence to clinical processes of care and improve patient outcomes.

The National Stroke Foundation, through the work of the National Stroke Unit Program, proposed a core set of process of care performance indicators. It identified that:

...monitoring of performance in Australia for stroke was limited, variation in clinical practice and its impact on outcome is not monitored, existing performance indicators do not address health system issues concerned with availability and access to appropriate stroke care services in Australia or the long-term patient care aspects of stroke required for health services planning. (National Stroke Unit Program 2003b)

Work is underway to review this set of indicators from a national perspective and to develop indicators relevant to the *Clinical guidelines for stroke rehabilitation and recovery* (National Stroke Foundation 2005a). The Greater Metropolitan Clinical Taskforce in New South Wales facilitates clinical networks to improve health care. This taskforce, as part of its establishing/upgrading of 22 acute stroke care units across greater metropolitan Sydney, established a set of performance measures based on those developed by the National Stroke Foundation.

The Joint Commission on Accreditation of Health care Organizations (JCAHO), which evaluates and accredits more than 15,000 health care organisations and programs in the USA, is the predominant standard-setting and accrediting body in health care in the USA. JCAHO's comprehensive accreditation process evaluates an organisation's compliance with these standards and other accreditation requirements. JCAHO also runs a Certification Program for Disease-Specific Care, which includes a comprehensive evaluation of stroke services. Details are available at www.jcaho.org.

The Canadian Stroke Quality of Care Study is piloting 23 KPIs to form a set of performance measures for quantifying acute stroke care in Canada. It is proposed these indicators:

...be used by clinicians, researchers and policy-makers to improve the quality of care for patients with acute stroke and to ensure accountability, facilitate regional comparisons and enable continuous quality improvement (Lindsay et al. 2005).

Hospitals participating in the ROAST Program (see chapter 4) use KPIs developed by the National Stroke Foundation to assess institutional processes of care for the management of both acute and sub-acute stroke. The ROAST data collection forms are in appendix K. ROAST has indicated these KPIs permit continuous quality improvement and will assist in responding to the challenge of introducing new therapies such as thrombolysis.

3.8.2 Indicators for sub-acute stroke care

There are at least two established mechanisms for collecting data and measuring performance and outcomes for sub-acute care in Australia. These are neither complementary nor consistent, however, and they are undertaken in isolation.

The Australasian Rehabilitation Outcomes Centre, established in 2002 by the Australasian Faculty of Rehabilitation Medicine, has developed a dataset for items routinely collected and conforming to the National Health Data Dictionary. Based on the Australian Minimum Data Set for Rehabilitation, the Australasian Rehabilitation Outcomes Centre dataset includes information about the rehabilitation service, the person receiving the rehabilitation, administrative details about the period of rehabilitation care and clinical characteristics. The ROAST Program also collects 12 data elements on rehabilitation/sub-acute stroke care provided by participants (appendix K).

Developing indicators for stroke care

KPIs that measure and monitor stroke-related processes of care and care outcomes in acute and sub-acute settings should be developed and implemented by all public health services, based on existing and validated work, quantifiable and integrated with current health service information management systems. Examples of acute stroke KPIs include:

- time from ED presentation to brain imaging
- time from ED presentation to tPA
- proportion of patients considered appropriate for, and who receive, thrombolysis
- time from ED presentation to inpatient admission
- time from diagnosis to sub-acute referral
- provision of high quality information to carer/family
- swallow assessment within 24 hours of ED presentation
- secondary prevention strategies commenced
- evidence of discharge planning
- referral to outpatient TIA/neurovascular clinic.

Examples of sub-acute stroke KPIs include:

- documented interdisciplinary care plan
- functional outcome assessment
- continence assessment
- cognitive assessment
- depression assessment
- pain assessment
- discharge planning
- follow-up care

In the context of developing and implementing statewide data collection and quantifying performance measures and functional/patient outcomes, consideration should be given to aligning with existing data sets to minimise data collection activities.

Recommendation 10

The Department of Human Services, in consultation with key stakeholders, should develop and implement a statewide performance monitoring system for stroke care management and patient outcomes.

3.9 Clinical support in the community following a stroke

GPs have a pivotal role in preventing the incidence of first and subsequent stroke by monitoring and treating known risk factors for stroke, participating in developing self-management programs for, and improving the quality of life of, people who have had a stroke. GPs are also well positioned to refer patients to or collaborate with, specialist providers of stroke care to further reduce stroke incidence and improve functional outcomes after stroke. GPs also have knowledge of relevant community-based services that some people may require following hospital discharge. GPs should be engaged in the care of stroke survivors as early as possible following diagnosis to ensure ongoing and appropriate clinical care and support.

3.9.1 Monitoring and treating stroke risk factors

The GP plays an important role in reducing the incidence of first and subsequent stroke in the community. There is strong clinical evidence that screening, monitoring and treating known risk factors for stroke. A recent UK study, for example, reported that optimal treatment of atrial fibrillation in the population might reduce stroke incidence by 10 per cent (Hobbs et al. 2005). GPs are best placed to provide this care.

3.9.2 Accessing sub-acute ambulatory care services

SACS provide community rehabilitation in both centre-based and home-based settings with the goal of helping people to regain or maintain function (detailed in chapter 4). These services play a pivotal role in optimising independence and participation in the community for people with stroke in the months and years after the initial episode of acute and sub-acute stroke care.

The *Clinical guidelines for stroke rehabilitation and recovery* present strong evidence for interventions to improve or prevent deterioration in activities of daily living, mobility, fitness and participation in the community (National Stroke Foundation 2005a). The stakeholder consultation highlighted the need for flexible and responsive services after rehabilitation to assist with optimal recovery, adjustment to disability and participation in the community. GPs have an important role in referral to and liaison with SACS services to optimise care. This is particularly important if a stroke survivor requires additional sub-acute care if the need arises some time after the initial sub-acute episode.

3.9.3 Self-management programs

Self-management has been defined as an:

...individual's ability to manage their symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition... to maintain a satisfactory quality of life (Barlow et al. 2002).

Activities associated with self-management approaches cover a range of activities including regular exercise, healthier eating, improved social functioning and symptom control. An important requirement for self-management is the belief in one's own ability to successfully undertake and sustain these approaches. Clients with greater ability tend to be more proactive in the management of their conditions with their health provider.

GPs should be aware of the self-management concept regarding ongoing patient care and how this approach can be valuable for stroke survivors. See chapter 5 for further details about self-management approaches.

3.9.4 Collaborative models of care/shared care

Some health services and GPs have collaborated to develop and implement models of shared care for secondary prevention of stroke. The Royal Melbourne Hospital and the North West Melbourne Division of General Practice, for example, piloted a shared care stroke prevention program whereby hospital clinicians and GPs provided care based on agreed protocols and professional support. The program reported risk factor reduction, streamlining of clinical processes and improved clinical liaison, and improved service profile and clinical reporting. Health services and GPs should work towards developing and implementing shared models of care to ensure ongoing and appropriate clinical care and support.

Recommendation 11

General practitioners should be engaged in the care of stroke survivors as early as possible following diagnosis to ensure ongoing and appropriate clinical care and support, which should include:

- managing known risk factors for stroke
- referring to, and linking with, community rehabilitation and self-management programs
- referring to appropriate specialist clinical services.

4.0 Organisation of stroke services

Key findings

Stroke care

- Optimal stroke care is provided by stroke teams supported by multidisciplinary care.
- Most public acute stroke services have organised acute stroke care such that patients are usually colocated within existing inpatient wards.
- Improved outcomes following a stroke are demonstrated where coordinated processes of care are implemented.

Role delineation

- Determines the support services, staff profile, minimum safety standards and other requirements that ensure specialised clinical services are provided safely and are appropriately supported.
- The level of generalist or specialist acute stroke care service provided depends on the overall capacity of the individual health service, its geographic location, the different levels of skills and expertise that exist and the population it serves.
- Clarifies links between health services providing a differing complexity of care to support appropriate referral patterns to such services.
- Guides individual health service delivery and future planning.

Linkages/referral relationships

- Informal linkages/referral relationships exist between a number of health services.
- Establishing formal linkages/referral relationships between providers of acute and sub-acute stroke care should strengthen existing informal referral pathways between geographically proximate hospital and community services and enhance more effective care coordination.
- Effective bandwidth, health service reimbursement and adequate infrastructure should underpin effective use of telemedicine.
- Telemedicine can facilitate diagnosis and treatment of acute stroke, including thrombolysis.

4.1 Organisation of stroke services

Both acute and sub-acute stroke care have undergone substantial change in the past 30 years with the advent of coordinated stroke management. For acute stroke care, much of this is attributed to the stroke care unit (stroke unit). In addition, rehabilitation commencing early in the acute care setting has improved outcomes.

The organisation of stroke services in both acute and sub-acute settings must include stroke care within existing physical infrastructure and other resources. Role delineation of stroke services provides a framework that can guide health services in how best to organise stroke services. Stroke service organisation and role delineation are discussed below.

4.1.1 Acute stroke service organisation

Stroke units

A stroke unit is defined as a model of organised stroke care. This is underpinned by criteria including the collocation of patients in an inpatient ward who are cared for by a multidisciplinary team with care coordinated through regular meetings (Crump, Talman & Gates 2005, Stroke Unit Trialists' Collaboration 2006).

Patients who receive inpatient care in a stroke unit have been shown to have higher rates of survival as well as being more likely to be living independently in the community. The benefits are most apparent in units based in a discrete ward because this can result in higher intensity of therapy and allows clinical staff to develop specialist skills and contribute to multidisciplinary care as a member of a stroke team (Stroke Unit Trialists' Collaboration 2006, Stegmayr et al. 1999, Glader et al. 2001, Rudd et al. 2005).

Stroke units also improve patient outcomes when 'processes of care' are established and structures that support these processes are enabled (Crump et al. 2005). The Australian SCOPES study found that adherence to key processes of care was associated with improved outcomes (Cadilhac et al. 2004). Such processes included timely and appropriate investigations and assessment within 24 hours, documentation of adherence to protocols and provision of information to patients and relatives. Recent studies have demonstrated that stroke patients not treated in a stroke unit, but in which stroke-specific processes of care were implemented, have improved outcomes approaching those associated with care provided by a stroke unit (Cadilhac et al. 2004, Rudd et al. 2005, van der Walt et al. 2005).

A major driver for a health service to establish a stroke unit is a commitment to reorganise stroke services in a more efficient and centralised manner. The reallocation of medical, nursing and allied health expertise to provide assessment and treatment, and a 'champion' to lead stroke care, contribute to the success of this interdisciplinary model (NSUP 2002). This approach has been undertaken by the health services in Victoria that have established stroke units.

While best practice advocates treatment of acute stroke in a stroke unit, not all health services will have the infrastructure and workforce considered necessary to support this. This is particularly the case for those treating a relatively small number of patients.

Rural Organisation of Australian Stroke Teams

Whilst 10,000 strokes occur in rural Australia annually, it has been suggested that outcomes for rural patients with stroke may be worse than their metropolitan counterparts. Many factors may make this likely. There is a disproportionate ageing of many rural populations, a higher proportion of aboriginal residents, limited access to health services because of travelling distance and difficulty recruiting and retaining health professionals in rural communities.

Recognising the need for greater support in rural areas, in 2004 the Support Scheme for Rural Specialists (a project of the Committee of Presidents of Medical Colleges of Australia and the Australian Government Department of Health and Ageing), funded the Rural Organisation of Acute Stroke Teams (ROAST) project in Victoria, whereby clinicians were supported through educational activities and performance feedback to deliver best practice care in inpatient stroke management. Such support networks have been recommended to encourage adoption of evidence based practice in Australia.

At the time of writing the ROAST project is in its third year of funding and currently boasts the involvement of 21 hospitals across rural Australia managing patients with stroke in their acute and rehabilitation phases of care. Data from the initial six Victorian hospitals has been scrutinised and reveals that the processors of care have been improved by more than ten per cent and compare favourably to levels of care in metropolitan hospitals.

The ROAST project demonstrates that it is quite feasible to deliver best practice care to stroke patients in rural Australia.

Stroke care organisation in Victorian health services

In Victoria, stroke units have been established in eight metropolitan hospitals (The Alfred, Austin Hospital, Box Hill Hospital, Frankston Hospital, Monash Medical Centre, Northern Hospital, Royal Melbourne Hospital, St Vincent's Hospital, Western Hospital), two regional hospitals (Ballarat Base Hospital and Geelong Hospital) and one rural hospitals (Warrnambool Campus of South West Healthcare). Most stroke units are located within existing inpatient wards and were established by reorganising existing health service resources. Regardless of whether acute stroke care is provided in a designated stroke unit or through another type of organised stroke service (for example, a ROAST team), stroke care is provided by an interdisciplinary team of clinical experts that consults throughout a health service and provides continuity of care throughout the patient's hospital stay.

All providers of acute stroke care should reorganise acute stroke services to ensure that all acute stroke patients are geographically collocated within a single inpatient ward to ensure coordinated interdisciplinary care. Where reorganisation is required to achieve this, it should be undertaken by reallocating existing resources. It is recognised that this has already been achieved by a number of health services. Rehabilitation for stroke patients should commence as early as possible within the acute phase of care.

Clinical leadership

A stroke service should be led by a *stroke physician*; that is, a clinician with expertise and experience in treating acute stroke. For most metropolitan health services, a neurologist will undertake this role. For other health services, visiting neurology expertise is not always available. In these cases, other physicians who have expertise or experience in treating stroke should be the primary care providers. In regional and rural areas, where access to neurology expertise is limited, organised stroke care could be led by general medicine physicians, rehabilitation physicians or geriatricians.

Clinical leadership of a stroke service is necessary to ensure provision of a safe and high quality service and support professional development. The stroke physician must have support from health service management, with a governance structure established to support the organised stroke service and appropriate resourcing to ensure optimal stroke care.

Recommendation 12

Acute stroke care should be provided by stroke units that are led by a physician with an interest and experience in stroke treatment and supported by an interdisciplinary team.

4.1.2 Sub-acute stroke service organisation

Patients requiring ongoing care following their acute stroke care management access different services depending on the level of care they have been identified as requiring. The differing health care needs of patients who have had a stroke will determine the most appropriate service for their ongoing care, be it rehabilitation, geriatric evaluation and management or SACS. The treating team determines the care required based on a comprehensive assessment of the patient's capacity for functional improvement.

Sub-acute inpatient care

The sub-acute services provided following a stroke must take into account the ability of the person to actively participate in a rehabilitation program and the need for an interdisciplinary approach to rehabilitative care. These services must also provide the appropriate physical environment, rehabilitation equipment and skilled staffing resources to provide high quality stroke rehabilitation.

Victoria has a designation process for rehabilitation units of more than 20 beds. This designation takes into account the physical and staffing resources required to deliver a quality service, as well as the programs that are available to patients of those services. The rehabilitation designation process was developed in 1995 and will be reviewed in 2007-08 to reflect the changing practices in sub-acute care in recent years.

As with acute stroke organisation, sub-acute inpatient stroke care should be led by an experienced rehabilitation physician with the support of an interdisciplinary team and, ideally, be collocated within the appropriate inpatient environment.

Recommendation 13

People with stroke and who are assessed as requiring rehabilitation and other sub-acute services should receive those in a program that has the following features:

- an interdisciplinary approach to care with a full range of medical, nursing and allied health professionals
- a physical environment that facilitates the rehabilitation process, is enabling for ongoing recovery and is easy to navigate for people who have mobility problems, visual deficits or cognitive impairment
- equipment necessary to facilitate the provision of a quality rehabilitation program.

Recommendation 14

The Department of Human Services should review the current designation of sub-acute services.

Recommendation 15

Sub-acute inpatient care should be led by a physician with an interest and experience in rehabilitation, supported by an interdisciplinary team and collocated within the appropriate inpatient environment.

Sub-acute ambulatory care

Stroke survivors discharged from an inpatient setting can access sub-acute ambulatory stroke care through SACS, which can occur in either a centre-based (for example, a community rehabilitation centre) or home-based setting, depending on the person's needs and preferences, to enable them to maximise their functioning and reintegration into the community.

Regardless of the setting of the SACS provided, people who have had a stroke should have access to the full range of appropriate health care, particularly allied health care, in order to maximise outcomes and reduce ongoing disability. This care should be provided in accordance with evidence-based clinical practice guidelines and should be supported by role delineation of sub-acute stroke service organisation.

Recommendation 16

People with stroke receiving sub-acute care should have access to the full range of medical, nursing and allied health care in an appropriate environment with access to appropriate evidence-based rehabilitation interventions, which is supported by role delineation of sub-acute services.

4.2 Role delineation of stroke services

Role delineation defines the minimum level of clinical services that should be provided by a health service to achieve a defined level of care. Role delineation depends on facility standards, a capacity to meet standards of care, and a population base of a sufficient size to generate a large enough workload for the maintenance of high-quality, safe and effective services. Role delineation can help to ensure that care is delivered equitably and efficiently in relation to geographic and demographic factors.

The level of service prescribed by role delineation describes the complexity of the clinical activity undertaken, which is chiefly determined by the presence of appropriate health care personnel who hold qualifications compatible with the defined level of care. Necessary support services for a defined level of care within a facility should be identified. Adequate formal appointment and credentialing processes are mandatory.

Role delineation promotes best practice patient care within existing infrastructure and resources, supports care paradigms specific to a clinical service and facilitates the strengthening of links between health services through continuing education, research and other identified initiatives. Role delineation considers the continuum of care and encourages linked, rather than stand-alone, services.

Both New South Wales and Queensland have developed and implemented role delineation for health services in a range of clinical specialities (Statewide Services Development Branch 2002, Queensland Health 2005). The aim of these is to guide health services in describing the services they provide and act as a tool for planning service developments. As indicated above, these frameworks delineate minimum requirements for the provision and planning of health services.

In Victoria, role delineation for cancer and maternity services is being implemented and underpins the delivery of clinical services in rural Victorian areas (CCORE 2003, DHS 2004a). The frameworks indicate access to appropriate expertise to ensure optimum care is provided in accordance with the infrastructure and services available within a health service.

The National Stroke Unit Program developed a stroke service model that aimed to ensure equity of stroke care for all Australians (NSUP 2002). This policy document acknowledges that it is not feasible to establish stroke units in all health services because of a range of factors, including resources (for example, infrastructure, facilities) and access to expertise in rural areas. The stroke service model (that is, role delineation for acute stroke services) was developed expressly for this reason.

This strategy introduces role delineation for public sector acute stroke services. Based on the NSUP stroke service model (2002), implementing role delineation will guide individual health service considerations of the developments and planning required should they wish to provide a particular level of acute stroke service.

Table 4.1 Role delineation of acute stroke services in Victoria

Characteristic	Element	Level 1*	Level 2	Level 3	Level 4
Services					
<i>Medical/nursing</i>	Neurosurgery services	-	-	-	+
	Interventional neuroradiology	-	-	-	+
	Stroke physician	-	±	+	+
	Stroke nursing	-	±	+	+
<i>Allied health</i>	Neuropsychology	-	-	+	+
	Occupational therapy, speech pathology and dietician	-	+	+	+
	Physiotherapy and social work*	±	+	+	+
Specialised diagnosis/treatment					
	Rapid triage of stroke/TIA	+	+	+	+
	Computerised tomography	-	+	+	+
	Magnetic resonance imaging or digital subtraction angiography	-	-	±	+
	Capacity to deliver stroke thrombolysis	-	±	+	+
	Outpatient TIA/neurovascular clinic	-	-	+	+
Service/care organisation and physical facilities					
	Acute stroke care collocated in an inpatient ward	-	±	+	+
	Interdisciplinary team	-	+	+	+
	Specified director, stroke services	-	-	+	+
	Intensive care/high dependency unit	-	±	+	+
	Stroke care facilitator	-	-	+	+
	Telemedicine facilities for clinical and professional support	+	+	+	+
Education and research					
	Leading education and research initiatives	-	-	+	+
	Participating in education and research initiatives	+	+	-	-

Key:

+ Onsite access

- Offsite access

± Could have onsite access

+ Yes

- No

± Could have

*It is suggested that these services could be provided in a community setting rather than in level 1 facilities.

*While level 1 facilities are unlikely to provide accurate diagnosis or high-level acute stroke care, they can provide acute stroke care in appropriate circumstances

4.2.1 Role delineation of acute stroke services

Role delineation of acute stroke services provides a framework for health service planning over the next five to 10 years, and identifies the necessary components and supports for providing a specific complexity of stroke care. A four-level classification, presented in table 4.1 and summarised in table 4.2, identifies the minimum criteria necessary to support acute stroke care at a particular level. Role delineation also guides health service planning consideration should more complex stroke care be required.

A higher classification indicates a more comprehensive level of care and identifies necessary components and supports for providing a specific complexity of stroke care. Level 1 stroke services, for example, would not have CT imaging on site and could not support rapid diagnosis of stroke to inform appropriate emergency or high-level acute stroke care. Where components of care are unavailable, role delineation ensures that formal protocols to facilitate links and referral patterns are established to ensure access to the necessary elements of stroke care.

Role delineation of acute stroke services should:

- be based on the existing infrastructure and resources available within a facility
- Not be directly or strictly linked or benchmarked to stroke caseload, but there is an expectation of at least level 3 service for health services treating more than 200 acute strokes a year
- support the population catchment
- be underpinned by appropriate links between health services, and across care settings and sectors, to ensure adequate and timely access to specialist stroke care
- facilitate health service consideration of how resources might best be allocated to support optimal stroke care within existing constraints.

Each health service should align itself with a particular level of stroke service to facilitate optimal acute stroke care within existing resource and physical capacity. At all levels, considerations will have to be made to ensure that provision of appropriate stroke care incorporates:

- care coordination
- informing patients and carers about treatment options
- referring patients to outpatient TIA/neurovascular clinics
- transitioning patients from one sector/setting to another sector/setting.

To support high quality emergency care of people with stroke, a geographic focus for acute stroke services in rural areas is required. At least one level 3 acute stroke service should be available within each rural region.

Recommendation 17

All health services should implement role delineation for acute stroke services to guide service delivery and future planning and ensure provision of the appropriate level of acute stroke care and expertise in accordance with infrastructure and resources. Role delineation will also ensure health services establish appropriate linkages and referral processes to ensure that people with stroke have access to appropriate expertise and resources as required.

Table 4.2 Summary of role delineation level classifications for acute stroke services

Service level	Descriptor
Level 1	• Would not be capable of providing emergency or high-level acute stroke care because it does not have the necessary infrastructure to support such care. • Would only be capable of providing acute stroke care when it is appropriate to do so (for example, palliative care close to home, informed choice of a patient wishing to remain close to home). • Would not have access CT, MRI or digital subtraction angiography services to support quick and accurate diagnosis of stroke. • Would have protocols for the rapid triage of patients to ensure rapid access to emergency stroke care. • Would not provide public outpatient TIA/neurovascular clinic. • Would be able to access relevant medical, nursing and allied health expertise via telemedicine. • Would generally participate in education and research initiatives. • Would have links with higher level services to meet other requirements in the continuum of acute stroke care.
Level 2	As for level 1 services plus: • Would be capable of providing emergency or high-level acute stroke care because it would have some of the necessary infrastructure to support such care. • Could have access to medical, nursing and allied health stroke expertise. • Would have CT on site to support quick and accurate diagnosis of stroke. • Could provide thrombolysis if the appropriate links and support were in place. • Could collocate patients within an inpatient ward. • Care would be provided by an interdisciplinary team. • Would provide all elements of allied health care except neuropsychology. • Could have access to ICU/HDU.
Level 3	As for Level 2 services plus: • Would have the necessary infrastructure to support the provision of emergency or high-level acute stroke care. • Could have MRI or digital subtraction angiography services on site. • Would have access to medical, nursing and allied health stroke expertise. • Would provide thrombolysis. • Would have access to ICU/HDU. • Would be able to provide public outpatient TIA/neurovascular clinic. • Would generally lead education and research initiatives.
Level 4	As for Level 3 services plus: • Interventional neuroradiology services would be available on site. • Neurosurgical services would be available on site.

4.2.2 Role delineation of sub-acute stroke services

Sub-acute services, which comprise both inpatient and ambulatory components, are detailed in chapter 3. In Victoria, sub-acute care is provided by public and private providers in hospital and community settings. Sub-acute orthopaedic and stroke patients are the major users of sub-acute services. Because sub-acute stroke services are provided through an existing sub-acute service structure, role delineation of sub-acute stroke should not be considered or developed in isolation. Role delineation of sub-acute stroke must fit within role delineation for sub-acute services overall.

As with role delineation for acute stroke services, role delineation for sub-acute services should distinguish level classification that considers:

- medical, nursing and allied health services
- diagnostic, intervention and other clinical services
- service organisation and physical facilities
- participation in education and research.

Role delineation for sub-acute services has been considered but has not been developed or implemented in Australia. The first attempt at developing role delineation for sub-acute services in an Australian context was presented in the discussion paper that informed this strategy's development (DHS 2005d). This framework proposed a four-level classification, summarised in table 4.3 below, for service characteristics including staffing, service delivery settings, level of complexity, service mix, service system relationships, service type and other requirements that ensure sub-acute services are provided safely and are appropriately supported. As with acute stroke service role delineation, appropriate links between acute and sub-acute health services ensure adequate and timely access to sub-acute services.

Table 4.3 Summary of proposed role delineation for sub-acute services

Proposed classification	Descriptor
Level 1	Care is provided by generalist allied health providers, nurses and a general physician with relevant knowledge in rehabilitation principles and practice. The service provides less complex rehabilitation, usually involving a single discipline approach, and can provide slow stream rehabilitation, maintenance and support. A possible example of where sub-acute care level 1 may occur is a hospital outpatient clinic.
Level 2	Care is provided by an interdisciplinary team with access to a consultant in rehabilitation medicine or a geriatrician. A suite of rehabilitation services is available in a setting supporting the rehabilitative approach. A possible example of where sub-acute care level 2 may occur is in community rehabilitation centres (CRCs).
Level 3	Specialist rehabilitation services are delivered in the hospital, community and home settings, as part of CPHIs, and provide definitive care for complex rehabilitation patients. The level of complexity able to be accommodated at a CPHI includes specialist rehabilitation and specialist assessment and management. Service is provided to inpatients, outpatients and in an outreach service in a shared care model.
Level 4	This level denotes definitive care for highly complex, low volume patients (for example, acquired brain injury, burns, spinal and paediatric patients) whose care requires specialised expertise. It relies on a critical mass of expertise.

Roles should be delineated for sub-acute services as a whole. This work will be informed by reviewing the designation of rehabilitation services in Victoria, identified in recommendation 14.

Recommendation 18

The Department of Human Services should develop role delineation to guide service delivery and future planning of all sub-acute services, including sub-acute stroke services.

4.3 Linkages and referral relationships between health services

Access to acute and sub-acute stroke care varies between health services. Some health services have collocated acute and sub-acute services, for example; others have acute and sub-acute services located a short distance apart. Many health services do not provide all components of either acute or sub-acute care, especially in rural areas.

Establishing formal linkages and referral relationships between providers of acute and sub-acute stroke care is critical to ensure that optimal stroke care is provided by the appropriately resourced provider at the appropriate time. While role delineation provides a framework for organising stroke care within a health service, regardless of its location, it does not provide a means for connecting, or linking, adequately resourced health services that can provide appropriate care.

A corollary of proposing role delineation for acute and sub-acute stroke care is that the following formal linkages be established between all providers of acute and sub-acute stroke care to achieve optimal stroke care across Victoria:

- acute inpatient services to other acute inpatient services of differing complexity
- acute inpatient services to sub-acute inpatient services
- acute inpatient services to transitional care services (acute/aged care interface)
- acute inpatient services to home-based and centre-based rehabilitation services
- sub-acute inpatient services to sub-acute (inpatient and ambulatory) services.

These linkages should span metropolitan and rural areas to ensure that the full range of stroke care, up to and including the most complex level of care proposed in role delineation, is available across the state. Informal linkages/referral relationships already exist between health services and have developed for various reasons. Such relationships include health services comprising more than one hospital campus, professional relationships between physicians sharing knowledge of services following clinical rotations at different health services and the location of health services (that is, nearest higher level of complexity health service). These are not always clear, however, and may not exist in some health services. This has implications for access to appropriate and timely care and family/carer support. Stakeholders have identified a number of issues, some of which are detailed below, that can compromise stroke care.

Out of area prioritising

Some people admitted for acute stroke care in a health service not close to where they reside are referred back to their local community at a lower priority for access to sub-acute services than people who received their initial treatment in the nearest acute health service.

Referral from metropolitan health services

Anecdotal evidence indicates there are well-established referral relationships between acute and sub-acute service providers in rural regions. The referral relationships are less clear when a person residing in a rural region receives their acute care in a metropolitan hospital or lives in a metropolitan/rural or rural/border area. Concerns exist that appropriate referral back to the major regional provider of sub-acute services may not always occur for such patients.

Referral to providers of more complex care

Similarly, appropriate care may not be provided in an acute hospital where a patient with stroke initially presents, but appropriate treatment can be provided at another acute hospital (for example, for patients residing in a metropolitan or rural region requiring more complex care, such as neurosurgery). The referral relationships between acute hospitals of differing complexity, particularly when more complex care is required, are not clear.

The following three case studies of best practice demonstrate how appropriate linkages can lead to optimal outcomes following a stroke.

Patient A

A 65 year old man living in Ballarat visiting family in Melbourne presented to the ED at a major metropolitan hospital with tingling of the left upper arm and unsteady gait. A diagnosis of a brain stem stroke was made and he was admitted to the stroke unit. On day one he underwent MRI. Other complications included type II diabetes, hypertension, ischaemic heart disease and dyslipidaemia. It was noted that he lived in a mobile home in central Ballarat.

On day four he was referred to another metropolitan hospital for a rehabilitation assessment. Following assessment, further rehabilitation at his local regional hospital was recommended. On day five, details of the reasons for inpatient rehabilitation were faxed to the local regional hospital. These included residual left leg weakness and decreased peripheral vision with a history of retinopathy. On day eight he was transferred back to his local hospital for rehabilitation.

The patient was then discharged to his own home with the Rehabilitation in the Home Program and Meals on Wheels on day 18 post-stroke with follow-up appointments arranged back at the major metropolitan hospital (where he was initially admitted) in the next three months.

Comment: This case represents a smooth transition for a man with diabetes who had a stroke presenting at a major metropolitan hospital and was transferred back to his local regional centre. The only caveat was the outpatient follow-up at the major metropolitan hospital, which presented significant costs and inconvenience to the patient. A suggestion is that there should be better documentation of what outpatient facilities are available in regional centres to meet these needs, particularly in relation to post-stroke follow-up.

Patient B

A patient was admitted to a rural hospital with a large left pre-frontal and parietal infarct, no motor return and significant impairment of conscious state. A review was arranged two weeks post-admission by an Aged Care Assessment Service with a medical component. When the patient's conscious state had improved with no language or motor return, it was felt that the patient was likely to need nursing home care; however, in order to improve outcomes and minimise nursing requirements in a nursing home, a transfer to the rehabilitation unit of the local regional hospital for a period of intensive rehabilitation and assessment was arranged.

The patient was admitted for a period of six weeks. The patient made some improvement in function and handicaps were better managed. The family was educated and subsequently elected to take the patient home rather than have the patient admitted to nursing home care because of the improvements that had occurred during rehabilitation.

Comment: The ability of a major regional hospital to take people from smaller rural hospitals for trials of rehabilitation is only possible with an understanding from the smaller rural hospitals that, should the rehabilitation not be successful and not lead to a home discharge, the patient can transition in the rural hospital while awaiting an appropriate residential care bed. Also there is an understanding with the rural hospitals that if an extensive service package is required, while the disability and handicap is well defined and the care needs are clear cut, the practicality of putting that package together is often best done from the rural hospital environment. A patient may also be admitted back to the rural hospital so that modifications to a house and a support network can be put in place.

Patient C

A 79 year old woman was admitted to a private hospital with a left middle cerebral artery infarct, secondary to atrial fibrillation resulting in a right hemiparesis, and a severe expressive and receptive dysphasia. Her conscious state was impaired and she was dependent in all aspects of care. She was assessed as not being appropriate for transfer to rehabilitation, and arrangements were commenced for a transfer to nursing home care. Her level of consciousness subsequently improved, however, and a review regarding rehabilitation options was requested. Her family indicated they were keen for her return home if possible. She was accepted for a trial of rehabilitation. Because of the severity of her stroke and the anticipated long stay for inpatient rehabilitation, her only option for rehabilitation was in the public system. She was transferred to the rehabilitation unit after a seven week acute care admission. Progress in rehabilitation was slow but uncomplicated. Goals were eventually achieved and she and her family remained keen for discharge home rather than residential care.

The patient was discharged home after a 10 week inpatient rehabilitation program. She initially required a home-based program post-discharge to closely monitor safety at home and the burden of care on her husband. She was assessed as unsuitable for admission by her geographical rehabilitation in the home (RITH) service, so arrangements were made for her to be managed by the treating hospital's RITH service, with some initial home-based therapy provided by her inpatient physiotherapist and occupational therapist. The inpatient and RITH therapists had joint treatment sessions in the patient's home to ensure adequate handover of a complex scenario. Local services were used to assist with personal care.

The patient continued to improve functionally following her discharge and was transferred from the RITH program to a local CRC. She is able to walk short distances with a wheelie walker at home and receives daily personal care assistance.

Comment: This case illustrates the potential benefits of providing specialised rehabilitation for patients who have had severe strokes. If this woman had not been accepted for rehabilitation, she would have been discharged to permanent nursing home care. She was very dependent initially, and required a relatively high intensity rehabilitation program to achieve the functional gains necessary for return home. The rehabilitation unit was prepared to accept that she would require a long inpatient admission, which is not easily accommodated under the rehabilitation funding model. It is unlikely that a private rehabilitation facility would accept this patient, and many public units would also not have offered rehabilitation.

There does not appear to be any overall consensus regarding the criteria for admission to rehabilitation, or whether a patient should be transferred to a rehabilitation unit or a GEM unit. In general, these patients would be transferred to the rehabilitation unit rather than the GEM unit because of the degree of specialisation and intensity of rehabilitation therapies available.

Admission criteria for home-based therapy services vary. Flexibility by this hospital's RITH program allowed this discharge to occur, but may not have been supported in other regions.

Handover protocols are important in ensuring continuity of care and, ultimately, the achievement of post-discharge goals. Joint sessions between the inpatient and ambulatory program therapists can be an effective way of ensuring that goals are identified and appropriate therapy is continued.

Establishing formal linkages between acute and sub-acute stroke care providers will strengthen informal referral pathways between geographically proximate hospitals and community services, and lead to more effective stroke care coordination. Where possible, these linkages should be geographically aligned along existing metropolitan and rural boundaries. They should address all levels of care, and also consider existing and logical referral patterns to facilitate timely and quality care. For example:

- A patient who may be a candidate for thrombolysis should be transported to the nearest appropriate health service able to provide this treatment, not necessarily the nearest health service.
- Patients who require neurosurgical intervention and present to a rural health service should be transported to the nearest metropolitan health service providing neurosurgery.
- A patient referred to a regional or metropolitan health service for accurate diagnosis and more complex intervention should be referred back to the centre closest to where they reside as soon as clinically indicated.

MAS and RAV are expected to continue to provide appropriate support to refer stroke patients to the most appropriate health service. This will ensure that the optimal stroke care is provided.

Recommendation 19

Health services should transfer/refer patients to appropriate acute stroke services for accurate diagnosis of stroke and transfer patients – when clinically appropriate – back to acute or sub-acute settings close to where they reside.

Recommendation 20

Health services should establish linkages and develop referral pathways and protocols with hospitals that receive their patient transfers and/or referrals to facilitate timely and smooth patient transition.

4.4 Telemedicine

Telemedicine is the use of telecommunications technology for the purposes of clinical diagnosis, treatment and monitoring where distance and/or time separates the patient from a clinician. It can comprise a phone call from one clinician to another, video-conferencing between local providers and patients in a case conference with clinicians geographically located elsewhere, and providing guidance on complex interventional procedures. Sending an email of a CT scan—for example, from a rural hospital to a metropolitan specialist—is another example of telemedicine. Telemedicine facilities can exist at health services, in GP clinics, in specialists' consulting rooms and homes.

Canada and the USA are leading the way in the use of telemedicine for diagnosis and treatment of acute stroke, including thrombolysis, for patients residing in rural areas (Hersh et al. 2006). It is recognised, however, that access to appropriate telemedicine equipment, to medical, nursing and allied health expertise, to timely diagnostic images, and to effective bandwidth underpins effective use of telemedicine.

In its policy document, the NSUP (2002) reported that 160 health services in Victoria were equipped with video-conferencing facilities. This included a generic video-conferencing infrastructure able to be used for any telehealth application. It is not clear whether these facilities are currently operational, whether they are currently used for any telehealth application, or whether there is any hub and spoke system established for linking rural and metropolitan clinicians to facilitate diagnosis or treatment of stroke.

Effective bandwidth is important for effective telemedicine. The telecommunication lines must be of sufficient capacity to ensure that data, be it sound, vision or diagnostic images, are communicated in real time without disruption. This is crucial when patients are participating in a video-conference or when images, such as CT scans, are being viewed, particularly when considering stroke diagnosis and therapy.

Stakeholder feedback suggests that emailing CT scans – for example, from rural to metropolitan physicians – to confer over diagnostic and treatment issues is likely to represent the preferred mode of telemedicine communication. If this is to be the case, telemedicine infrastructure is less likely to be an issue because effective computer-to-computer communication will be the requirement, which is considered to be underpinned by effective broadband. It is not clear, however, whether all health services have broadband access for fast access to diagnosis and treatment.

Another significant issue regarding the use of telemedicine in Victoria pertains to reimbursement for clinician time. GPs can claim reimbursement for participating in case conferences via telemedicine; however, health services are not reimbursed for telemedicine consultations, nor is it clear how health services account for telemedicine consultations. This is likely to be a barrier to implementing effective telemedicine for optimum care.

Telemedicine would facilitate effective diagnosis and treatment of acute stroke, particularly in rural areas. The establishment of a hub and spoke model spanning metropolitan and rural areas would encourage the use of telemedicine in geographically defined areas to ensure that physicians, nurses and allied health staff in rural areas could access expertise located in metropolitan areas.

To achieve this, an assessment of telemedicine requirements, current infrastructure and consideration of standards and processes for telemedicine is required. A review of funding models for secondary consultation with health services is also required.

Recommendation 21

To facilitate the use of telemedicine by health services in the diagnosis and treatment of stroke, particularly for improving access to clinical expertise and quality of care for rural patients, the Department of Human Services should:

- assess telemedicine requirements and current infrastructure for public health services across Victoria
- review funding models to facilitate secondary consultation.

5.0 Patient and carer/family support

Key findings

High quality written information about stroke

- The quality and consistency of written information about stroke and treatment options provided to people who have a stroke and their carers/family members is variable. Many hospitals do not provide any written information.
- People who have had a stroke and their carers/family members want consistent and high quality information about stroke and treatment options before they are discharged from hospital.
- The National Stroke Foundation (2005c) has produced a *Stroke survivor kit* for consumers and is developing consumer-friendly versions of its acute, rehabilitation and recovery and clinical practice guidelines.
- Consistent and high quality written information about stroke and available treatment options should be provided to patients and carers/family members throughout the episode of care and prior to hospital discharge.
- Relevant information could be developed in consultation with, and distributed by, GPs to patients with identified risk factors to reduce stroke incidence in the community.

Care coordination throughout the continuum of care

- Stakeholders have indicated a lack of coordination and communication to ensure that carers/family members understand what is occurring and why throughout the care continuum.
- Care coordinators can also access clinical psychology, grief counselling, pastoral care services and interpreters for the culturally and linguistically diverse community.
- A number of acute health services have already identified a single point of contact for carers/family members.

Returning to the community

- Some patients and carers/family members want to be able to share their experiences through community stroke support groups.
- Self-management programs allow stroke survivors to take greater control in their recovery and, where implemented, demonstrate an improved quality of life.
- Stroke survivors and their carers/family members want to know about community-based services and programs that might assist in the ongoing care of someone who has had a stroke.

For many people, acute hospital stay is a time of information overload. It is often not until days or weeks later, particularly after a stroke, that people will begin to understand what has happened, ask questions and seek detailed information about why it has happened, treatment options and relevant clinical and non-clinical support structures.

A number of issues were identified in the stakeholder consultation process regarding provision of care and support for patients and their carer/family member throughout the continuum of care, including:

- access to consistent and high quality written information about stroke
- shared decision making with providers regarding appropriate treatment options
- coordination of care services throughout the episode of care
- accommodation for carers/family members
- palliative care services following a stroke
- access to aids and equipment for independent living
- post-discharge community-based support services.

Stakeholder consultation also identified that some clinicians lacked sensitivity in communicating a poor prognosis for someone who has experienced a stroke.

In 2004, the Australian National Health and Medical Research Council (2004) released its *General guidelines for medical practitioners on providing information to patients*. These guidelines aim to foster better communication between doctors and patients so that patients are able, along with their doctors, to make the best decisions about their medical care. Many of the issues detailed below were also identified as part of the Clinical Systems Support Project about the provision of acute stroke care that was undertaken at a number of Victorian metropolitan and rural hospitals (CSSP 2004).

5.1 High quality written information about stroke

People who have had a stroke, their carers/family members and stroke care providers agree there is verbal information overload when someone is admitted to hospital for acute stroke care. It is also agreed that much of this information is not taken on board, or is quickly forgotten, due to the clinical crisis occurring.

Information about stroke, and its treatment options, provided to carers/family members is inconsistent. Many providers—particularly those in public health services—provide brochures produced by the National Stroke Foundation to carers/family members. Some health services indicated they have developed their own written information for carers/family members, but it is not known whether this information is similar to information produced by the National Stroke Foundation. Many health services do not provide any written information.

In 2005, the National Stroke Foundation (2005c) produced its *Stroke survivor kit*, which included a journal, discharge plan, emergency response fridge magnet, information about secondary prevention of stroke, contact details of state stroke associations and various national organisations. The National Stroke Foundation is encouraging providers of stroke care to give these, along with associated verbal information on its use, to carers/family members prior to hospital discharge.

The National Stroke Foundation has also developed the following three consumer guidelines booklets National Stroke Foundation (2006b), which are based on information in the evidence-based clinical guidelines for the management of acute stroke and rehabilitation and recovery:

- *Early testing and treatment*
- *Stroke rehabilitation*
- *Long term recovery.*

It is considered that a kit containing the information and items identified above should be provided by all care providers to all patients and their carers/family members throughout the episode of care, and certainly prior to hospital discharge. This can be used as a resource and referred to when required, even after returning home. A variation of the kit could be developed with, and distributed by, GPs who can pass them on to patients with stroke risk factors. Such a kit should contain, as a minimum, the following information:

- symptoms of stroke and TIA
- secondary prevention strategies
- locations and contact details of community stroke support groups/programs
- details of community services providing/supporting self-management programs
- details of community services providing relevant ongoing care and support
- details of carer support programs
- information and contact details for the National Stroke Foundation and state stroke associations
- relevant websites.

The *Stroke survivor kit* and consumer guidelines booklets can be ordered through the National Stroke Foundation website at www.strokefoundation.com.au

Recommendation 22

Information about stroke and treatment options should be provided to patients and their carers/family members throughout the care continuum to allow participation in decision making and ensure that personal choices, values and beliefs are considered in accordance with evidence-based guidelines.

5.2 Care coordination throughout the continuum of care

Care coordination is a much debated and complex concept. The relationship between care coordination and continuity of care is often not clear. The two terms are poorly defined and are often used interchangeably. Care coordination 'is a multi-faceted approach to achieving continuity of care' (Woodward et al. 2004), and continuity of care is 'an outcome of care as experienced by the patient' (Strumberg 2003).

Ideally, a patient should experience their care as connected and coherent—that is, to have their care delivered in a logical and timely fashion—consistent with their medical and personal needs (Haggerty et al. 2003). Continuity of care is achieved for patients when a provider knows what has happened in the past, different providers agree on the management plan and a provider who knows them will care for them in the future (Woodward et al. 2004).

Care coordination encompasses multiple aspects of care delivery, including multidisciplinary team meetings, psychosocial assessment and provision of required care, referral practices, data collection, development of common protocols, information provision and individual clinical treatment. Dedicated care coordination roles are often perceived as the only mechanism through which care is coordinated. Such roles already exist in a range of settings. The interpretation and implementation of current care coordinator roles varies widely, based on location, volume and institutional focus. Many of the functions required for coordination are not clearly or exclusively clinical roles and have a major administrative and communication component. This is evident in certain health care fields that place the GP, or even the carer/family member, in the role of care coordinator.

Coordinated care has been highlighted in a number of clinical areas. An approach that recognises the function of facilitated continuity of care by taking a whole of system approach, as opposed to supporting individual patient care management, is considered to provide better care coordination.

The department is currently undertaking policy development in this area. The objective is to develop and implement measures to ensure that people have timely access to high quality services and treatment options and the psychosocial needs of the patient and their carer/family are met.

Stroke care coordination—challenges

Stroke care is complex and challenging for both care providers and consumers. Most people who have a stroke are seen by many health professionals within and across multiple health services and across different health sectors. Stroke represents a significant burden to patients and their families, the health system and the community.

The need for improved delivery and care coordination of the following components of stroke care could improve outcomes for patients and their carers:

- providing consistent and high quality written information about stroke
- interfacing between ED and neurology clinicians and processes
- timely access to, and notification of results of, diagnostic assessment that may inform specific treatments
- referring patients to other, more appropriate, health services
- discharging patients to the community or other health services.

Because stroke care is complex and requires input from a range of care providers at different times and for different reasons, many stroke patients and their carers can become confused about what is happening. A number of health services have nominated a key contact—usually a nurse, but could be any member of the multidisciplinary team—as the single point of contact for the patient, carer and clinicians providing stroke care, who effectively navigates the system with the patient and carer.

Stroke care coordination—the way forward

Victoria's strategic focus on care coordination acknowledges the need to redesign systems of care moving towards building relationships between health care providers as a means of ensuring that care coordination becomes the function and responsibility of the multidisciplinary team and not just the individual (care) coordinator. Much of the work leading to coordinated care is based on improving communication and systems that support patient care and information sharing within and between stroke services. Activities or initiatives for improving care coordination largely occur behind the scenes, and are less tangible to patients and carers.

It is anticipated that, despite the complexity of stroke and stroke care, the majority of patients with a stroke will have their care provided according to protocols or a care pathway. These should provide appropriate guidance for care coordination. Stroke care providers should nominate a single point of contact for carers/family members of people who have had a stroke. These people will also be responsible for ensuring ongoing communication between the stroke workforce and the patients and their carers. This role would also coordinate other needs of patients and their carers as required, including:

- access to information about stroke and its treatment
- clinical psychology, grief counselling and pastoral care; ideally this would include access to culturally and linguistically appropriate staff
- the use of interpreters for the culturally and linguistically diverse community; this is an issue for a number of health services and can cause delays in communication with patients.

Currently, access to these resources is inconsistent. While stroke providers should ensure that care coordination is provided according to evidence, work should be undertaken to guide the implementation of coordinated stroke care. This work should be informed by the broader policy on care coordination being developed by the department, and should support the following key principles to guide care coordination initiatives for stroke care:

- patients, their carers and families affected by stroke are at the centre of care
- care coordination initiatives should take into consideration the continuum of care including the various health sectors involved in the delivery of stroke care
- care coordination initiatives should take into consideration rural/regional and metropolitan contexts of care.

This initiative should lead to implementing measures to provide optimal stroke care including, but not limited to, timely access to high quality services and treatment options, meeting social and emotional needs of patients and families, facilitating access to sub-acute services and ensuring appropriate community-based care post-discharge.

Recommendation 23

Health services should identify for each patient and their carer/family member a single point of contact who will be responsible for ensuring ongoing communication between the stroke care team for that patient and their carer. This role would also coordinate other needs of patients and their carers as required.

Recommendation 24

The Department of Human Services should undertake work that will guide health services in the implementation of coordinated stroke care.

5.3 Returning to the community

The reality of having a stroke and living with the consequences does not usually become apparent until after a stroke survivor is discharged from hospital and returns to the community. It is often at this time that stroke survivors and their carers struggle, not just because of the deficits induced by the stroke, but also because they are often not aware of community-based support services and programs that might be available.

Stakeholder consultation indicated a strong and consistent view from stroke survivors and their carers/family members of a need to access community-based support services and programs. Such services and programs can provide, for example, support for the grief and fear associated with factors such as disability, lifestyle change, loss of roles and loss of independence following stroke. These can lead to depression, which is increasingly being recognised in people following stroke. Providers acknowledge that depression following stroke is a growing concern, and strategies to improve its identification and management should be considered.

Access to non-clinical community-based support services and programs benefits patients and their carers/family members, and reduces anxiety and stress associated with living with stroke. This information should be provided to patients prior to discharge from hospital. Stroke survivors and their carers/family members identified through the stakeholder consultation want to know about community-based services and programs that might assist in the ongoing care of someone with a stroke, including:

- National Stroke Foundation helpline
- local state stroke associations
- palliative care services
- respite care

- education programs for carers
- emotional and psychological support services
- stroke support groups/programs
- self-management programs
- transport to non-inpatient medical care.

The National Stroke Foundation national helpline refers callers to appropriate clinical and non-clinical services.

5.3.1 State stroke associations and stroke support/recovery groups

All states and the Australian Capital Territory have established jurisdictional stroke associations, which are non-profit volunteer-run organisations. Stroke associations are community-based agencies that provide support to stroke survivors and their carers/family members, which usually include a combination of some of the following:

- telephone counselling
- referral to other services
- provision of stroke information
- establish, support and coordinate stroke support/recovery groups
- advocate for awareness of stroke symptoms and prevention measures
- organise community seminars and activities
- hospital visits to people admitted for stroke
- regular newsletters on stroke issues
- shared resources (books, videos, brochures).

A major role of the stroke associations is to support the establishment of stroke support/recovery groups, whose primary role is to provide support for both stroke survivors and their carers to participate in all aspects of community life. These groups also provide a valuable means by which stroke survivors and their carers can receive advice and support from their peers.

The Stroke Association of Victoria is the lead agency in the state, overseeing community-based non-clinical stroke support services in Victoria. The National Stroke Foundation liaises closely with all stroke associations.

A number of stroke support/recovery groups have established links with acute and sub-acute providers and visit people following a stroke in hospital (usually on a request basis). Where this occurs, the usual practice is for the stroke service to make this resource known to patients and their carers/family members and for them to agree to meet with the stroke support/recovery group member(s).

Given the sensitivities around stroke, the differing requirements of health services, care providers and stroke survivors and their carers/family members, some state stroke associations have developed operational frameworks or guidelines around:

- establishing stroke support/recovery groups
- meeting with stroke survivors within a health care setting
- training requirements for visiting stroke survivors within a health care setting
- networks/links with other state stroke associations, health care providers, community and government
- governance and reporting arrangements.

Where implemented, frameworks and guidelines support the establishment and operation of community stroke support/recovery groups, which should be adequately supported by state stroke associations. Stroke support/recovery groups are a community-based resource that stroke survivors and their carers/family members can turn to for peer support, information and advice.

The National Stroke Foundation and the state stroke associations are currently undertaking work to determine the various models of stroke support across Australia, with a view to developing processes to increase accessibility and quality of these services.

The success of state stroke associations and community stroke support/recovery groups in other states should be enhanced in Victoria. Stroke survivors and their carers/family members should be able to access well-supported and sustainable peer support. This requires appropriate resourcing and ongoing consultation with the department and other relevant stakeholders to ensure the development and implementation of operational frameworks and guidelines with appropriate governance, monitoring and reporting requirements.

5.3.2 Self-management programs

At an international level there has been recognition of the need for reform in the area of chronic disease management to meet the forecasted growth in the stroke survivor population over the next 10 to 20 years. One of the primary mechanisms for driving this change in patient centred care has been the development of a range of self management models.

Self-management is about people being actively involved in their own health care. Self-management encourages the person, their carer/family members, service providers and the health system to work together to achieve better health outcomes and improve their quality of life.

Self management:

...involves [the person with the chronic disease] engaging in activities that protect and promote health, monitoring and managing the symptoms and signs of illness, managing the impact of illness on functioning, emotions and interpersonal relationships and adhering to treatment regimes. (Center for Advancement in Health 1996)

...is about enabling participants to make informed choices, to adapt new perspectives and generic skills that can be applied to new problems as they arise, to practise new health behaviours, and to maintain or regain emotional stability. (Lorig 1993)

Self-management is underpinned by the person being at the centre of their health care, and involves the skills and resources that a person needs to negotiate the health system and maximise their quality of life across the continuum of prevention and care. The following six characteristics are considered to be the six principles of self-management. They are individuals who:

1. have knowledge of their condition
2. follow a treatment plan (care plan) agreed with their health professionals
3. actively share in decision making with health professionals
4. monitor and manage signs and symptoms of their condition
5. manage the impact of the condition on their physical, emotional and social life
6. adopt lifestyles that promote health (Flinders University 2005).

Various models of self-management exist, including the Stanford (Lorig 1993), Flinders (Flinders University 2005) model and a recently piloted stroke specific model developed by the National Stroke Foundation.

The Stanford Program has been tested in a large scale RCT and there is a growing body of evidence emerging that clearly demonstrates the effectiveness of this generic self-management program amongst the chronic disease population. This includes improved health outcomes, improved levels of self-efficacy and improvement in quality of life. However, research to date, looking at the effectiveness of this model, has excluded people with cognitive problems and/or those with severe disability. People with stroke who do not have a cognitive impairment should be made aware of the availability of the generic self management program before discharge from hospital and be supported to access such programs once they have returned to the community.

Stroke specific self management programs may be provided to people who require more specialised programs such as the program developed and piloted by the National Stroke Foundation in 2004/06. This program has been tailored to the needs of stroke survivors and is underpinned by the Flinders' principles and tools for self-management. The drivers behind the development of this program were members of the Central Victorian Stroke Support Group. They clearly identified a gap in services when stroke survivors transition from hospital to home. They describe this gap as 'the black hole' as stroke survivors describe the struggle to apply the skills learnt in hospital to facilitate the home based, ongoing stroke recovery journey. Outcomes of this program include increased access to therapeutic services, increased social interaction, more effective management of risk factors, and emotional gains. Participants described having motivation and determination to continue setting and achieving goals and having a more positive and confident attitude from being better informed. Participants have also described a change in health professional attitudes to self management and stroke and an increased capacity of health professionals in their current workplaces.

Case study

Mr R, a 50yr old stroke survivor with history of multiple strokes, poor risk factor management, depression and other chronic condition, was referred to the stroke self management program upon discharge from hospital.

Mr R describes the program as ‘life changing’ ‘Two great things happened to me this year, I became a grandfather for the first time and I did the stroke self management program. Before I never went out, couldn’t write, didn’t talk to my friends, hardly ever saw my GP and didn’t look after myself. Now, I am out almost every day, I see my GP about once a fortnight, I am doing a computer course and plan to write a book. At the end of the program, we decided that we learnt so much from each other, enjoyed sharing our experiences and encouraging each other that we wanted to continue. We have formed a new stroke support group and meet once a month”

A collaboratively developed self management care plan may be used to harness and optimise self management skills prior to discharge from hospital. Ongoing monitoring and review are critical components of good self management. As such referral to an appropriate self management program and consultation with the major care provider, usually a GP, is important to ensure continued goal setting with demonstrated improved outcomes. Following its anticipated release, the National Chronic Disease Strategy (Australian Government, in press) should provide further guidance regarding self-management programs.

Details about the Flinders model are available at <http://som.flinders.edu.au/FUSA/CCTU/self-management.htm>.

5.3.3 Carer support

Little attention has been paid to the role of the carer/family member who is responsible for providing ongoing care to someone who has a stroke. Carers Australia, for example, provides carer education programs that are free for carers. These are designed to increase the awareness and knowledge of carers, and to provide them with the information and skills needed to provide effective care and look after their own wellbeing. Some organisations and communities also provide support structures for carers to access, such as respite care and Meals on Wheels.

Caring for stroke survivors is hard work. Information about programs for carers should be included in information made available to carers/family members, and programs providing other types of support to carers are explored/identified to ensure appropriate and relevant carer support. The stroke associations, including the Stroke Association of Victoria, also provide support and advice to carers of stroke survivors. In addition, the *Clinical guidelines for stroke rehabilitation and recovery* (National Stroke Foundation 2005a) have several recommendations specific to carer support and training.

5.3.4 Community-based services and programs

The Australian and state governments and local councils fund a range of community-based services and programs that may be useful for both stroke survivors returning to the community following hospital discharge and their carers. These services are diverse in their scope and audience, and include the Home and Community Care Program and the Aids and Equipment Program.

Hospital social workers, occupational therapists, GPs and local councils can provide further details about these services and programs. Written information about community-based services that may assist stroke survivors and their carers should be provided to stroke survivors and their carers prior to hospital discharge.

Recommendation 25

Guidelines for providing peer support to inpatients, establishing community-based stroke support groups, promoting self-management programs for long-term care and accessing community-based services should be developed and implemented in accordance with evidence-based guidelines.

6.0 Stroke care workforce

Key findings

- The provision of safe and high quality stroke care requires skilled health care workers.
- Workforce configurations and staffing profiles are the responsibility of health services.
- Recruitment and retention of skilled health care workers is a challenge due to a nationwide shortage of skilled medical, nursing and allied health expertise.
- The department funds a range of initiatives and approaches to ensure an appropriate supply and distribution of appropriately qualified and trained health care workers.
- The Australasian Faculty of Rehabilitation Medicine has produced *Standards for adult rehabilitation medicine services in public and private hospitals*.
- Undergraduate curricula are determined by tertiary institutions in consultation with professional bodies and can vary between institutions.
- Professional bodies are currently responsible for determining standards for health care professions and workers.
- The Australian Government Department of Education, Science and Training (2005) undertook a review entitled *Medical education in Australia—what makes for success?* This considered graduate learning outcomes, including expected skills and knowledge, and the transition to internship and postgraduate specialist training.
- Staffing of stroke units in Victoria varies across health services.
- A training program devised for the non-medical workforce to enhance the capability to provide optimum stroke care would facilitate relevant ongoing education, training and continuing professional development.
- Establishing or enhancing links/referral pathways between health services would facilitate information exchange and education and training across services.
- Increasing the capability of the workforce, through ongoing education, training and professional development, will improve and enhance provision of stroke care.
- The underpinning theme of any workforce-related recommendation should be to encourage/enable training and education that can be embedded in continuing professional development.

6.1 Stroke care workforce–background

The following areas have been identified by stakeholders to impact directly on the provision of safe and high quality stroke services by the health care workforce in Victoria:

- nationwide shortage of skilled medical, nursing and allied health expertise
- undergraduate curriculum
- enhancing the capability of the existing workforce
- ongoing education, training and professional development.

These are considered in detail below, along with issues around the staffing of acute stroke units. Strategies presented are designed to enhance the workforce and improve overall stroke care.

6.2 Nationwide shortage of skilled medical, nursing and allied health expertise

One of the greatest challenges faced regarding the provision of any type of health care is the shortage of skilled medical, nursing and allied health expertise, both nationally and internationally. This is creating the biggest impact on the provision of health care in Australia, particularly in rural areas. Many believe this has its foundations in undergraduate training programs, with too few places in the relevant fields (for example, medicine, nursing, allied health streams) to sustain an adequate health care workforce.

The Australian Government recently announced an increase in the number of places for undergraduate medical students from 2007, although the effects of making these places available will not be felt for some time. It is hoped that similar consideration will be given to nursing and allied health undergraduate numbers.

6.3 Undergraduate curriculum

A number of stakeholders consider that undergraduate curricula may not adequately incorporate new treatment paradigms and best practice, nor provide sufficient stroke-related content.

The broad outlines of tertiary curricula are determined and developed by national accrediting bodies, such as the Australian Medical Council and the Australian Nursing and Midwifery Council. Within frameworks developed by these accrediting bodies, individual tertiary institutions have certain freedoms to develop curricula.

Providing the health care workforce at the undergraduate level with relevant and up-to-date training and education will enhance knowledge of stroke, and its care and treatment options, and encourage greater interest prior to graduates specialising in this particular clinical field. The department encourages tertiary institutions to enhance stroke-related content of relevant curricula and that the relevant professional bodies should assist in providing up-to-date information about best practice and treatment paradigms.

6.4 Enhancing the capability of the existing workforce

Health services and the stroke care workforce have suggested that increasing workforce capability, rather than capacity, can improve provision of stroke care. While this may require additional resourcing in some scenarios, some health services have, in consultation and collaboration with existing expertise and within existing resources, undertaken to train and credential staff to undertake activities not normally considered part of their domain. Only those activities supported by evidence-based clinical practice guidelines are considered suitable for this approach.

A number of clinical stakeholders, for example, identified that it was difficult at times for a speech pathologist to undertake a swallowing assessment within 24 hours of admission. The clinical team identified a mechanism whereby nurses and other allied health staff could provide a swallowing screen when speech pathologists were not available; an example is presented in the case study below. Nurses and allied health staff do not provide assessment—it is recommended that this always be undertaken by a speech pathologist—but trained staff can perform screening. Some health services have taken such an approach to enhancing staff capacity and have demonstrated benefits to patients and increased staff motivation, resulting in improved performance.

Case study—swallowing screening

Speech pathologists are specialists in treating communication and swallowing difficulties. An important role of speech pathologists working with people who have had a stroke is to undertake a swallow assessment and advise on and commence appropriate interventions. At Peninsula Health, in accordance with the Stroke Clinical Pathway, all patients admitted with suspected stroke are required to receive a swallowing screening within the first 24 hours. Speech pathologists at Peninsula Health work usual business hours (Monday to Friday).

Patients with stroke admitted on a Friday would not have access to a speech pathology assessment until Monday morning, more than 60 hours later. Australian clinical practice guidelines indicate that a swallow assessment should be undertaken in all patients, but no time limit is stipulated. This should be done in a timely fashion, however, to ensure an individual's nutrition is not compromised.

To overcome this challenge at Peninsula Health, a protocol was developed, in collaboration with three other health services, to engage nursing staff in a credentialing process in the screening of swallowing difficulties. This process involves two components: a theoretical and practical component, with the practical component reviewed with the speech pathologists annually.

This activity has been broadly accepted and implemented, with over 50 nursing staff credentialed to conduct swallowing screening across Frankston and Rosebud hospitals, in accordance with the Peninsula Health Stroke Clinical Pathway. Following this screening, and using information provided by the nursing staff involved in screening, speech pathologists conduct comprehensive swallowing assessments on the next business day.

Better Skills, Best Care

The provision of quality services in any setting requires an adequate supply of a suitably trained workforce (that is, the right people must be in the right place at the right time with the right skills to deliver quality care to patients). In some instances, increasing the number of health workers is achievable and can prevent shortages that restrict service capacity, but this alone is not sufficient to meet future demand. To achieve such goals requires consideration of how to make best use of available skills by exploring how:

- work might be reorganised to minimise duplication of effort and make best use of available staff
- new roles can be developed to meet current and evolving patient needs
- technology can be better employed to manage training and workforce requirements.

The *Better Skills, Best Care strategy* (DHS 2005b) aims to progress these issues by:

- integrating role design workforce initiatives with current and planned department service strategies
- encouraging locally responsive workforce review and design initiatives
- facilitating tailored competency-based training for new and amended roles
- working with stakeholders to explore workforce issues and role design initiatives
- building an evidence base for role design and evaluation measures.

This strategy will incorporate a series of projects to look afresh at the organisation of work for specific patient populations or services. These projects will develop, test and implement roles and role configurations that better align skills to patient needs.

6.5 Ongoing education, training and professional development

Ongoing education, training and professional development are paramount to ensure that safe and high quality stroke care is sustained. The stroke care workforce should participate in educational activities to keep up to date with new knowledge about stroke and its treatment. Education and training needs, as a part of ongoing development/continuing professional development (CPD), vary for each health care worker. In addition, specialist post-graduate courses provide training for many health care workers who provide stroke care.

It is generally the professional organisations that develop and run CPD programs for their respective members. For physicians, CPD activities are usually quite specific for the clinical area/indication (for example, brain imaging for stroke diagnosis, thrombolysis). For most non-medical providers such as nurses and allied health, however, CPD programs would usually only include neurology/stroke components as part of a broader program; that is, they are not usually specific for a clinical area or condition such as stroke. Regardless of the workforce group, it is recognised that input from, and interaction with, stroke team members is an important aspect of CPD.

The National Stroke Foundation undertakes educational programs with stroke care professionals to support the implementation of clinical practice guidelines. A number of resources have been developed for use with team-based and small group learning (CD-ROM and DVD). These are used predominantly in Queensland, where the program is supported by Queensland Health. The use of web casting for professional education is also being explored. Stakeholder feedback suggests non-medical workforce participation in CPD activities is often variable due to the cost of courses, competing health service priorities and availability and timing of activities.

Increasing workload and a lack of access to CPD activities also leads to staff overwork and exhaustion. The health care workforce is wary of burn-out and some health services are taking steps to prevent this occurring; for example, some health services and stroke care workers have identified and implemented a range of activities that appear to be effective in reducing workforce burn-out and enhancing workforce capability, both of which are assumed to lead to improved patient outcomes. Some of these are:

- some nursing and allied health workers are undertaking self-directed CPD packages
- some nursing and allied health workers are actively participating in mentoring programs, particularly those in rural health services
- some rural health services have developed and implemented *care bundles*, which are local care pathways/protocols developed in accordance with existing evidence-based clinical practice guidelines, and are supported by existing infrastructure (that is, role delineation). This has led to establishing or enhancing links/referral pathways with other health services to ensure access to the most appropriate care. For some, this has facilitated information exchange and education and training across services (for example, provision of thrombolysis in some cases)
- a number of health services, particularly in rural areas, indicated that telemedicine should be used more than it is currently to inform decision making and best practice, particularly where clinical expertise is inadequate or a second opinion is warranted. Several rural health services that provide thrombolysis for ischaemic stroke have established links with appropriate clinical expertise.

It is essential that the stroke care workforce is provided with opportunities to undertake CPD activities to enhance their capability and sustain their drive to learn about new initiatives and practices. There is merit in building on new initiatives implemented in health services and linking into existing education and training programs. A number of stroke care providers accept that initiatives implemented in other health services should be implemented in their hospitals.

These programs reflect a number of opportunities that could, and should, be considered to ensure that provision of safe and high quality stroke care can be delivered and sustained by a workforce that is supported in its efforts to learn more about stroke and how to treat it and how to support others in the process.

The role of government

Government is also responsible for ensuring the health care workforce is adequate, and adequately trained. The Australian Government, for example, has undertaken the following initiatives to address workforce issues:

- The Department of Educating Science and Training is undertaking a review entitled *Medical education in Australia—what makes for success?*, which will consider graduate learning outcomes, including expected skills and knowledge, and the transition to internship and postgraduate specialist training (2005). It is anticipated this review will result in recommendations relevant to undergraduate education and the ongoing training, education and CPD for the health care workforce.

- In its *Research report on health workforce* (released in January 2006), the Productivity Commission made a range of recommendations on facilitating workforce innovation, more responsive education and training arrangements, consolidated workforce regulatory frameworks, funding incentives for workplace change and meeting the needs in rural and remote Australia and for groups with special needs.

The Victorian Department of Human Services has developed a series of workforce initiatives broadly separated into three categories: increasing supply, improving distribution and better aligning the skills and competence of the workforce to service need. A number of the initiatives under each of these categories should assist in addressing some of the stroke-related workforce issues, which are discussed below.

- Supporting the professional development of nurses by funding:
 - graduate programs to support the transition of new graduate nurses into the workforce and assist health services to manage clinical risk, increase nurse retention and deliver safe practice and more productive practitioners in the long term
 - health services to provide the clinical component of post-graduate nursing courses and providing scholarships to assist individual nurses to undertake postgraduate studies in targeted clinical areas
 - a contribution towards the provision of continuing nurse education programs to achieve behavioural and practice change across the system.
- Supporting CPD programs for general practitioners, under its CPD for rural GPs program and its extended skills for GPs program, to allow GPs to pursue special skills training and up-skilling opportunities in priority areas, including stroke care.
- Implementing the training consortia model for basic physician trainees to address the training and distribution issues facing physician trainees. Given that physician trainees are the feeder group for rehabilitation medicine specialists, the model has the potential to provide increased training opportunities in stroke care.

This strategy considers that the underpinning theme of any workforce-related recommendation is to aid and enable training and education that can be embedded in CPD and results in a net improvement to patient care.

The role of professional organisations

Some professional organisations have developed standards for professional expertise regarding the provision of care. These standards also provide direction regarding the credentialing of members.

As part of ongoing Australian Medical Council accreditation, all medical specialists are required to participate in ongoing CPD activities. The Royal Australasian College of Physicians implemented its Maintenance of Professional Standards Program in 1994 to provide fellows of the college with a way of formally documenting their participation in a range of continuing education and quality assurance activities. This program has since been expanded to allow some physicians and paediatricians who are not fellows of the college to also participate.

The department recently developed the Allied Health Recruitment and Retention Program to support rural allied health practitioners access CPD and postgraduate education and new graduates via a mentoring program. In addition, a locum program is being piloted for the

hospital pharmacy workforce. This program makes it easier for pharmacists to take leave for either recreational or professional development purposes. It is intended that the program will be expanded to other health professionals once the effectiveness of the program is demonstrated. More information about the Allied Health Recruitment and Retention Program is in appendix M.

The Australasian Faculty of Rehabilitation Medicine (2005) recently endorsed its *Standards for adult rehabilitation medicine services in public and private hospitals*. This document refers only to specialist rehabilitation medicine units and makes explicit that the standards do not refer to medical rehabilitation programs conducted by other physicians who are not specialists in rehabilitation medicine.

6.6 Staffing of acute stroke units

There is little consensus about recommended staffing levels for acute stroke units, particularly for care provided by nursing and allied health. There is also little evidence for the most effective level of staffing to ensure optimal outcomes.

Several recent reports presented a range of views related to resourcing of stroke units, particularly nursing and allied health expertise. There is no one single view regarding the necessary resourcing for stroke units, which may vary depending on activity and role delineation of the health service within which the stroke unit is located. A number of documents developed by professional organisations and government have attempted to identify the staffing requirements for stroke care. The summary below is provided for consideration by health services.

Health services that have established stroke units have done so by reallocating resources that were previously being used to manage people who had been admitted to different wards across the health service. Health services should allocate appropriate resources for stroke units with consideration for other workforce-related issues, which are detailed in this chapter.

The NSUP (2002) policy document proposed a draft model for determining staff resources to treat patients with different types of stroke. The model addressed complexity of stroke and care requirements for patients that inform consideration of staffing requirements. The full range of allied health professionals were not identified in this model, although it did suggest patients should be referred to these (for example, psychology, audiology). The NSUP Policy Document also indicates that the principles of the draft model could be used by health services to inform local consideration of staff requirements and reorganisation of services in establishing a stroke unit.

The Cochrane review of organised stroke unit care indicated that the median amount of treatment received in stroke units per patient per weekday was 45 mins of physiotherapy and 40 minutes of occupational therapy (Langhorne & Pollock 2002). This study also noted that staffing levels for 10 inpatient beds was 1.2–1.7 effective full time staff (EFT) for physiotherapy, 0.6–1.7 EFT for occupational therapy, 0.25–0.75 EFT for speech pathology and 0.6 EFT for social work. The level of daily physiotherapy received in these stroke units was higher than a recent benchmarking study of physiotherapy in acute stroke services in Victoria, where the median amount of daily physiotherapy (in a seven-day week) ranged from seven to 17 minutes (Brock, Ilett & Cotton 2006).

New South Wales Health's *Guide to role delineation of health services* (Statewide Services Development Branch 2002), discussed in further detail in chapter 4, provides some guidance on staffing for particular medical and surgical areas, but not for nursing or allied health. In its recently published *Adult rehabilitation medicine services in public and private hospitals*, the Australasian

Faculty of Rehabilitation Medicine (2005) defined standards for specialist rehabilitation medicine units and included recommendations for adequate professional and support staff for rehabilitation medicine service functions.

6.7 Stroke care workforce—where to from here?

The stroke care workforce is expected to participate in ongoing education, training and professional development to ensure they continue to provide the most up-to-date, high-quality stroke care possible. Ideally, this would be undertaken as much as possible within normal work hours and with health service support and resourcing.

Given the nationwide shortage of the health care workforce around stroke care, however, the stroke workforce and health services have indicated that providing best practice is difficult because there are limited time and resources to undertake appropriate education, training and CPD. This is seen to compromise provision of a safe and high quality stroke service. This is a major challenge in regional and rural areas, where it is difficult to recruit skilled health care workers, and more difficult to retain them. To this end, several targeted initiatives should be developed and implemented. Examples are:

- Increasing workforce capability, by supporting new skill acquisition by existing staff, could lead to improvements in the provision of stroke care. A number of health services have demonstrated this within existing capacity and within existing resourcing; however, extending such initiatives to all health services, particularly in rural areas where resources can be limited, may require additional resourcing.
- Developing *training packages* may be an appropriate mechanism to enhance the capability of the workforce to provide optimum stroke care. This could include both generalist and specialist components (that is, not everyone working in a stroke team necessarily needs to be a specialist in stroke care).
- Linking into existing workforce recruitment and retention initiatives, which are already funded by the department, could lead, not only to improved workforce recruitment and retention, but also enhanced links/referral pathways between health services that could facilitate information exchange and education and training across services.

Existing work, policy and recognition that there is variability in practice and provider location should be considered wherever possible to inform the development of strategies to implement workforce-related recommendations. The health care workforce should also have opportunities to participate in relevant stroke-related research.

Recommendation 26

The capacity of the system should be increased, in accordance with the role delineation of stroke services, to provide safe and high quality stroke care, enhance workforce capability and provide for future demand. This should be done by:

- better use of existing workforce recruitment and retention strategies
- developing stroke-specific education programs targeted at both specialist and general stroke care workforce
- encouraging and supporting staff providing stroke care to undertake appropriate education, training and research.

7.0 Implementing the recommendations

The strategy provides direction for all public health services providing acute and sub-acute stroke care in Victoria. It was not developed for private health services, but it is anticipated that implementation of the recommendations by public health services will lead to better communication with, and enhanced links between, public and private providers to ensure a more integrated stroke care system.

The department will collaborate with key stakeholders to coordinate the strategy's implementation to ensure it is consistent and achieves the recommended system changes. The appointment of time-limited clinical facilitators and a statewide stroke project manager will allow system-wide development and implementation of protocols where appropriate. An implementation steering group, comprising key stakeholder representatives, should be appointed to oversee recommendation implementation.

7.1 Health service strategic plans and statement of priorities

The development of strategic plans by each public health service is recommended in the Metropolitan Health Strategy (DHS 2003a). They provide an agreed basis for action between the department and each public health service, and guide the future provision of services. Strategic plans define the role of each campus for a five-year period and are updated annually and provide an opportunity for the department to negotiate with each health service on the type and level of service each provides.

All health services develop an annual statement of priorities, which are the key accountability agreements between health services and the Minister for Health. The annual agreement ensures delivery or substantial progress towards the key shared objectives of financial stability, and improves access and waiting times and quality of service provision. Statements of priorities are also a mechanism that identifies deliverables and timeframes regarding the implementation of strategic priorities for health services.

7.2 Clinical facilitators

A number of recommendations presented in the strategy require that protocols be developed to guide the provision of care in line with best practice guidelines. Given the different settings in which stroke care is provided, it is expected these will vary between health services to ensure optimal stroke care is provided within existing capacity and infrastructure. A number of health services have already developed and implemented many of these protocols, but many have not.

Additional expert staff—clinical facilitators—will be required in the short term to develop these protocols and facilitate their implementation. People who undertake this work, who could be existing clinical staff, will have the appropriate expertise, knowledge and understanding of the public health system to implement the recommendations in consultation and in agreement with other health services.

Clinical facilitators will ensure the development of protocols in line with best practice clinical guidelines of stroke care, and facilitate their implementation. This will be undertaken with health service agreement, consultation and interaction. Clinical facilitators will also be required to consider, identify and develop, if necessary, relevant education and training opportunities for the stroke care workforce.

Clinical facilitators will:

- be primarily clinicians with stroke care experience
- work collaboratively with clinical areas involved in the care of stroke patients (including ED, acute, sub-acute) across their designated region
- develop a cross-regional network to link work across geographic boundaries and support the implementation of recommendations.

The following factors will be used as a guide when appointing clinical facilitators:

- work across geographical (that is, metropolitan and rural) regions
- being based at metropolitan and regional health services
- being appointed across Victoria
- position descriptions will be developed in consultation with health services
- being appointed for no longer than two years.

Clinical facilitators will be required to work across health services in metropolitan and rural regions. The number and composition (that is, which health services) of catchments and number of clinical facilitators to be appointed will be agreed on in consultation with health services. It is expected that catchments will, to some extent, align with existing regional boundaries and existing links/referral patterns within and between health services and regions.

The principles supporting the establishment of catchments for clinical facilitators are:

- catchments will cover all public sector acute stroke services in Victoria
- catchments will have some overlap to reflect that links and referral patterns within and between health services and regions do not always align with regional boundaries
- all catchments will have metropolitan and rural components, except the Royal Children's Hospital, which should be a single catchment because it is the major referral centre for paediatric stroke
- catchments should be of approximately equal size (activity), except the Royal Children's Hospital
- There must be at least one level-4 facility within each catchment.

Clinical facilitators will be based at a health service within each catchment and will be expected to communicate with, and travel to, other health services within that catchment on a regular basis. This will require the support of all health services throughout the duration of the appointment of clinical facilitators.

In implementing the Greater Metropolitan Clinical Taskforce for Stroke Services, New South Wales Health appointed a project manager to oversee and coordinate its implementation. This included managing project staff, who worked with the health services, liaising directly with health service management, clinicians and professional bodies, and ensuring the project was managed on time and within budget.

Recommendation 27

Clinical facilitators should be appointed on a time-limited basis to:

- develop protocols identified in the recommendations above
- oversee the implementation of protocols by stroke care providers
- facilitate appropriate/relevant education, training and support
- contribute to the development of stroke-specific education programs.

Recommendation 28

A statewide project manager should be appointed on a time-limited basis to:

- coordinate the implementation of the strategy recommendations for Victoria
- oversee the work of the clinical facilitators
- mainstream the implementation of the *Stroke care strategy for Victoria*.

An outline of the *implementation plan* for implementing the recommendations of the *Stroke care strategy for Victoria* is presented on the following page. This plan identifies key responsibilities, timeframes and measures of success against each recommendation

7.3 Implementation plan

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
1. Health services and general practitioners (GPs) should manage TIAs and secondary prevention of stroke in accordance with existing evidence-based clinical practice guidelines.	Health services will develop and implement protocols for management of TIAs and secondary prevention of stroke.	Health services	Short term	Protocols developed and implemented
	The General Practice Divisions Victoria (GPDV) and professional bodies will undertake work, in conjunction with the National Stroke Foundation (NSF), to develop and implement protocols for GPs.	GPDV Professional bodies NSF		
2. The Department of Human Services (DHS) should support the NSF in delivering public education campaigns that increase public awareness of stroke symptoms.	DHS will provide support to the NSF to deliver public education campaigns to increase public awareness of stroke symptoms.	NSF	Short term	Public education campaigns delivered
3. Assessment/follow-up of people at risk of having a new or subsequent stroke should be undertaken at TIA/neurovascular clinics. Unless already in place, public health services treating more than 200 acute strokes a year should establish TIA/neurovascular clinics. Access criteria, protocols and requirements to monitor and evaluate the practice and activity of TIA clinics should be developed.	Public health services will be encouraged to establish TIA/neurovascular clinics.	DHS Health services	Medium term	Protocols and referral forms developed and implemented TIA/neurovascular clinics established
	DHS is developing the Outpatient Improvement and Innovation Strategy to improve access to appropriate outpatient services. Protocols around assessment, diagnosis, appropriate staffing, referral forms, referral of selected patients from EDs/specialists/GPs, performance monitoring and evaluation criteria will be developed and implemented. Longer term strategies for the sustainability of this recommendation will be considered as part of the review of statewide outpatient services.			
4. DHS should undertake work to examine options that provide appropriate mechanisms for health services to transfer people who have a stroke to ensure they receive appropriate emergency stroke care.	DHS will examine options for providing mechanisms to health services to transfer stroke patients to facilities that provide appropriate emergency stroke care.	DHS Ambulance services	Medium term	Incentive options identified
5. Health services should treat all patients with stroke symptoms as a medical emergency and in accordance with existing evidence-based clinical practice guidelines, which include, but is not limited to: • rapid triage of patients presenting with stroke symptoms • rapid brain imaging of patients presenting with stroke symptoms.	Health services will develop and implement protocols for the emergency management of stroke.	Health services	Short term	Protocols developed and implemented

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
6. Acute health services should provide thrombolysis in accordance with role delineation for acute stroke services and internationally recognised clinical criteria, with appropriate neurology support, and provide information on these patients to the international SITS registry.	Health services treating acute stroke in accordance with role delineation will develop and implement protocols for the provision of thrombolysis for acute stroke in accordance with role delineation of acute stroke services and according to existing internationally recognised clinical criteria.	Health services Professional bodies	Medium term	Protocols developed and implemented
7. Health services should provide acute stroke care in accordance with existing evidence-based clinical practice guidelines. Care should address: • appropriate treatment of acute stroke • accessing specialist acute services (for example, neurosurgery, interventional neuroradiology, specialist allied health) • interdisciplinary care • commencement of rehabilitation within the acute setting and prior to transfer • transition between acute and sub-acute services • inpatient discharge planning • ongoing care in the community.	Health services will develop and implement protocols in accordance with existing evidence-based clinical practice guidelines, for the management of acute stroke.	Health services Professional bodies	Medium term	Protocols developed and implemented
8. Sub-acute stroke care should be provided in accordance with existing evidence-based clinical practice guidelines. Care should address: • accessing specialist sub-acute services (for example, specialist allied health) • interdisciplinary care • provision of sub-acute care across the care continuum • transition between sub-acute services • discharge planning • ongoing care in the community.	Health services will develop and implement protocols in accordance with existing evidence-based clinical practice guidelines, for the management of sub-acute stroke.	Health services Professional bodies GPs	Medium term	Protocols developed and implemented

* *Definitions of the proposed timelines are: short term=0–2 years; medium term=2–5 years; long term=5–10 years*

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
9. Appropriate culturally sensitive palliative care should be provided and communication with carers/family members undertaken in accordance with existing national guidelines and <i>Strengthening palliative care – a policy for health and community care providers 2004–09</i> .	Health services will develop and implement protocols for the provision of appropriate palliative care according to the Victorian policy <i>Strengthening palliative care – a policy for health and community care providers 2004–09</i> .	Health services	Short term	Protocols developed and implemented
10. DHS, in consultation with key stakeholders, should develop and implement a statewide performance monitoring system for stroke care management and patient outcomes.	DHS, in conjunction with health services and key stakeholders, will undertake work to develop a statewide performance monitoring system, which will include requirements for monitoring and evaluation, for stroke care management and patient outcomes. An agreed minimum data set will be developed.	DHS Health services NSF Professional bodies	Medium term	Statewide performance monitoring system developed and implemented
11. GPs should be engaged in the care of stroke survivors as early as possible following diagnosis to ensure ongoing and appropriate clinical care and support, which should include: - managing known risk factors for stroke - referring to, and linking with, community rehabilitation and self-management programs - referring to appropriate specialist clinical services.	Health services should engage/liaise with a patient's GP, if one exists, prior to discharge to ensure ongoing and appropriate clinical care and support in the community. Health services, the Royal Australian College of Physicians and GPDV should undertake work, in consultation with the NSF, to develop and implement protocols to ensure ongoing and appropriate clinical care in the community.	Health services NSF GPDV Professional bodies	Short term	Protocols developed and implemented
12. Acute stroke care should be provided by stroke units that are led by a physician with an interest and experience in stroke treatment and supported by an interdisciplinary team.	Health services providing acute stroke care should establish stroke units. Health services will identify a <i>stroke physician</i> (that is, a physician with an interest or experience in stroke care) to lead the stroke unit, which will be supported by a team providing interdisciplinary care.	Health services	Medium term	Stroke units established Stroke unit leader identified Interdisciplinary team established

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
13. People with stroke who are assessed as requiring rehabilitation and other sub-acute services should receive them in a program that has: • an interdisciplinary approach to care with a full range of medical, nursing and allied health professionals • a physical environment that facilitates the rehabilitation process, is enabling for ongoing recovery and is easy to navigate for people who have mobility problems, visual deficits or cognitive impairment • equipment necessary to facilitate the provision of a quality rehabilitation program.	Sub-acute care providers will develop and implement protocols to ensure that people requiring rehabilitation do so within the context of a designated rehabilitation program.	Health services Professional bodies	Medium term	Protocols developed and implemented
14. DHS should review the current designation of sub-acute services.	DHS will review the designation of rehabilitation services.	DHS Health services	Medium term	Review of designation of rehabilitation services completed
15. Sub-acute inpatient care should be led by a physician with an interest and experience in rehabilitation, supported by an interdisciplinary team and collocated within the appropriate inpatient environment.	Sub-acute care providers will: • identify a physician with experience in rehabilitation to coordinate sub-acute stroke care • establish an interdisciplinary team to support sub-acute care • ensure that patients requiring designated rehabilitation or GEM care are collocated within the appropriate hospital ward.	Health services	Medium term	Stroke care leader identified Patients collocated Interdisciplinary team established
16. People with stroke receiving sub-acute care should have access to the full range of medical, nursing and allied health care in an appropriate environment with access to appropriate evidence-based rehabilitation interventions, which is supported by role delineation of sub-acute services.	Health services will ensure that stroke patients have access to the full range of allied health expertise, which is dependent on the setting of care, to facilitate necessary intervention and improved outcomes.	Health services	Medium term	Improvement in quantifiable performance measures

* *Definitions of the proposed timelines are: short term=0–2 years; medium term=2–5 years; long term=5–10 years*

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
17. All health services should implement role delineation for acute stroke services to guide service delivery and future planning and ensure provision of the appropriate level of acute stroke care and expertise in accordance with infrastructure and resources. Role delineation will also ensure health services establish appropriate linkages and referral processes to ensure that people with stroke have access to appropriate expertise and resources as required.	Health services providing acute stroke care will nominate role delineation classifications for each site providing acute stroke care to guide service delivery and future planning over the next five years. This may require development and implementation of protocols as identified in other recommendations.	Health services DHS	Short term	Health services nominated classification
18. DHS should develop role delineation to guide service delivery and future planning of all sub-acute services, including sub-acute stroke services.	DHS will: - review the designation of rehabilitation services - lead the development and implementation of role delineation for Victorian sub-acute inpatient and ambulatory services.	DHS Health services Professional bodies	Medium term	Role delineation for sub-acute services commenced
19. Health services should transfer/refer patients to appropriate acute stroke services for accurate diagnosis of stroke and transfer patients—when clinically appropriate—back to acute or sub-acute settings close to where they reside.	Ambulance services will continue to ensure that people with stroke symptoms are transported to the nearest appropriate acute health service. Health services will develop and implement protocols to transfer patients: - to acute health services for accurate diagnosis and appropriate care, particularly where thrombolysis or neurosurgery may be indicated - to sub-acute services closest to where they reside when they are considered clinically stable.	Health services MAS RAV	Short term	Ambulance transport to nearest appropriate health services demonstrated Protocols developed and implemented
20. Health services should establish linkages and develop referral pathways and protocols with hospitals that receive their patient transfers and/or referrals to facilitate timely and smooth patient transition.	Health services will establish links and develop and implement referral pathways with other hospitals to facilitate timely and smooth patient transition.	Health services	Short term	Links established and referral pathways and protocols developed and documented

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
21. To facilitate the use of telemedicine by health services in the diagnosis and treatment of stroke—particularly for improving access to clinical expertise and quality of care for rural patients DHS should:— • assess telemedicine requirements and current infrastructure for public health services across Victoria • review funding models to facilitate secondary consultation.	DHS should work with health services to identify existing telemedicine infrastructure, identify gaps and barriers in utilising telemedicine. DHS should work with health services to develop and implement protocols/agreements for the appropriate use of telemedicine. DHS should review funding models to facilitate telemedicine-mediated secondary consultation with stroke experts.	DHS Health services	Long term	Telemedicine infrastructure audited Protocols developed and implemented Funding model revised and implemented
22. Information about stroke and treatment options should be provided to patients and their carers/family members throughout the care continuum to allow participation in decision making and to ensure that personal choices, values and beliefs are considered in accordance with evidence-based guidelines.	DHS should work with key stakeholders to develop an information kit, which details information about stroke and treatment options, which would be provided to all patients or their carers/family members at the first family meeting.	DHS Key stakeholders	Short term	Information kit developed
23. Health services should identify for each patient and their carer/family member a single point of contact who will be responsible for ensuring ongoing communication between the stroke care team for that patient and their carer. This role would also coordinate other needs of patients and their carers as required.	Health services should nominate a member of the stroke care team as the identified single point of contact, who will have overall responsibility for the care coordination of a patient admitted for acute stroke care.	Health services	Medium term	Stroke care coordinators identified
24. DHS should undertake work that will guide health services in the implementation of coordinated stroke care.	DHS should undertake work to develop guidance to assist health services to implement coordinated stroke care.	DHS	Medium term	Guidance on implementing coordinated clinical care developed and disseminated
25. Guidelines for providing peer support to inpatients, establishing community-based stroke support groups, promoting self-management programs for long-term care and accessing community-based services should be developed and implemented in accordance with evidence-based guidelines.	DHS will contract an organisation to develop and oversee the implementation of guidelines for the provision, operation, monitoring and evaluation of peer support to inpatients, the establishment and operations of community-based stroke support groups and promotion of self-management programs for long-term care of people who have had a stroke. Health services will provide input to the development and implementation of these guidelines.	DHS Key stakeholders	Short term	Tender advertised Community organisation engaged Protocols developed and implemented Evaluation of implemented activities

* Definitions of the proposed timelines are: short term=0–2 years; medium term=2–5 years; long term=5–10 years

Recommendation	Action(s)	Responsibility	Timeframe*	Measure of success
26. The capacity of the system should be increased, in accordance with the role delineation of stroke services, to provide safe and high quality stroke care, enhance workforce capability and provide for future demand. This should be done by: • better use of existing workforce recruitment and retention strategies • developing stroke-specific education programs targeted at both specialist and general stroke care workforce • encouraging and supporting staff providing stroke care to undertake appropriate education, training and research.	DHS, in consultation with health services and professional bodies, will identify existing initiatives, and develop and implement targeted initiatives, around increasing workforce capability, developing training packages and linking into existing workforce recruitment and retention initiatives to support the ongoing provision of safe and high quality stroke care.	DHS Health services Professional bodies	Medium term	Relevant initiatives identified or developed and implemented Workforce participation in initiatives Quantifiable improvement in the delivery of stroke care
27. Clinical facilitators should be appointed on a time-limited basis to: • develop protocols identified in the recommendations above • oversee the implementation of protocols by health services • facilitate appropriate/relevant education, training and support • contribute to the development of stroke-specific education programs.	DHS should appoint, in consultation with health services, <i>clinical facilitators</i> for a period of two years. They will be responsible for providing leadership and guidance around a range of identified activities for geographic catchments that will lead to improved patient outcomes and motivated stroke care providers, and facilitate the development and implementation of protocols. The department and health services will consult to develop a position description for these appointments and a timetable for activities and progress.	DHS Health services	Short term	Position descriptions developed Clinical facilitators appointed Protocols developed and implemented
28. A statewide project manager should be appointed on a time-limited basis to: • coordinate the implementation of the recommendations of the <i>Stroke care strategy for Victoria</i> • oversee the work of the clinical facilitators • mainstream the implementation of the <i>Stroke care strategy for Victoria</i>.	DHS should appoint a statewide stroke project manager to oversee and coordinate the implementation of the recommendations of the <i>Stroke care strategy for Victoria</i> , manage and coordinate the work of the clinical facilitators, consult with health service managers and clinicians, provide regular reports for review and ensure the recommendations are implemented within agreed timelines and within any budget allocated.	DHS	Short term	Position description developed Project manager appointed Work plan and timelines agreed

* Definitions of the proposed timelines are: short term=0–2 years; medium term=2–5 years; long term=5–10 years

Appendix A

Terms and references supporting the development of the Stroke Care Strategy

The objectives of the Stroke Care Strategy for Victoria are to:

- identify existing and future needs for acute and sub-acute stroke services
- specify role designation for acute and sub-acute services
- specify links between acute services of different complexity and between acute and sub-acute services
- strengthen links with other relevant services and providers
- advise on the role of private hospitals providing acute and sub-acute care that may impact on public sector services
- detail a plan for implementing the recommendations for service development.

Principles underpinning the development of the Stroke Care Strategy for Victoria are:

- high quality and safe services
- maximal geographic access for patients and their carers/families
- multidisciplinary care to ensure effective and efficient patient management
- engagement of carers in care planning processes
- coordination of effective patient care across the various phases of ambulance, acute, sub-acute and other relevant service provision
- dissemination and implementation of agreed clinical guidelines.

The review process included:

- examination of acute and sub-acute stroke services that exist in Victoria
- examination of trends in clinical practice, new technology and approaches to care that have potential impact on future demand for and delivery of services
- examination of projections for acute stroke services as provided by the department from the Victorian Inpatient Forecasting Model, along with other available data, and consideration of the implications of these on service provision
- consultation with key stakeholders
- establishment of working groups to consider issues specific to role delineation and workforce.

Expected deliverables include a strategy for the provision of acute and sub-acute stroke services in Victoria which:

- identifies role delineation models for acute and sub-acute stroke care that consider equity of access, promote efficient and appropriate use of services, are responsive to changes in need and clinical and technology advances, specify criteria to evaluate and monitor the quality and performance of services
- proposes a plan for implementing the strategy.

Appendix B

Burden of disease studies: findings on stroke

Death

	Male					Female				
Age range (years)	0–14	15–34	35–54	55–74	75+	0–14	15–34	35–54	55–74	75+
1996	–	8	73	345	847	1	3	41	239	1,579
2001	–	6	53	275	853	–	4	28	206	1,544

Years of life lost

	Male					Female				
Age range (years)	0–14	15–34	35–54	55–74	75+	0–14	15–34	35–54	55–74	75+
1996	–	212	1,483	3,986	4,749	30	80	912	3,183	9,478
2001	–	161	1,106	3,341	4,428	–	112	624	2,787	8,059

Disability-adjusted life years

	Male					Female				
Age range (years)	0–14	15–34	35–54	55–74	75+	0–14	15–34	35–54	55–74	75+
1996	56	392	2,182	6,731	6,023	63	283	1,596	5,013	11,077
2001	83	494	2,431	6,702	5,002	10	839	2,219	6,856	9,172

Incidence

	Male					Female				
Age range (years)	0–14	15–34	35–54	55–74	75+	0–14	15–34	35–54	55–74	75+
1996	14	56	293	1,619	1,585	7	47	217	972	2,106
2001	7	65	443	1,283	1,668	–	72	262	1,011	2,126

Prevalence

	Male					Female				
Age range (years)	0–14	15–34	35–54	55–74	75+	0–14	15–34	35–54	55–74	75+
1996	49	337	1,251	5,790	4,589	17	228	1,066	3,631	3,126
2001	190	500	2,970	5,811	4,577	–	1,239	4,611	7,130	6,635

Sources: DHS 1999b; DHS 2005a

Appendix C

Key findings: stroke care in the acute and sub-acute sectors

(from Stakeholder Consultation Report, PricewaterhouseCoopers 2006)

Appendix C Key findings regarding stroke care in the acute and sub-acute sectors

Stroke care	Initial Access	Emergency Care	Acute inpatient care	Sub-acute care
Current practice/ Observations	Influencing Factors - The level of awareness of 'stroke as a medical emergency' - The level of awareness of TIAs being a significant warning of an impending stroke - Level of availability of services - Level of relationships between providers was an influencing factor to accessing services - Financial parameters influencing care decisions (e.g. reluctance by some service providers to incur additional costs or lose revenue)	- Variability in development and use of evidence based guidelines. - Variability in the level of recognition of stroke as a medical emergency - Variability of effectiveness of emergency department (ED) in delivering stroke care services - Potential role for telemedicine to support effective stroke care - Thrombolysis as an early intervention strategy for stroke care	- Variable levels of support for patients and families - Strong support for development of geographically base stroke care units/services - Key components of a stroke care service within the acute setting - Variation in the level of use of stroke care pathways - Need for improved palliative care services.	- Key components of a comprehensive service include: - Provide services to wide range of patients - Interdisciplinary, goal-directed, evidence-based rehabilitation with objective measurement of progress and outcomes - Consideration of secondary prevention strategies - Flexible and responsive SACS services - Effective discharge planning - Approach appears to reflect a client-centred interdisciplinary approach - Strong support for dedicated stroke care units for rehabilitation
Factors that have supported successful outcomes	a) Success factors Where awareness of stroke as an emergency is high and relationships between providers is strong there is greater access to services	- Strong commitment from senior clinicians - Development and implementation of protocols to support efficient and evidence-based practices - Stroke nurse role to liaise with family and co-ordinate services - Allied health involvement in the ED to commence early interdisciplinary care - Formal guidelines incorporate family support	- Presence of a senior medical champion - Care in a geographically located stroke unit/ward - Care delivered by a multidisciplinary team in an interdisciplinary manner - Implementation of evidence-based guidelines - Structured meetings - Commencing rehabilitation in the acute setting - The presence of a 'key liaison person' for each patient - Use of educational material.	- Multidisciplinary teams delivering full interdisciplinary care - Holistic rehabilitation services - Achieving optimal outcomes with slow to recover stroke patients - Rotating staff across various sites - Consistent paperwork and effective communication systems. Preparing to return to the community - Practical preparation to ensure physical safety

			Rural Specific success factors a) Support from metro health services, b) Collaboration with other services (ROAST). Transferring from acute care a) Involvement of rehabilitation specialists in the acute care setting b) Co-location of acute and sub-acute units c) Centralised system for monitoring bed occupancy d) Good communication between acute and sub-acute settings e) Use of a stroke liaison key person, and f) Rotating allied health staff across different settings.	b) Support material to assist coming to terms with having a stroke e) Looking beyond traditional physical rehabilitation f) Stroke support groups are underutilised g) Home visit by hospital nurse h) Ongoing engagement of GP.
Challenges within current systems b) Challenges a) Environments where there is a low level of awareness in relation to stroke b) High levels of fear and denial in the community, and particularly by men, associated with stroke c) Equitable access to optimal treatment is compromised due to the unequal distribution of services and differences in practices across providers and services	a) Lack of adequate skilled resources within the system b) Reluctance of some medical staff to treat stroke as a medical emergency c) Difficulty in accessing intensive care beds for stroke patients d) Difficulty in effectively supporting the families of stroke victims	a) Managing patients' and family's overall needs, with special recognition of culturally diverse, non-English speaking and younger patients b) Redefining the meaning of a 'stable stroke' c) Bed availability and allocation to appropriate ward d) Gaining the support of the VMOs e) Delivering effective care with limited resources f) Commencing rehabilitation in the acute phase g) Maintaining momentum avoiding burn out of staff, and h) Working collaboratively with GPs. Rural Specific Challenges a) Accessing specialist support. b) Limited access to endovascular therapies c) Patients are reluctant to be transferred d) Gaining engagement of junior medical staff. Transferring from acute care a) Facilitating timely transfers b) Managing private patients c) Differing criteria for admission d) Transferring to aged care.	a) Providing equitable care to all stroke patients b) Long waiting times for rehabilitation services c) Lack of formal linkages. Preparing to return to the community a) Delays in accessing home support and community " services b) Meeting ongoing expenses c) Accessing ongoing support d) Accessing free community services e) Managing depression, and f) Lack of focus on stroke prevention strategies.	

Stroke care	Initial Access	Emergency Care	Acute inpatient care	Sub-acute care
Specific views/ suggestions	c) Specific suggestions Systems for Community-based education in relation to early recognition and management of stroke and TIA need to be developed and implemented	a) The need for the provision of written accurate information in relation to their diagnosis, prognosis and expected time course for management in a timely manner b) Care in the manner information is delivered so as to be balanced, but not too negative c) Gain understanding of root causes of delays in accessing emergency stroke care services & identify strategies to improve access to services d) Increase awareness of stroke as an emergency e) TIAs be treated as a medical emergency through rapid assessment clinics, early investigation and, where appropriate, early intervention f) Patients and carers seek opportunity to be involved in decision making g) Clear communication and agreement around protocols and processes h) Intervention at the State level and reaffirmation at the executive level the best place to treat stroke patients	a) The need for the provision of written accurate information in relation to their diagnosis, prognosis and expected time course for management in a timely manner. b) Provide greater support structures for meeting consumer needs c) Develop organised evidence-based stroke care services across Victoria d) Monitor thrombolysis administration e) Monitor performance of stroke care services f) Establish a stroke liaison role to liaise with families and co-ordinate services g) Explore opportunities for improving the patient moving through the phases of care h) Develop linkages between health services to ensure there is no delay in transferring patients from acute to sub-acute care if out of region i) Specific stroke clinic follow up to ensure all appropriate investigations have been performed and tests ordered and recovery is proceeding satisfactorily j) Strategies are developed for stroke care support groups to engage with health care providers to support a more structured input into stroke care services.	a) Early introduction of rehabilitation services in acute sector b) Development of geographically located stroke care units within services where there are sufficient patients warranting the capability c) Develop uniform referral/acceptance processes for all services d) Increase the number of rehabilitation beds to facilitate early transfer of patients e) Development of stroke units where sufficient patients f) Review the funding mode g) Develop system for equitable access to SACS. Preparing for the Community a) Allied health services in the outpatients setting b) Regular and ongoing review by a member of the stroke team c) Home visit by occupational therapist for all patients to ensure appropriate modifications, provision of aids and equipment and education d) Provision of information on discharge plans and post-discharge management to GP's, primary health carers and community services e) Increased emphasis and resource allocation to better manage issues such as depression and adjustment disorders f) Development of an interdisciplinary "lifetime plan" that fully supports the patient in the community including identification of stroke prevention strategies.

Source: Stakeholder Consultation Report, PricewaterhouseCoopers 2006

Appendix D

Key findings: organisation of stroke care including

(from Stakeholder Consultation Report, PricewaterhouseCoopers 2006)

Appendix D Key findings regarding organisation of stroke care including: role delineation, linkages/referral patterns and workforce issues

Role delineation	Linkages/referral relationships	Workforce
The area of role delineation may need to be explored in more detail within the industry: - Some were familiar with the concept from observing like models across areas such as cancer and trauma services and were very supportive - For others, this was a new concept that requires further explanation and exploration to ensure the level of overall stakeholder understanding and acceptance required for effective implementation and integration of a new framework. Comments from both survey and workshops participants indicated that better definitions (examples of) each of the hospital levels would be useful - Where possible the division between acute and sub-acute should be removed allowing for smooth transition between the two. Stakeholder Observations - Need for flexibility - Maintenance of existing capabilities is vital - Need for strong professional support links - Stroke service should be developed in consideration of the whole-of-service response - Staff shortages may impede effectiveness - Need to match infrastructure with appropriately skilled resources - Allied health should be recommended for all levels. Perceived Advantages - Supports standardisation of services state-wide - Provides a workable framework that facilitates access to organised stroke care services - Encourages formalised networks - Monitoring of evidence-based practices - Facilitate better resource allocation - Maintenance and improvement of the resources of the current level. Perceived Disadvantages - Skepticism as to the level of acceptance and ability to implement the framework - Differing levels in quality of care depending of the service provided (e.g. Stroke unit vs. mobile team) - Definition of “stable stroke” is not clear and is open to interpretation - People who live in remote rural centres will be disadvantaged - Difficult for families and carers	Some city hospitals have significant links with country Victoria and are active participants in the new consortium model of physician training. However: - Linkages are not formalised - Patients are referred because of long-standing institutional or personal relationships or because of the neurosurgical centre or the specialist neurology expertise - The services envisage continuing these linkages and even establishing new ones - Some do not see that firm “sectorisation” of Victoria is feasible or desirable as it would create a framework that was too rigid and which would strain at times so that referrals in or out would often need to be redirected. It was generally preferable to have rehabilitation at a regional level: - Patients to be closer to home - Easier for families and friends - less isolation. Considerations - Linkages with GPs are required to support improved communication and collaboration - Need to understand drivers underpinning referrals – currently referral are largely based on personal relationships between providers - Geographical linkages should not be too rigid, provide opportunities for professional support and may need additional provisions initially to be established - Linkages across geographical locations and care settings - Linkages between care settings. Specific suggestions <i>Private to public linkages</i> - Formal linkages be established between the public and private sectors. - Opportunity to purchase rehabilitation beds from the private sector to reduce the waiting time for sub-acute services - Provide continuity of care. <i>Linkages between care settings</i> - Protocols and guidelines could be created to support consistent admission, transfer and discharge criteria - Systems could be created to support the monitoring of service delivery and adherence to protocols.	There was a consistently forceful message relayed in regard to the insufficient level of skilled resource available to effectively deliver stroke care services across all sectors and across all regions. There is a recognised difficulty attracting and retaining staff in this field. The work is physically and emotionally demanding and staff are prone to “burn out”. Specific suggestions Education of the wider workforce - Education of community providers and emergency staff that “time is brain”. Professional Development <i>Create a supportive collegial environment</i> - Development of identifiable stroke teams with clinical leadership which have a strong research focus - Motivation of staff and carers - Address potential for fragmentation and professional isolation - Provide appropriate access to training, professional development and peer support - Staff working in the private sector participate in joint professional development and training activities. Raise the profile of stroke care through investment in professional development - Develop a career structure within the clinical setting for nursing and allied health staff - Stroke be made more prominent in university curricula for nurses, doctors and allied health professionals - Encourage the development of postgraduate courses for stroke care. c) Support Clinical Practice - Define the core competencies required for effective stroke care - Provide formal training to support the implementation of evidence-based guidelines - Facilitate access to research grants/professional development funds/conferences - Provide services to support staff (e.g. counselling services). <i>Medical</i> - Develop a state-wide communication network for stroke clinicians - More training of neurologists in cerebrovascular medicine

• Patients with severe communication deficits may not receive appropriate level of care • The structure at lower end of the framework may end up being de-skilled • There may not be clear definition of where some services should reside • Staffing services effectively may be a challenge • The model for acute care suggests that care in level 1 and 2 facilities is provided by an incomplete stroke team, resulting in sub-optimal services • For some it was unclear from the framework how organised stroke services may be delivered to all stroke patients (including 'stable stroke') • In relation to sub-acute care it was unclear whether specialised allied health and medical staff in level 3 and 4 centres will provide care on a stroke unit • Sub acute delineation services appear to be contained unnecessarily and perceived by referral sources to be less specialised or equipped • There should be places where stroke is not treated at all – these could be rated a level 0.	<i>Geographical linkages</i> • While it was accepted that linkages were vital, the degree to which they were formally and rigidly developed was an area of debate.	Improvement of interdisciplinary communication between specialists • Greater sessional allocation for stroke physicians • Resource allocation to reflect requirements to meet the needs associated with the delivery of emergency care • Improved liaison between country centres and specialist units in Melbourne and understand resource requirements for effective telemedicine links to centres without neurologists. <i>Nursing</i> • Need for increased clinical nurse specialists in stroke for all stroke units • Improved resources to support higher number of 'heavy' patients (now that people are being kept alive with larger strokes) • Stroke units recognise the important role of nurses where as mobile stroke teams do not. <i>Allied Health</i> • Allied health training, particularly in community programs/ staff training in neurorehabilitation, especially sub-acute ambulatory care level Increased resources to support 'heavy' patients/ appropriately recognise and resource sub-acute services • Mentoring programs for rural clinicians. <i>Carers</i> • Specific recognition of requirements to support carers in the community. They are generally a resource that provides a significant service that may otherwise need to be provided by the state or federal government.
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Source: Stakeholder Consultation Report, PricewaterhouseCoopers 2006

Appendix E

Statewide provision of acute stroke services 2005-06

Acute stroke separations from Metropolitan Health Services 2005-06

Metropolitan Health Service and campuses		Separations	% of total separations
Austin	Austin campus	730	5.0
	Repatriation campus	8	0.1
Total		738	5.1
Bayside	The Alfred	730	5.0
	Sandringham and District Memorial Hospital	132	0.9
	Caulfield General Medical Centre	20	0.1
Total		882	6.0
Eastern	Box Hill Hospital	760	5.2
	Maroondah Hospital	340	2.3
	Angliss Hospital	136	0.9
	Healesville Hospital	4	0.0
Total		1,240	8.5
Melbourne	Royal Melbourne Hospital	1,182	8.1
Total		1,182	8.1
Mercy Health and Aged Care	Mercy Hospital for Women	1	0.0
Total		1	0.0
Northern	Northern Hospital	404	2.8
Total		404	2.8
Peninsula	Rosebud Hospital	190	1.3
	Frankston Hospital	751	5.2
Total		941	6.5
Royal Children's Hospital	Royal Children's Hospital	71	0.5
Total		71	0.5
Royal Women's Hospital	Royal Women's Hospital	2	0.0
Total		2	0.0
St Vincent's	St Vincent's Hospital	685	4.7
Total		685	4.7
Southern	Monash Medical Centre (Clayton)	797	5.5
	Monash Medical Centre (Moorabbin)	3	0.0
	Dandenong Hospital	346	2.4
	Casey Hospital	108	0.7
Total		1,254	8.6
Western	Western Hospital	818	5.6
	Sunshine Hospital	247	1.7
	Williamstown Hospital	33	0.2
Total		1,098	7.5
Non-networked hospitals		123	0.8
Total		123	0.8
Total metropolitan public acute stroke Seps		8,621	59.3
Total Victorian acute stroke Seps		14,533	100.0

Non-networked hospitals are Mercy (Werribee), Royal Victorian Eye and Ear, Peter MacCallum Cancer Centre
Seps=separations

Acute stroke separations from regional and rural public health services with ≥ 40 separations reported in 2005-06

Rural region and health service/campus	Seps	% of total Separations
Barwon South Western		
Geelong Hospital	586	4.0
South West Healthcare (Warrnambool)	130	0.9
Portland District Health	56	0.4
Hamilton Base Hospital	55	0.4
Colac Community Health Service	46	0.3
Number of hospitals with < 40 separations	11	0.1
Separations from hospitals with < 40 separations	66	0.4
Total Barwon South Western	939	6.5
Grampians		
Ballarat Health Service	240	1.7
Wimmera Health Care Group (Horsham)	108	0.7
Number of hospitals with < 40 separations	17	0.1
Separations from hospitals with < 40 separations	130	0.9
Total Grampians	478	3.3
Loddon Mallee		
Bendigo Hospital	246	1.7
New Mildura Base Hospital	123	0.8
Swan Hill District Hospital	71	0.5
Echuca Regional Health	51	0.3
Number of hospitals with < 40 separations	19	0.1
Separations from hospitals with < 40 separations	174	1.2
Total Loddon Mallee	665	4.6
Hume		
Goulburn Valley Health (Shepparton)	169	1.2
Wangaratta District Base Hospital	130	0.9
Wodonga Regional Health Service	86	0.6
Number of hospitals with < 40 separations	17	0.1
Separations from hospitals with < 40 separations	194	1.4
Total Hume	579	4.0
Gippsland		
New Latrobe Regional Hospital (Traralgon)	171	1.2
Bairnsdale Regional Health Service	95	0.7
Central Gippsland Health Service (Sale)	77	0.5
West Gippsland Healthcare Group (Warragul)	79	0.5
Wonthaggi and District Hospital	62	0.4
Number of hospitals with < 40 separations	6	0.0
Separations from hospitals with < 40 separations	79	0.5
Total Gippsland	563	3.9
Total Rural public acute stroke Seps	3,224	22.2
Total Victorian acute stroke Seps	14,533	100.0

Seps=separations

Appendix F

Statewide provision of sub-acute stroke services

2005-06

Metropolitan providers of public sector sub-acute services 2005-06

DHS region, metropolitan health service and campus	Inpatient		Ambulatory	
	Rehabilitation	GEM	Centre-based	Home-based
North and West Region				
Austin Health*				
Heidelberg Repatriation Hospital	✓	✓	✓	
Royal Talbot Rehabilitation Centre	✓		✓	✓
Calvary Health Care				
Bethlehem Hospital		✓	✓	
Melbourne Health				
Royal Melbourne Hospital–City Campus		✓		
Royal Melbourne Hospital–Royal Park Campus*	✓	✓	✓	✓
Mercy Health				
Mercy Werribee CRC			✓	
Northern Health				
Broadmeadows Health Service*	✓	✓	✓	✓
Bundoora Extended Care Centre*	✓	✓	✓	✓
Royal Children's Hospital				
Royal Children's Hospital**	✓			
St Vincent's Health				
Boroondara CRC			✓	
Cambridge (Richmond) CRC			✓	
Darebin CRC			✓	
St Vincent's Hospital*	✓	✓	✓	✓
St Georges Hospital	✓	✓	✓	
Western Health				
Sunshine Hospital*	✓	✓	✓	✓
Williamstown Hospital		✓	✓	
Eastern Region				
Eastern Health				
Angliss Hospital	✓	✓	✓	✓
Healesville Hospital		✓		
Maroondah Hospital		✓		
Peter James Centre*	✓	✓	✓	✓
Croydon CRC			✓	✓
Southern Region				
Bayside Health				
Caulfield GMC*	✓	✓	✓	✓
Port Phillip CRC			✓	
Peninsula Health				
Frankston Hospital (Golf Links Road)	✓		✓	✓
Mount Eliza Centre*		✓	✓	✓
Chelsea CRC			✓	
Rosebud CRC	✓		✓	
Southern Health				
Cardinia CRC			✓	✓
Casey Hospital	✓	✓		
Casey (Cranbourne) CRC			✓	✓
Dandenong Hospital	✓	✓	✓	
Kingston Centre*	✓	✓	✓	✓
Monash (Clayton) CRC			✓	
Parkdale CRC			✓	
Springvale CRC			✓	

* Centre promoting health independence ** Commenced service provision in October 2005

Rural and Regional providers of public sub-acute services 2005-06

Region and health service/provider	Inpatient		Ambulatory	
	Rehabilitation	GEM	Centre-based	Home-based
Barwon South Western				
Barwon Health Service				
Belmont CRC			✓	
Grace Mackellar Centre*	✓	✓	✓	✓
Colac CRC			✓	
Hamilton House CRC			✓	
Lyndoch (Warrnambool) CRC			✓	✓
South West Healthcare (Warrnambool)	✓		✓	
Grampians				
Ballarat Health Service				
Queen Elizabeth Centre*	✓	✓	✓	✓
West Wimmera Health Service		✓		
Wimmera Base Hospital (Horsham) CRC			✓	
Loddon-Mallee				
Bendigo Health Care Group				
Anne Caudle Centre (Bendigo)*	✓	✓	✓	✓#
Stewart Cowen (Bendigo) CRC			✓	
Echuca CRC			✓	
Mildura	✓	✓	✓	
Mount Alexander (Castlemaine)	✓	✓	✓	
Swan Hill Hospital CRC			✓	
Hume				
Goulburn Valley Health (Shepparton)*	✓	✓	✓	✓#
North East Health (Wangaratta)*	✓	✓	✓	✓
Seymour Hospital CRC*			✓	
Wodonga Regional Health Service*	✓		✓	✓
Gippsland				
Bairnsdale Regional Health Service	✓	✓	✓	
Central Gippsland Health Service (Sale)		✓	Proposed	
Korrumburra Hospital		✓	✓	
Latrobe Regional Hospital (Traralgon)*	✓	✓	✓	
Leongatha Hospital		✓		
West Gippsland Healthcare Group (Warragul)		✓	✓	
Wonthaggi Hospital CRC		✓	✓	✓
Yarram MPS		✓	✓	

* Centre promoting health independence; # Home-based rehabilitation service primarily funded by the Australian Government; CRC=community rehabilitation centre

Metropolitan sub-acute inpatient separations for stroke

Metropolitan health service and campus		Separations						% change 2000-01* to 2005-06
		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	
Austin	Repatriation Campus	102	115	131	112	96	137	34.3
	Royal Talbot Campus	82	89	111	135	159	87	6.1
	Austin Health Total	184	204	242	248	255	224	21.7
Bayside	Caulfield General Medical Centre	137	148	142	119	152	173	26.3
	Peter James Centre	194	132	140	138	146	173	-10.8
	Maroondah Hospital	59	50	32	19	15	21	-64.4
	Angliss Hospital	81	101	98	130	176	90	11.1
Melbourne	Eastern Health Total	334	283	270	287	489	457	36.8
	Royal Melbourne Hospital–Royal Park	261	244	225	284	275	199	-23.8
	Royal Melbourne Hospital–City	24	13	6	5	13	35	45.8
Northern	Melbourne Health Total	285	257	231	289	288	234	-17.9
	Broadmeadows Health Service	103	155	184	104	141	122	18.4
	Bundoora Extended Care Centre	66	77	79	83	104	133	101.5
	Northern Health Total	169	232	263	187	245	255	50.9
Peninsula	Mount Eliza Aged Care and Rehabilitation Service	175	219	316	322	341	336	92.0
	Peninsula Health Total	175	219	316	322	341	336	92.0
St Vincent's	St Vincent's Hospital	72	134	92	77	66	65	-9.8
	St George's Hospital	95	88	71	67	85	98	3.2
	St Vincent's Health Total	168	222	163	144	151	163	-3.0
Southern	Dandenong Hospital*	0	0	63	104	67	60	-4.8
	Kingston Centre	218	268	286	312	336	215	-1.4
	Casey*					30	73	143.3
	Southern Health Total	218	268	349	416	433	348	11.9
Western	Sunshine Hospital	175	187	202	229	190	146	-16.6
	Williamstown Hospital	37	26	23	25	23	52	40.5
	Western Health Total	212	213	225	254	213	198	-6.6
Total Metropolitan sub-acute inpatient stroke separations		1,802	2,046	2,201	2,185	2,415	2,215	22.9

* Or earliest reported year of activity; Seps=separations

Rural sub-acute inpatient stroke activity for stroke

Rural region and health service	Separations						% Change 2000-01 to 2005-06
	2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	
Barwon South Western Region							
McKellar Centre (Barwon Health)	107	127	107	108	135	149	39.3
South West Healthcare (Warrnambool)	54	43	54	61	40	47	-13.0
Total Barwon South Western	161	170	161	169	175	196	21.7
Grampians Region							
Queen Elizabeth Centre (Ballarat)	121	140	170	153	173	111	-8.7
West Wimmera Health Service	4	5	4	7	6	7	75.0
Total Grampians	125	145	174	160	179	118	-5.6
Loddon Mallee Region							
Anne Caudle (Bendigo)	127	97	119	88	99	125	-1.6
New Mildura Base Hospital	29	51	38	41	36	41	41.4
Mount Alexander (Castlemaine)	35	31	17	36	33	30	-14.3
Total Loddon Mallee	191	179	174	165	168	196	2.6
Hume Region							
Goulburn Valley Health (Shepparton)	72	80	81	87	108	115	59.7
North East Health (Wangaratta)	41	51	32	54	46	52	26.8
Wodonga Regional Health Service	5	19	9	15	31	31	620.0
Total Hume	118	150	122	156	185	198	67.8
Gippsland Region							
Latrobe Regional Hospital (Traralgon)	85	71	71	66	86	91	7.1
Bairnsdale Regional Health Service	39	36	35	45	42	52	33.3
Central Gippsland Health Service (Sale)	3	5	5	10	18	10	233.3
West Gippsland Healthcare Group (Warragul)	8	1	7	5	7	21	162.5
Wonthaggi and District Hospital	5	8	9	8	6	9	80.0
Total Gippsland	140	121	127	134	162	183	30.7
Total rural sub-acute inpatient stroke separations	735	765	758	784	869	891	21.2

Stroke-related sub-acute ambulatory services in metropolitan CRCs (2000-01 to 2004-05)

Metropolitan health service	Community rehabilitation centre	2000-01		2001-02		2002-03		2003-04		2004-05		% change 2000-01 to 2004-05
		Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	
Austin	Heidelberg	39	25.8	36	16	36	16.7	33	14.3	11	4.1	-71.8
Bayside	Caulfield	48	14.2	52	10.6	27	5.9	15	8.7	27	6.8	-43.8
	Port Phillip	21	6.5	27	9.7	12	4.7	21	5.0	18	5.3	-14.3
Eastern	Peter James Centre	146	15.8	111	12.6	131	11.8	113	9.7	84	7.0	-42.5
	Ferntree Gully	44	9.4	80	11.6	78	9.9	60	7.8	70	12.6	59.1
	Croydon	51	14.5	93	17.8	94	15.7	84	15.1	82	10.3	60.8
Melbourne	MECRS	145	17.8	145	17.1	160	17.3	149	15.1	131	13.1	-9.7
Mercy	Werribee Mercy	33	18.9	45	18.9	25	10.7	32	13.5	23	9.6	-30.3
Northern	Broadmeadows	90	16.8	71	16.3	106	16	119	9.9	121	9.2	34.4
	Bundoora	71	20.2	76	16.7	60	13.2	77	13.3	81	12.3	-14.1
	Chelsea	41	6.7	43	7.1	38	7	33	7.4	15	4.1	-63.4
Peninsula	Frankston	54	5.6	68	8.2	92	9.6	58	6.7	46	5.5	-14.8
	Rosebud	107	6.3	88	6.3	89	5.4	56	4.5	37	3.3	-65.4
	Greater Dandenong	39	6.2	38	7.1	30	6.3	34	7.7	20	6.0	-48.7
Southern	Clayton	23	7.9	29	8.5	10	6	18	7.9	36	9.7	56.5
	Parkdale	28	11.3	25	8.3	31	8.1	9	10.6	13	6.6	-53.6
	Springvale	37	6.6	43	8.3	30	5.6	30	5.8	31	6.8	-16.2
St Vincent's	Casey	38	11	50	11.2	40	7.7	46	7.7	55	9.2	44.7
	Cardinia	9	6.1	13	6.4	12	5	6	2.3	9	3.7	0.0
	Boroondara	52	7.6	56	7.8	41	6.2	32	5.3	35	6.9	-33.0
Western	Cambridge Centre	29	9.4	26	6.7	26	7.8	16	4.7	24	6.3	-17.2
	Darebin	0	0	0	0	17	17.5	6	11.3	22	12.0	29.4
	Sunshine Hospital	116	19.6	111	18.1	125	17.6	128	18.2	109	15.5	-6.0
Metro total and average % of total Seps	Williamstown Hospital	40	15.9	45	17.9	59	18.8	52	14.4	37	10.2	-7.5
		1,301	12.2	1,371	11.7	1,369	10.4	1,227	9.4	1,137	8.4	-12.6
		1,646	9.6	1,885	9.6	1,899	8.6	1,759	7.4	1,607	7.0	-2.4

Seps=separations

Stroke-related sub-acute ambulatory services in regional and rural CRCs (2000-01 to 2004-05)

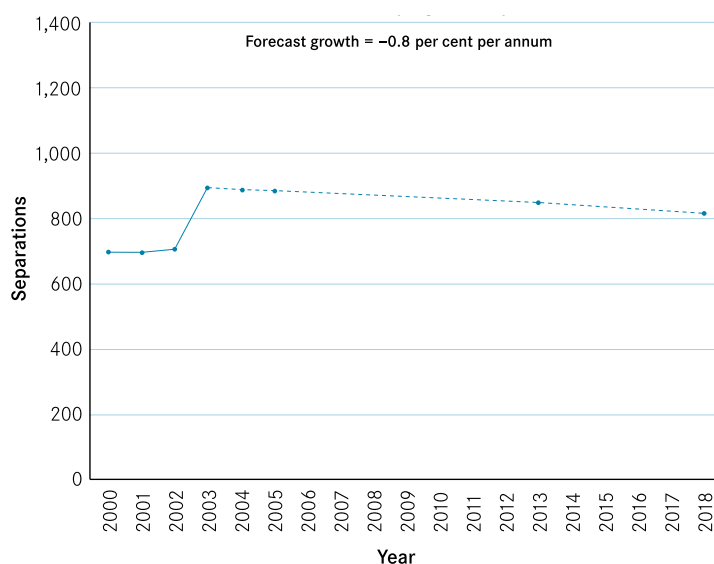
DHS region	Community rehabilitation centre	2000-01		2001-02		2002-03		2003-04		2004-05		% change 2000-01 to 2004-05
		Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	Stroke Seps	% total Seps	
Barwon South Western	Belmont CRC (Geelong)	63	7.7	92	8.7	59	6.5	57	6.4	87	11.3	38.1
	North Geelong CRC	92	8.6	67	8.4	106	9.1	85	7.2	92	8.1	0.0
	Colac CRC (Colac)	5	4.3	[[[	[[[	12	9.6	10	5.1	8	4.8	60.0
	Hamilton House CRC (Hamilton)	2	5.6	0	0	6	2.6	10	3.6	17	7.5	750.0
	Lyndoch Warrnambool CRC	12	10.3	23	19.7	14	12.1	10	8.3	25	15.0	23.0
Grampians	South West Healthcare CRC (Warrnambool)	13	2.3	10	1.8	10	1.7	10	1.4	9	1.4	-29.8
	Ballarat CRC (Queen Elizabeth Centre)	19	6.3	75	9.7	56	6.5	12	5.8	nd	nd	na
	Wimmera Base Hospital CRC (Horsham)	20	14.8	19	8.8	8	2.5	9	2.5	5	1.7	-75.0
Loddon-Mallee	Echuca CRC	9	5.6	14	6.9	16	7.1	15	6.4	11	5.0	22.2
	Mt. Alexander Hospital CRC (Castlemaine)	15	3	33	4	24	2.8	26	3.2	28	3.1	86.7
	John Lindell Rehabilitation Unit (Bendigo)	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
	Stewart Cowen CRC (Bendigo)	0	0	0	0	0	0	0	0.0	0	0.0	na
	Swan Hill District Hospital CRC	18	10.6	12	6.8	19	7.8	14	4.8	16	5.1	-11.1
Hume	Mildura CRC	nd	nd	9	3.2	10	2.6	12	3.3	0	0.0	-100.0
	Goulburn Valley Health CRC (Shepparton)	47	10.5	50	11.7	39	7.2	46	8.5	30	6.1	-36.2
	Seymour District Memorial Hospital CRC	0	0	9	3.1	14	2.3	20	3.8	11	1.8	22.2
	Northeast Health Wangaratta CRC	22	7.2	12	2.7	16	3.2	23	4.9	13	2.9	-39.9
	Wodonga Regional Health Service CRC	8	6.1	10	4.1	17	5.5	22	5.9	25	6.5	212.5
Gippsland	Bairnsdale Regional Health Service CRC	nd	nd	nd	nd	12	2.5	26	1.8	32	2.0	166.7
	Wonthaggi & District Hospital CRC	nd	nd	22	10	11	7.3	27	17.3	5	5.0	-77.3
	Yarram & District Health Service CRC	nd	nd	2	2.6	5	3.3	5	2.6	6	2.7	200
	West Gippsland Hospital CRC (Warragul)	nd	nd	nd	nd	21	9.3	19	7.3	21	7.3	0.0
	Latrobe Regional Hospital CRC (Traralgon)	nd	nd	55	29.7	55	32.5	74	13.4	29	13.9	-47.3
Rural total and average % of total Seps		345	6.4	514	7.5	530	6.5	532	5.0	470	4.9	36.2
Victorian total and average % of total Seps		1,646	9.6	1,885	9.6	1,899	8.6	1,759	7.4	1,607	7.0	-2.4

nd=no data for year; na=not applicable; Seps=separations; CRC=community rehabilitation centre

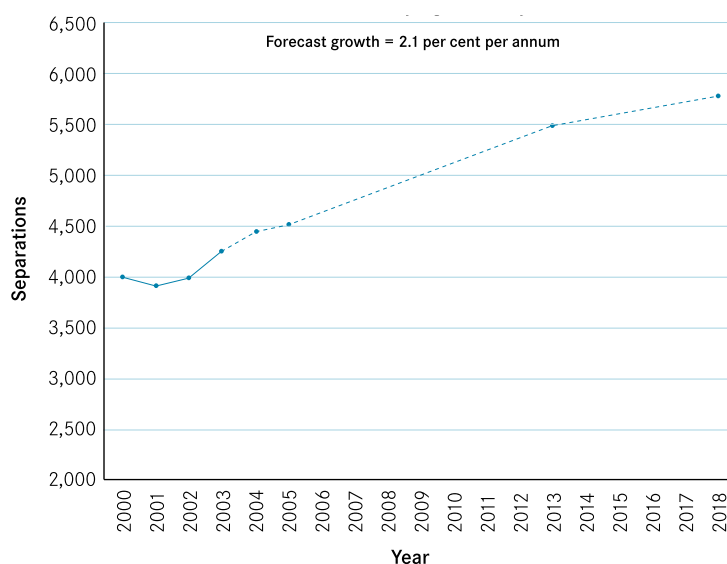
Appendix G

Forecast acute stroke inpatient activity to 2018-19

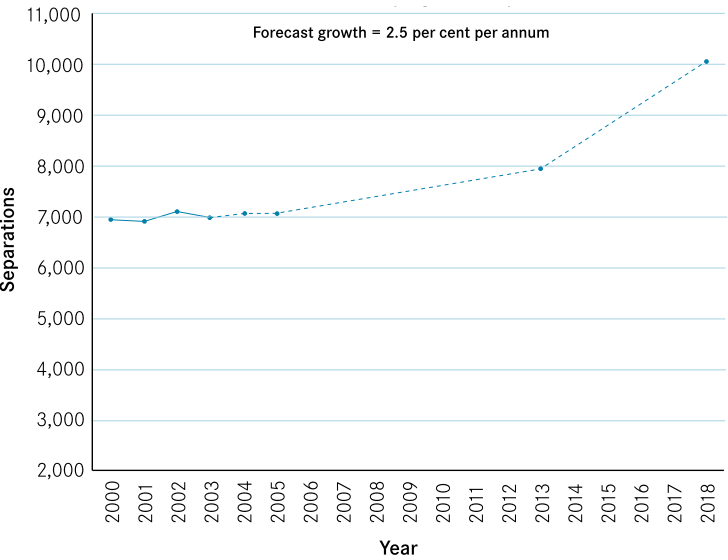
Inpatient stroke forecast by age, 0–44 years



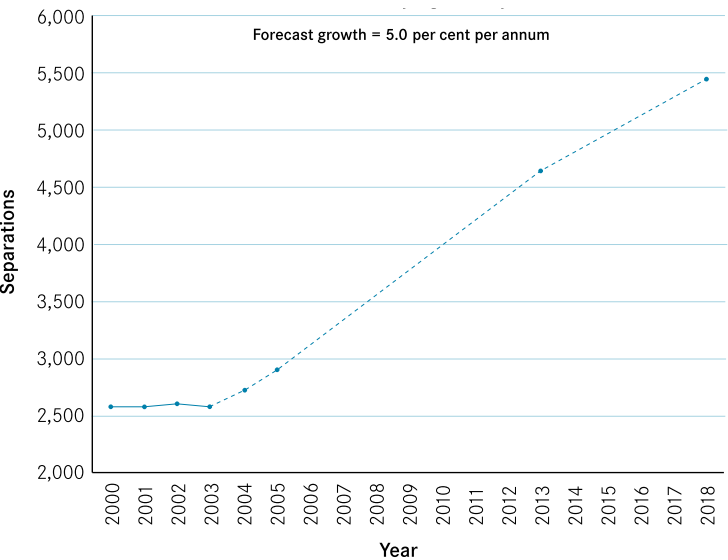
Inpatient stroke forecast by age, 45–69 years



Inpatient stroke forecast by age, 70–85 years



Inpatient stroke forecast by age, 85+ years



Appendix H

Separations by acute stroke principle diagnosis 2000–01 to 2005–06 by ICD-10-AM (3rd ed.)

Separations by acute stroke principle diagnosis 2000–01 to 2005–06 by ICD-10-AM (3rd ed.)

Public sector separations (VAED)

Stroke type descriptor	Relevant ICD codes	Financial year						Mean % change p.a.
		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	
Aneurysm	I671	171	170	207	312	334	297	11.6
Other CNS/brain disorder	G454,934,938,939,98,96,978	232	209	263	267	382	361	9.2
Other CV disorders	I678,679	87	57	83	65	60	64	-5.9
Stroke	I64	1,844	1,873	1,920	1,828	1,952	1,758	-0.9
Arterial occlusions	I650,651,652,653,658,659,660,661,662,663,664,668,669,672	861	801	872	810	788	730	-3.2
Intracerebral haemorrhage	I610,611,612,613,614,615,616,618,619	977	1,060	1,017	1,085	1,065	1,145	3.2
Subarachnoid haemorrhage	I600,601,602,603,604,605,606,607,608,609	497	528	563	549	577	530	1.3
Non-traumatic intracranial haemorrhage	I620,621,629	390	381	406	492	513	434	2.1
Cerebral infarction distal to occlusion	I630,631,632,633,634,635	575	595	673	733	830	1,100	13.8
TIA and related syndromes	G450,451,452,458,459	2,397	2,560	2,577	2,495	2,623	2,871	3.6
Cerebral infarction	I638,639	2,381	2,506	2,538	2,654	2,527	2,682	2.4
Total		10,412	10,740	11,119	11,290	11,651	11,972	2.8

Mean % change p.a. is calculated from 2000-01 to 2005-06

Private sector separations (VAED)

Stroke type descriptor	Relevant ICD codes	Financial year						Mean % change p.a.
		2000-01	2001-02	2002-03	2003-04	2004-05	2005-06	
Aneurysm	I671	55	81	96	109	91	83	8.5
Other CNS/brain disorder	G454,934,938,939,98,968,978	46	56	53	62	108	96	15.8
Other CV disorders	I678,679	94	63	59	41	48	42	-14.8
Stroke	I64	661	497	580	532	475	445	-7.6
Arterial occlusions	I650,651,652,653,658,659,660,661,662,663,664,668,669,672	550	573	584	580	536	515	-1.3
Intracerebral haemorrhage	I610,611,612,613,614,615,616,618,619	182	127	163	144	144	143	-4.7
Subarachnoid haemorrhage	I600,601,602,603,604,605,606,607,608,609	73	48	58	46	54	32	-15.2
Non-traumatic intracranial haemorrhage	I620,621,629	92	94	98	116	82	95	0.6
Cerebral infarction distal to occlusion	I630,631,632,633,634,635	226	208	155	165	166	166	-5.9
TIA and related syndromes	G450,451,452,458,459	653	607	585	599	515	529	-4.1
Cerebral infarction	I638,639	619	449	513	492	497	422	-7.3
Total		3,251	2,803	2,944	2,886	2,716	2,568	-4.6

Mean % change p.a. is calculated from 2000-01 to 2005-06.

Appendix I

Estimated resident population: 2005 and 2018

Metropolitan Melbourne

Region	2005	2018	% growth p.a.
North and West			
Banyule	117,492	121,088	0.2%
Brimbank	175,979	180,773	0.2%
Darebin	127,729	133,031	0.3%
Hobson's Bay	83,194	90,448	0.6%
Hume	152,018	172,940	1.0%
Maribyrnong (C)	61,985	72,805	1.2%
Melbourne	64,999	106,304	3.9%
Melton	76,131	123,794	3.8%
Moonee Valley	108,878	113,942	3.5%
Moreland	135,861	145,384	0.5%
Nilumbick	61,048	62,571	0.2%
Whittlesea	127,915	162,903	1.9%
Wyndham	115,532	170,704	3.0%
Yarra	69,634	79,782	1.0%
Total	1,478,395	1,736,468	1.2%
Eastern			
Boroondara	158,006	163,474	0.3%
Knox	149,930	156,445	0.3%
Manningham	113,676	122,674	0.6%
Maroondah	101,113	115,504	1.0%
Monash	161,720	173,388	0.5%
Whitehorse	144,448	155,451	0.6%
Yarra Ranges	143,398	145,838	0.1%
Total	972,291	1,032,775	0.5%
Southern			
Bayside	89,263	95,106	0.5%
Cardinia	57,115	101,841	4.6%
Casey	217,349	260,553	1.4%
Frankston	120,462	126,954	0.4%
Glen Eira	122,738	134,877	0.7%
Greater Dandenong	127,250	134,738	0.4%
Kingston	136,767	149,061	0.7%
Mornington Peninsula	139,610	160,305	1.0%
Port Phillip	83,167	99,838	1.4%
Stonington	90,302	99,543	0.8%
Total	1,184,123	1,362,817	1.1%
Total metropolitan	3,634,809	4,132,061	1.0%

Rural Victoria

Region	2005	2018	% growth p.a.
Barwon South Western			
Colac–Otway	21,698	21,972	0.1%
Corangamite	17,287	16,266	-0.5%
Glenelg	20,269	19,704	-0.2%
Greater Geelong	204,891	238,928	1.2%
Moyne	15,907	15,388	-0.3%
Queenscliff	3,191	3,307	0.3%
Southern Grampians	16,895	15,339	-0.7%
Surf Coast	23,085	29,071	1.8%
Warrnambool	31,083	36,407	1.2%
Total	354,306	396,382	0.9%
Grampians			
Ararat	11,444	11,402	0.0%
Ballarat	88,777	100,316	0.9%
Golden Plains	16,887	19,180	1.0%
Hepburn	14,800	15,907	0.6%
Hindmarsh	6,392	5,566	-1.1%
Horsham	19,177	20,421	0.5%
Moorabool	26,721	32,326	1.5%
Northern Grampians	12,687	13,034	0.2%
Pyrenees	6,552	6,200	-0.4%
West Wimmera	4,710	4,083	-1.1%
Yarriambiack	7,918	6,883	-1.1%
Total	216,065	235,317	0.7%
Loddon Mallee			
Buloke	7,044	5,991	-1.2%
Campaspe	37,120	41,386	0.8%
Central Goldfields	12,939	13,270	0.2%
Gannawarra	11,814	10,436	-0.9%
Greater Bendigo	94,427	112,381	1.3%
Loddon	8,390	8,110	-0.3%
Macedon Ranges	39,925	49,429	1.7%
Mildura	51,165	59,565	1.2%
Mount Alexander	17,208	18,563	0.6%
Swan Hill	21,419	21,620	0.1%
Total	301,448	340,750	0.9%
Hume			
Alpine	13,142	14,146	0.6%
Benalla	14,039	14,929	0.5%
Greater Shepparton	59,907	71,550	1.4%
Indigo	15,061	16,511	0.7%
Mansfield	6,983	8,188	1.2%
Mitchell	31,512	40,474	1.9%
Moir	27,409	30,565	0.8%
Murrindindi	13,881	15,419	0.8%
Strathbogie	9,597	10,294	0.5%
Towong	6,192	6,056	-0.2%
Wangaratta	26,589	28,035	0.4%
Wodonga	34,762	44,459	1.9%
Total	259,435	300,627	1.1%
Gippsland			
Bass Coast	28,456	36,623	2.0%
Baw Baw	37,860	42,859	1.0%
East Gippsland	40,746	44,304	0.6%
LaTrobe	70,177	70,436	0.0%
South Gippsland	26,834	29,370	0.7%
Wellington	41,368	41,497	0.0%
Total	245,446	265,089	0.6%
Total rural	1,376,700	1,538,165	0.9%

Source: DSE 2004

Appendix J

Key performance indicators for stroke

The Australian Council on Healthcare Standards (ACHS; www.achs.org.au) indicators that relate to stroke care are included in indicators for internal medicine (neurology area), surgical medicine (vascular surgery) and rehabilitation, and include:

- stroke investigation
- carotid endarterectomy
- functional assessment
- rehabilitation planning
- program interruption
- inpatient mortality.

National Stroke Foundation (www.strokefoundation.org.au)

The processes of care performance indicators are:

- documentation of swallowing ability within 24 hours of arrival at hospital
- brain imaging with CT or MRI within 12 hours of arrival at hospital
- allied health assessment within one day of admission
- physiotherapy assessment
- occupational therapy assessment
- speech pathology assessment
- a clinical care plan exists to avoid complications and promote urinary continence
- commencement of aspirin for patients with a thrombotic or thromboembolic stroke within 48 hours of admission
- the multidisciplinary team meets with the patient and their carer within seven days of admission
- timely and informative provision of a discharge summary
- commencement of an anti-platelet or anti-thrombotic agent for patients with a thrombotic or thromboembolic stroke at time of separation
- a self-management (consumer) care plan.

The Joint Commission on Accreditation of Healthcare Organizations (www.jcaho.org)

The JCAHO disease-specific care performance measures for stroke care, which are being validated across a number of sites, are:

- deep vein thrombosis prophylaxis
- discharged on antithrombotics
- patients with atrial fibrillation receiving anticoagulation therapy
- tPA considered
- antithrombotic medication within 48 hours of hospitalisation
- lipid profile during hospitalisation
- screen for dysphagia
- stroke education
- smoking cessation
- a plan for rehabilitation was considered.



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ROAST - Rural Organisation of Australian Stroke Teams

Roast Facility Code [] [] [] []

Form Completed by [] [] [] [] [] [] [] [] [] []
(Initial, Surname)

Patient Number [] [] [] [] [] [] [] [] [] []

Position (RN, EN etc) [] [] [] []

ED Presentation Date [] [] / [] [] / [] [] [] [] ☐ N/A

ED Presentation Time [] [] : [] [] ☐ N/A

Date of Stroke [] [] / [] [] / [] [] [] []

Time of Stroke [] [] : [] []

Age [] []

Sex ☐ Male ☐ Female

From ☐ Home independent ☐ Home with Supports ☐ Special Accommodation ☐ Nursing Home ☐ Inpatient

Oxfordshire Stroke Classification (see over for calculation)

☐ TACI ☐ PACI ☐ LACI ☐ POCI ☐ Unknown

or

☐ Primary intracerebral bleed

Current Risk Factors ☐ Lipids >5.5

☐ HPT ☐ AF

☐ Smoking

☐ Previous Stroke

☐ Diabetes

☐ Other risk of cardiac embolus

Rankin Score - presentation (see over for calculation) ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Date of Ward Admission [] [] / [] [] / [] [] [] []

Time [] [] : [] []

National Performance Indicators : (please mark appropriate column)

Yes No N/A

Documentation of swallowing ability within 24 hours of arrival at hospital

☐ ☐

Brain imaging with CT or MRI scan within 12 hours of arrival at hospital

☐ ☐

Allied health assessment within 1 day of admission (includes ED): Physiotherapy
Occupational Therapy
Speech pathologist

☐ ☐
☐ ☐
☐ ☐

A clinical care plan exists to avoid complications

☐ ☐

A clinical care plan promotes urinary continence

☐ ☐ ☐

Patient is continent

☐ ☐

Commencement (or continuation) of aspirin for pts with thrombotic or thromboembolic stroke
within 48 hours of admission

☐ ☐ ☐

Multidisciplinary team meeting with carer and/or patient within 7 days of admission

☐ ☐

Timely and informative provision of a discharge summary (within 1 day of separation/ discharge)

☐ ☐

Commencement (or continuation) of aspirin for patients with thrombotic or thromboembolic stroke
by day of separation

☐ ☐ ☐

A self-management (consumer) care plan on separation

☐ ☐

Complications

Fever (2 recorded temperatures > 38.5 in first 48hrs)

☐ ☐

Was it actively managed?

☐ ☐ ☐

Hyperglycaemia (1 recorded blood level > 12mmol/l in 24 hr period)

☐ ☐ ☐

Was it actively managed?

☐ ☐ ☐

☐ Aspiration ☐ DVT ☐ UTI ☐ Further stroke ☐ Delirium ☐ Depression ☐ Shoulder pain

Separation from acute unit: Date [] [] / [] [] / 20[] [] Rankin ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Destination ☐ Home ☐ Rehab ☐ Special Accom ☐ Nursing Home ☐ Deceased ☐ Other

Separation from rehab unit: Date [] [] / [] [] / [] [] [] [] Rankin ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Destination ☐ Home ☐ Special Accommodation ☐ Nursing Home ☐ Deceased



Rehabilitation/Sub-Acute Episode Form

ROAST - Rural Organisation of Australian Stroke TeamsRoast Facility Code Form Completed by (Initial, Surname)Patient Number Position (Intern, RMO, Physio, RN, EN etc) Date of stroke / / ☐ N/ATime of Stroke : ☐ N/AAdmission to Rehab / / Time of admission : Age Sex ☐ Male ☐ FemaleFrom ☐ Home ☐ Home with Supports ☐ Special Accom ☐ Nursing Home ☐ Inpatient ☐ Transfer - other Hosp

Oxfordshire Stroke Classification (see over for calculation)

☐ TACI ☐ PACI ☐ LACI ☐ POCI ☐ Unknownor ☐ Primary intracerebral bleed

Current Risk Factors

☐ Lipids >5.5 ☐ AF☐ HPT ☐ Smoking ☐ Diabetes ☐ Previous Stroke☐ Other risk of cardiac embolusRankin Score - presentation (see over for calculation) ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6

Sub-Acute: National Performance Indicators : (please mark appropriate column)		Yes	No	N/A
Documented interdisciplinary care plan- (Within 3 days of admission)	Exists	☐	☐	
Includes:	Social Work	☐	☐	
	Speech Pathology	☐	☐	
	Occupational Therapy	☐	☐	
	Physiotherapy	☐	☐	
	Dietician	☐	☐	
	Psychology	☐	☐	
Functional Outcome Assessment ☐ FIM or ☐ Barthel (See attached sheet for calculation)	Completed	☐	☐	
☐ On admission score	☐ On discharge score			
Continence Assessment - Bladder	Completed	☐	☐	
	Intervention	☐	☐	☐
Bowel	Completed	☐	☐	
	Intervention	☐	☐	☐
Spasticity Assessment	Completed	☐	☐	
Interventions for moderate to severe spasticity		☐	☐	☐
Cognitive Assessment	Completed	☐	☐	
Scale used: ☐ MMSE ☐ COGNISTAT ☐ NCSC ☐ NUCOG ☐ Other.....				
Depression Assessment	Completed	☐	☐	
Scale used: ☐ HAD ☐ DAS ☐ BECK ☐ GDS ☐ Other.....				
Depression Interventions:	Antidepressants	☐	☐	☐
	Counselling	☐	☐	☐
Pain Assessment	Completed	☐	☐	
	Intervention	☐	☐	☐
Sexuality	Written Information Provided	☐	☐	
	Counselling	☐	☐	☐
Secondary Prevention	Were Risk Factors actively managed?	☐	☐	☐
Tick those applicable ☐ Antiplatelet therapy ☐ ACE Inh II	☐ Anticoagulation therapy ☐ Statin			
	☐ Smoking cessation ☐ Diet			
Patient and Family Education:	Was Information Provided	☐	☐	☐
	Information Pack	☐	☐	☐
	Driving information	☐	☐	☐
Discharge Planning:	Family Meeting	☐	☐	☐
	Communication with LMO	☐	☐	☐
Follow-up Care:	Specialist Medical Review	☐	☐	☐
	Community Based Rehabilitation	☐	☐	☐

Separation from rehab unit: Date / / Rankin ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6Destination ☐ Home ☐ Home with Supports ☐ Hostel ☐ Nursing Home ☐ Deceased

Appendix L

Key findings: workforce

(from the *Stakeholder consultation report on the development of a stroke care strategy for Victoria*)

Provider and consumer feedback identified:

- an insufficient level of skilled resource was available to effectively deliver stroke care services across all sectors and across all regions
- difficulty attracting and retaining staff for work that is physically and emotionally demanding
- stroke care workforce is prone to *burn out*.

a) Education of the wider workforce

- educate community providers and emergency staff that *time is brain*.

b) Professional development

Create a supportive, collegial environment:

- develop identifiable stroke teams with clinical leadership which have a strong research focus
- motivate staff and carers
- address potential for fragmentation and professional isolation
- provide appropriate access to training, professional development and peer support
- staff working in the private sector participate in joint professional development and training activities.

Raise the profile of stroke care through investment in professional development:

- stroke be made more prominent in university curricula for nurses, doctors and allied health professionals
- encourage the development of post graduate courses for stroke care

c) Supporting clinical practice

- define the core competencies required for effective stroke care
- provide formal training to support the implementation of evidence-based guidelines
- facilitate access to research grants, professional development funds, conferences
- provide services to support staff (for example, counselling services)

Medical:

- develop a statewide communication network for stroke clinicians
- increase training of neurologists in cerebrovascular medicine
- improve interdisciplinary communication between specialists
- increase sessional allocation for stroke physicians
- resource allocation to reflect requirements to meet the needs associated with delivering emergency care
- improve liaison between country centres and specialist units in Melbourne, and understand resource requirements for effective telemedicine links to centres without neurologists.

Nursing:

- increase clinical nurse specialists in stroke for all stroke units
- improve resources to support higher number of *heavy* patients (now that people are being kept alive with larger strokes)
- recognise the important role of nurses in the delivery of stroke care.

Allied health:

- supply allied health training, particularly in community programs and staff training in neurorehabilitation, especially sub-acute ambulatory care level
- increase resources to support *heavy* patients and appropriately recognise and resource sub-acute services
- supply mentoring programs for rural clinicians.

Carers:

Specific recognition of requirements to support carers in the community is required. Carers are resources that provide a significant service that the state or Australian government may otherwise be required provide.

Source: PricewaterhouseCoopers 2006

Appendix M

Allied health recruitment and retention program overview

Allied health workforce recruitment and retention program

In 2005–06, \$1.3 million was allocated to the allied health recruitment and retention workforce program, with \$1.07 million allocated from 2006–07 to 2007–08. There are four components to the program:

1. Rural Allied Health Scholarship Program
2. Professional Support Program for Rural Allied Health Practitioners
3. Rural Allied Health Professional Locum Program
4. Regional Allied Health Workforce Recruitment and Retention Service.

1. Rural Allied Health Scholarship Program

The aim of the scholarship program is to both expand the number of allied health professionals working in rural areas and to increase the level of retention of existing allied health practitioners by providing opportunities for post-graduate education. The Victorian Healthcare Association (VHA) will administer the program over a three-year period. The scholarship program consists of two levels of financial incentives for individuals, either choosing a career in allied health or those wishing to up-skill:

a. Rural Allied Health Undergraduate Scholarship Program

Scholarships will be offered to students with a rural background wishing to pursue a career in allied health in a rural setting via undergraduate or graduate entry. Scholarships are available to assist rural students with the increased costs that students face in first year of study.

b. Rural Allied Health Postgraduate Scholarship Program

Scholarships will be offered to current rural allied health professionals or for those with allied health undergraduate degrees that wish to further develop their expertise in an area of interest by undertaking postgraduate certificates or diplomas. Scholarships will be offered for both clinical and non-discipline-specific studies.

2. Professional Support Program for Rural Allied Health Practitioners

The evaluation of allied health recruitment and retention projects identified the need to offer alternative approaches for professional development opportunities to allied health professionals in rural and remote Victoria. As a result, a professional support program with two components has been developed:

a. Mentoring Program for Rural and Remote Allied Health Graduates

The aim of the mentoring program is to improve the recruitment and retention of allied health professionals in rural and remote Victoria by piloting a program that is targeted to meet the individual needs of allied health graduates in the publicly funded health and community services sector. It is anticipated that, by establishing supportive relationships for graduates at the beginning of their employment, recruitment and retention of allied health professionals in rural and remote Victoria will be improved. Success Works Pty Ltd has been commissioned to develop and implement the program over a three-year period.

b. CPD for Rural Allied Health Practitioners Subsidy Program

The aim of the CPD program is to increase retention of allied health professionals in rural and remote areas of Victoria by supporting access to appropriate continuing professional development opportunities. A minimum of 85 subsidies will be available to rural allied health professionals to support access to CPD opportunities. VHA will administer the program over a three-year period.

3. Rural Allied Health Professional Locum Program

The aim of this initiative is to improve the recruitment and retention of hospital pharmacists and optometrists in rural Victoria by piloting a locum relief service. The program has two components:

a. Rural Hospital Pharmacy Locum Service

This pilot will test a locum service model whereby a locum pharmacist will be employed on a permanent basis and based at a host hospital within a region. The pharmacist will have access to standard employment conditions, such as annual leave, long service leave, salary packaging, etc. The locum pharmacist will be available for 47 weeks of the year to hospitals in the region of the host site. The host hospital will also be able to access the pharmacist to cover up to eight weeks of work a year to cover its own staffing issues. The locum service will initially be piloted with the Bendigo Healthcare Group and Latrobe Regional Hospital as host sites for their regions over two years.

b. Rural Optometry Locum Service

The Rural Optometry Locum Service, managed by the Optometrists Association Australia (Victorian branch), will continue to receive funding to deliver a locum service to optometrists in rural Victoria. The aim of the locum service is to ensure people living in rural and remote Victoria have access to continuous quality optometry services. One EFT optometrist will be employed over the course of the year, and 36 weeks of locum services will be provided.

4. Regional Allied Health Recruitment and Retention Workforce Service

The Region of Choice initiative is based on the concept of building capacity to improve and enhance regional allied health workforce recruitment and retention efforts. Each region office will develop and manage a recruitment and retention workforce service for rural allied health professionals. The department has developed a model that describes the key components of Region of Choice. The detail of the model will be tailored to suit the operating environment within each individual region, but all will comprise the following broad elements:

- a collaborative regional allied health workforce strategic plan
- a statewide allied health vacancy register
- a case management strategy for assisting allied health workers who express an interest in taking up employment within a particular region, and to assist health services within the region to recruit appropriate staff to vacant positions
- a marketing strategy for promoting a region to the allied health profession
- an orientation program for allied health workers recruited to a region
- a guide for overseas-trained allied health recruits seeking to relocate to rural Victoria

- a statewide website for accessing information about existing allied health recruitment and retention initiatives and support
- resources for the regional allied health workforce
- a guide on local resources, including facilities and services such as schools, accommodation, clubs, etc.
- a platform for future, local implementation of departmental workforce projects, including those funded through the Allied Health Recruitment and Retention Program such as mentoring and scholarships, etc.

Evaluation of the Allied Health Recruitment and Retention Program

An evaluation framework has been developed for the allied health recruitment and retention workforce program and will form part of the each projects deliverables to ensure that clear impact data can be identified, collected and analysed as indicators of the success of the initiatives in improving allied health recruitment and retention rates. Each project will be required to report against the evaluation framework periodically throughout the course of the project.

Acronyms

AHMAC	Australian Health Ministers' Advisory Committee
COAWG	Care of Older Australians Working Group
CPD	continuing professional development
CPHI	centres promoting health independence
CRC	community rehabilitation centres
CT	computer tomography
DHS	Department Of Human Services
ED	emergency department
GEM	geriatric evaluation and management
GP	general practitioner
GPDV	General Practice Divisions Victoria
KPI	key performance indicator
MAS	Metropolitan Ambulance Service
MRI	magnetic resonance imaging
NSF	National Stroke Foundation
NSUP	National Stroke Unit Program
RAV	Rural Ambulance Victoria
ROAST	Rural Organisation of Australian Stroke Teams
SACS	sub-acute ambulatory care services
SCOPES	Stroke Care Outcomes: Providing Effective Services
SITS	Safe Implementation of Thrombolysis in Stroke
TIA	transient ischaemic attack
tPA	tissue plasminogen activator
VAED	Victorian Admitted Episode Dataset
VEMD	Victorian Emergency Minimum Database
VSS	Victorian Stroke Strategy
WHO	World Health Organization

Glossary

Clinician

A person with medical, nursing or allied health training and who provide stroke care to patients.

Length of stay

The length of stay of an admitted patient is measured in patient days. A same-day patient should be allocated a length of stay of one patient day. The length of stay of an overnight or multi-day stay patient is calculated by subtracting the admission date from the separation date and deducting total leave days. Total contracted patient days are included in length of stay.

Principal diagnosis

The diagnosis established after study to be chiefly responsible for occasioning the patient's episode of care in hospital (or attendance at the health care facility).

Separation

The process by which an episode of care for an admitted patient ceases. A separation may be a discharge from the hospital (patient transferred, goes home or dies) or a transfer of care type within the one hospital stay (episode changes from acute care to mental health or aged care). For this reason the number of separations does not equal the number of patients.

Transient ischaemic attack (TIA)

A TIA is a miniature thrombotic/embolic stroke (*mini-stroke*) usually caused by microscopic emboli lodging in very small blood vessels in the brain. They typically disintegrate quickly and dissolve following temporary blockage of the blood supply to the brain. Consequently, symptoms are transient and clear within 24 hours. TIAs often serve as a warning sign for a stroke, similar to angina serving as a warning sign for a heart attack.

Victorian Admitted Episodes Dataset (VAED)

The department collects morbidity data on all admitted patients from the Victorian public and private acute hospitals, including rehabilitation centres, extended care facilities and day procedure centres. These data form the VAED. Among other things, VAED data are used for health services planning, policy formulation, case mix funding and epidemiological research. The VAED data collection also enables the department to meet the requirements of the *Victorian Health Act 1958*, which includes maintaining a comprehensive information system on the:

- causes, effects and nature of illness among Victorians
- determinants of good health and ill health
- use of health services in Victoria.

Victorian Emergency Minimum Dataset (VEMD)

The VEMD contains de-identified demographic, administrative and clinical data detailing presentations at Victorian public hospitals with 24-hour emergency departments. Submission to the VEMD commenced in October 1995.

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