Consensus Panel on the Stroke Rehabilitation System

"Time is Function"

A Report from
The Consensus Panel on the Stroke Rehabilitation System
to the
Ministry of Health and Long-Term Care

Published by:
Heart and Stroke Foundation of Ontario
April 30, 2007

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Acknowledgements

The Consensus Panel on the Stroke Rehabilitation System would like to acknowledge the contribution of the many individuals who lent their time and expertise to this report.

Dr. Patrice Lindsay, Performance and Standards Specialist, Canadian Stroke Network and the Stroke Evaluation Rehabilitation Working Group (See Appendix D) for their contributions to the stroke rehabilitation evaluation conducted by the Stroke Evaluation Advisory Committee (SEAC) of the Ontario Stroke System.

Dr. Robert Teasell, Professor and Chair-Chief, Department of Physical Medicine & Rehabilitation, Parkwood Hospital, St. Joseph's Health Care London for his contribution to the understanding of the literature around stroke rehabilitation and to the understanding of the financial case for stroke rehabilitation.

Rika Vander Laan, Consultant
who acted as interim project manager.

Members of the Work Groups established by the Panel (See Appendix E).

Members of the Secondary Review Panel (See Appendix H).

Stroke rehabilitation professionals and other health care providers and administrators who participated in the consultation process with the 11 stroke regions and the Regional Rehabilitation Coordinators for arranging and hosting these sessions.

Executive Summary

Background

The burden of stroke is high in Ontario. Each year, about 24,000 patients present to hospitals in Ontario with signs and symptoms of stroke. Currently at least 90,000 Ontarians are living with the effects of stroke, such as motor, sensory, cognitive or communication deficits,[1] a number that is expected to grow with Ontario's aging population.

The probability of complete recovery after stroke is only 25%;[2] most patients (85%) survive the stroke, but many are left with severe long-term disabilities. The burden of care is high for the family/caregiver, who is often a frail or elderly spouse. Stroke rehabilitation is essential to minimizing the overall burden of stroke to the stroke survivor, the family/caregiver and the health care system.

In 1998, the Heart and Stroke Foundation of Ontario (the HSFO) proposed the creation of a provincial strategy for stroke care to ensure that all Ontarians have access to the best quality stroke care. This initiative ultimately led to the establishment of the Coordinated Stroke Strategy, which facilitated the development of significant advances in the delivery of stroke care. The initial focus of the Coordinated Stroke Strategy was on the hyper-acute phase of the stroke event. A Consensus Panel on Stroke Rehabilitation (the 2000 Consensus Panel) was convened in response to a need for further attention on stroke rehabilitation.

Since the 2000 Consensus Panel Report was released, there has been an intensifying focus on stroke rehabilitation through the following initiatives:

- Documentation of new evidence on the efficacy and cost-effectiveness of stroke rehabilitation (ongoing),
- The Stroke Canada Optimization of Rehabilitation through Evidence (SCORE) Project (2003),
- The release of HSFO's Best Practice Guidelines for Stroke Care[3] (2003),
- Stroke rehabilitation pilot projects in 6 of the 11 stroke regions in Ontario (2004),
- The approval and funding of two positions for the stroke regions: the Community and Long-Term Care Specialist (2004), and the Regional Rehabilitation Coordinator (2005), and
- The release of Canadian Best Practice Recommendations[4] (2006).

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[1] Ministry of Health and Long-Term Care. (2000). Report of the Joint Stroke Strategy Working Group: Executive summary. Toronto: Ontario.

[2] Stegmayr B, Asplund K, Kuulasmaa K, Rajakangas AM, Thorvaldsen P, Tuomilehto J. (1997). Stroke incidence and mortality correlated to stroke risk factors in the WHO MONICA project: An ecological study of 18 populations. *Stroke*, *28*, 1367-1374.

[3] www.heartandstroke.ca/profed

[4] Canadian Best Practice Recommendations for Stroke Care 2006. Developed by the Canadian Stroke Strategy, a joint initiative of the Canadian Stroke Network and the Heart and Stroke Foundation of Canada. Available at www.canadianstrokestrategy.ca

The Stroke Rehabilitation System Consensus Panel

Although these developments were welcomed, there was still a sense in the stroke rehabilitation community that more could be done, including the development of a strategy to implement changes in practice based on the new evidence. Accordingly, in 2005, the Ministry of Health and Long-Term Care (the MOHLTC) agreed to fund a Consensus Panel on the Stroke Rehabilitation System (the Panel).

The purpose of the Panel is provided in the box below.

> *The Consensus Panel will develop a framework and key stroke rehabilitation standards for the purpose of provincial policy development and regional planning as well as evaluation and performance monitoring of stroke rehabilitation services. The Panel will also identify the necessary tools and processes to support effective transitions to and from appropriate rehabilitation settings across the continuum.*

Specifically, the Panel was formed to:

- Describe and define the components of the Stroke Rehabilitation System in Ontario,
- Identify components of a triage system,
- Select the common assessment tools, and
- Take initial steps in the development of a province-wide data system for stroke rehabilitation.

Methods

The Panel met five times over a period of 15 months. The Panel's work was undertaken in five steps:

- The establishment of two working groups: the Components Working Group and an Assessment Tools Working Group,
- A review of existing guidelines and recommendations for stroke rehabilitation,
- Consultation with regional stakeholders throughout the process,
- Consensus building, through regional consultations in January and February 2007, and
- A secondary review.

The Panel assigned levels of evidence, including consensus opinion, to its proposed standards based on the categories described in the Evidence-Based Review of Stroke Rehabilitation.[5]

[5] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). *Evidence-based review of stroke rehabilitation* (9th Ed.). Canadian Stroke Network. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.

The MOHLTC's Transformation Agenda

An important element in the MOHLTC's Transformation Agenda was the devolution of the responsibility to plan, coordinate, integrate and fund health care services at a regional level, based on the advice of local communities, through the creation of Local Health Integrated Networks (LHINs).

The 11 stroke regions will need to align their work with the priorities set out in each LHIN's Integrated Health Services Plan (IHSP). Most LHINs identified two priority areas that are relevant for stroke rehabilitation: services for seniors or frail elderly, and chronic disease prevention and management. Some LHINs also identified rehabilitation as a priority area.

Gaps in the Existing Delivery of Stroke Rehabilitation

The Panel was convened in large part because stakeholders had identified gaps in the delivery of stroke rehabilitation services across the province. The Panel relied on the stakeholder consultation process to identify services gaps. Wherever possible, the Panel confirmed these concerns with data provided by the Canadian Stroke Network and the Ontario Stroke Evaluation Office.[6]

The Panel found that stakeholders were concerned about a widespread shortage of stroke rehabilitation services across the full continuum of care and the availability of human resources to fill existing positions. Effective health human resource strategies are required at both the regional and provincial level to ensure that the stroke rehabilitation community can meet the need for care.

Stakeholders also expressed a need for more coordination across the continuum of care, and described the role of research and evaluation in the delivery of effective stroke rehabilitation.

[6] Data provided by the Stroke Evaluation Office are based on best available data from the National Rehabilitation Reporting System (NRS), the Registry of the Canadian Stroke Network (RCSN) and other databases. The data are also based on cohorts of patients that may have specific inclusion criteria.

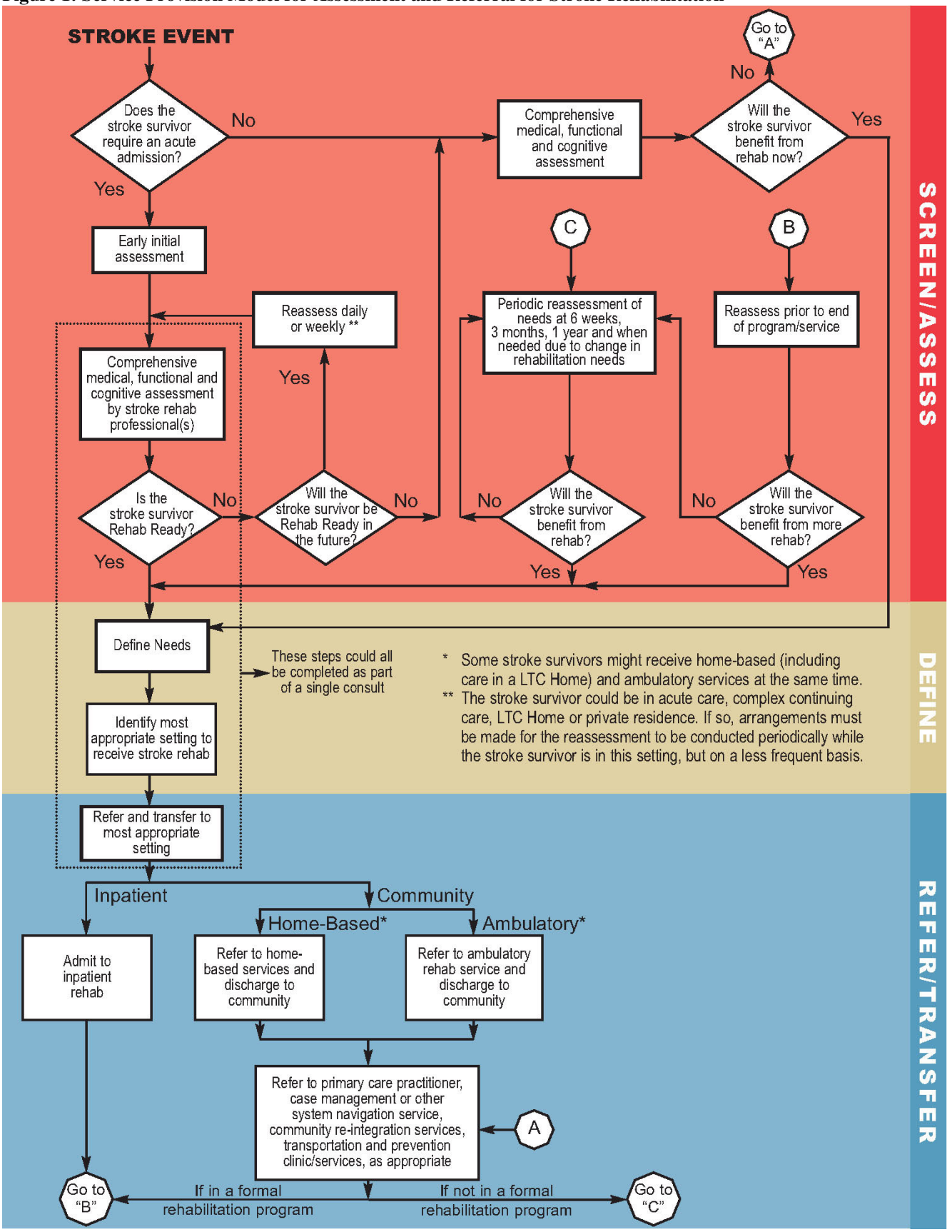
Service Provision Model

One deliverable for the Panel was to identify the components of a triage system. The Panel found that the term "triage" was generally used during hyper-acute phase of care (e.g., in the emergency department), and many stakeholders did not realize that the "triage" system was to apply across the entire continuum of care. Therefore, the Panel has renamed this deliverable as the "service provision model for assessment and referral for stroke rehabilitation" or "the service provision model."

The proposed service provision model is a starting algorithm to provide the foundation for a standardized approach for regional triage systems across the 11 stroke regions. It is expected that, within the general algorithm provided, the stroke regions will adapt the model and develop more detail in the process, as appropriate.

The service provision model is shown graphically in Figure 1.

Figure 1: Service Provision Model for Assessment and Referral for Stroke Rehabilitation



The Panel identified three major steps within the service provision model:

- **Screen/Assess.** The first step is to assess the stroke survivor to determine whether he or she will, at any time, benefit from stroke rehabilitation and, if so, if the stroke survivor is ready to begin post-acute rehabilitation (i.e., Rehab Ready).
- **Define.** Rehabilitation needs will be determined primarily based on functional and cognitive status and the stroke survivor's ability to tolerate the therapy.
- **Refer/Transfer.** The rehabilitation professional(s) must determine the most appropriate setting for the stroke survivor to receive rehabilitation therapy and arrange for the referral once the stroke survivor is Rehab Ready and, if appropriate, the transfer.

This three-step process is not a one-time event. The service provision model suggests that a reassessment be conducted at the many points along the continuum of care. Opportunities for delayed entry and/or reentry into stroke rehabilitation are a critical component of the proposed service provision model.

The Panel defined five criteria for determining whether a stroke survivor is ready to begin rehabilitation outside the acute care setting, which the Panel has defined as Rehab Ready:

1. Readiness for discharge from acute care,
2. Medical stability,
3. Ability to learn,
4. Ability to participate, and
5. Consent.

The Standards

The service provision model and the associated standards reflect six major themes relating to effective stroke rehabilitation:

1. **Screening and Assessment.** As proposed in the service provision model, assessments are required at key points along the continuum of care.
2. **Needs Definition.** For each stroke survivor, a formal plan based on findings of the assessment identifies patient and family/caregivers goals and rehabilitation needs.
3. **Quality Care.** Stroke rehabilitation should be delivered in all settings by an interprofessional team with stroke expertise. Stroke survivors should receive the intensity and duration of stroke rehabilitation services as clinically indicated.
4. **Accessible care.** All stroke survivors who might benefit should have an opportunity to participate in rehabilitation if clinically indicated.
5. **Timely care. Time is function.** Timely access to appropriate and quality stroke rehabilitation services is critical for achieving the maximum gains for stroke survivors. Stroke is a chronic disease. Without timely and appropriate rehabilitation, stroke can become a debilitating disease.

6. **System Planning.** The proposed standards create a framework for system planning both at the regional level (i.e., the service provision model) and at the provincial level (e.g., using data to plan, coordinate, integrate and set priorities for care).

Standards play an important role in setting the gold standard for service delivery and in understanding the needs of patient populations. When the Panel began its meetings in January 2006, there were no widely accepted clinical standards in stroke rehabilitation for Ontario, and the Panel felt that the service provision model would be more useful in the stroke community if it were supported by such standards.

The Panel's mandate included defining the components of stroke rehabilitation. These definitions are included in the full report and should be used in the interpretation of the Panel's standards.

Screening and Assessment

Standard #1: All patients admitted to hospital with acute stroke will have an early initial rehabilitation assessment by relevant rehabilitation professionals as soon as possible after admission (Evidence Level 1) within the first 24-48 hours (Evidence Level 3). Weekends will not limit "time to assessment." (adapted from CSS BPR 5.1a)

Standard #2: All stroke survivors (excluding TIAs) who are not admitted to hospital or who are discharged home from acute care will undergo an ambulatory or home-based screening assessment, which includes a medical, functional and cognitive assessment by professionals with expertise in stroke, within two weeks. (Evidence Level 1); (adapted from CSS BPR 5.1b)

Standard #3a: Survivors of a severe or moderate stroke who are not initially considered eligible for inpatient stroke rehabilitation, once Rehab Ready, will be reassessed at regular intervals for their rehabilitation needs. (Evidence Level 3)

Standard #3b: As clinically indicated, a primary care practitioner, CCAC case manager, physiatrist or relevant rehabilitation professional will conduct a periodic reassessment of rehabilitation needs of the stroke survivor at six weeks, three months, one year and as needed. This assessment and client goals will provide the basis for a comprehensive plan of care to be developed, implemented and updated with the stroke survivor and family/caregivers. (Evidence Level 3); (adapted from HSFO BPG 16)

Standard #4: Stroke survivors should have a mechanism to access or reaccess the rehabilitation environment, if clinically indicated, regardless of the time that has elapsed since the stroke. (Evidence Level 3)

Standard #5: Stroke related impairments and functional status will be evaluated by rehabilitation professionals trained in stroke rehabilitation using standardized, valid assessments. (Evidence Level 2); (adapted from CSS BPR 5.1c)

Needs Definition

Standard #6: The interprofessional team will develop a comprehensive rehabilitation plan with each stroke survivor that reflects the severity of the stroke, the needs and goals of the stroke survivor, and the family/caregiver and home environment. (Evidence Level 3); (adapted from HSFO BPG 12 and CSS BPR 5.2)

Standard #7: Stroke survivors will receive the appropriate intensity and duration of clinically relevant therapies across the care continuum based on individual need and tolerance. (Evidence Level 1); (adapted from HSFO BPG 13 and CSS BPR 5.3)

a) Mild stroke: Stroke survivors discharged to the community will be provided with ambulatory services for one hour of each appropriate therapy, two to five times per week, as tolerated by the patient and as indicated by patient need. If only one discipline is required (e.g., speech-language pathology), then the stroke survivor will be provided with that one service. (Evidence Level 3)

b) Moderate stroke: Survivors of a moderate stroke will receive a minimum of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 3)

c) Severe stroke: Survivors of a severe stroke who are Rehab Ready will receive the frequency and duration of therapy that can be tolerated; the interprofessional team will increase the frequency and duration as tolerance improves to a minimum target of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 1)

Quality Care

Standard #8: All stroke survivors who would benefit from inpatient stroke rehabilitation will be treated in a stroke rehabilitation unit or geographically defined unit with a stimulating environment. (Evidence Level 1); (adapted from CSS BPR 5.2 and the Blueprint)

Standard #9: Once it is determined that a stroke survivor will benefit from:

- Inpatient rehabilitation and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 1)
- Community rehabilitation (i.e., home-based or ambulatory) and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 3); (adapted from CSS BPR 5.2)

Standard #10: Post-acute stroke care will be delivered using a collaborative practice model. The interprofessional team will consist of a core team with clinical expertise including the

stroke survivor and family/caregivers, primary care practitioner, physiatrist, rehabilitation nurse, nurse, physiotherapist, occupational therapist, speech-language pathologist and social worker. The team will have access to a psychologist, a recreation therapist, a spiritual care provider, a dietitian, a pharmacist, a discharge planner, and consults for vocational, driving and video fluoroscopic swallowing assessments, orthoses, augmentative communication, and complex seating. (Evidence Level 3); (adapted from CSS BPR 5.2)

Standard #11: Therapy will include repetitive and intense use of novel tasks that challenge the stroke survivor to acquire necessary skills during functional tasks and activities. The interprofessional team, along with the family/caregiver and volunteers, will promote the practice of skills gained in therapy into the stroke survivor's daily routine and will reinforce increased stroke survivor participation and activity. (Evidence Level 1); (adapted from CSS BPR 5.3 and the EBRSR)

Standard #12a: The interprofessional team will have access to stroke rehabilitation education and professional development modules in order to support the standards and other evidence-based practice initiatives. These educational opportunities will be evidence-based, current and user-friendly and will incorporate knowledge translation strategies. (Evidence Level 3)

Standard #12b: Stroke survivors, family/caregivers and volunteers should be provided with information and education at all stages of care across the continuum (prevention, acute care, rehabilitation, community reintegration). It should address: the nature of stroke and its manifestations, signs and symptoms, impairments and their impact and management, risk factors, planning and decision making, resources and community support. (Evidence Level 1); (adapted from CSS BPR 2.1)

Information and education should be interactive, timely, up to date, provided in a variety of languages and formats (written, oral, counselling approach), and specific to stroke survivor and family/caregiver needs. (Evidence Level 1/2); (adapted from CSS BPR 2.1)

Accessible Care

Standard #13: All stroke survivors, regardless of where they live, will have equitable access to the same standard of care at the appropriate intensity and duration. (Evidence Level 3)

Standard #14: Stroke survivors of a moderate or severe stroke who are Rehab Ready and have rehabilitation goals will be given an opportunity to participate in inpatient stroke rehabilitation. (Evidence Level 1)

Standard #15: Once in a Long-Term Care (LTC) Home, Complex Continuing Care unit or Alternate Level of Care bed, residents should have access to stroke rehabilitation services as clinically indicated and based on the stroke survivor's goals through either ambulatory, outreach or Community Care Access Centre (CCAC) if it is not available in-house. (Evidence Level 3)

Standard #16: Stroke survivors who are discharged to the community with home-based stroke rehabilitation services will be provided with these services as per available evidence-based guidelines. (Evidence Level 3)

Standard #17: Interprofessional teams will facilitate linkages for stroke survivors and their family/caregivers after discharge to services in the community, including:

- Physical help, caregiver training and education, and psychosocial counselling, where needed. (Evidence Level 1); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)
- Access to primary care practitioners, case management or other system navigation service, respite care, educational opportunities, emotional help, wellness, vocational counselling, access to stroke resources, driving safety evaluation, transportation services, peer support groups, community reintegration services, prevention clinic/services and financial support, where needed. (Evidence Level 3); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)

Timely Care. Time is Function.

Standard #18: The wait time from when the stroke survivor is Rehab Ready and referred to rehabilitation services until the start of all appropriate rehabilitation services should be no more than:

- Two business days for inpatient stroke rehabilitation, and
- Five days for both ambulatory and home-based stroke rehabilitation. (Evidence Level 3).

System Planning

Standard #19: Each stroke region will have an explicit stroke rehabilitation service provision model in place in order to facilitate optimal and timely access to rehabilitation services. (Evidence Level 3)

Standard #20: Clinical and service utilization data will be used to plan, coordinate, integrate and prioritize regional stroke rehabilitation services and ensure equitable access based on patient need. (Evidence Level 3)

Province-Wide Information System

The Panel's mandate included defining "a core set of performance indicators for implementation across the province in order to monitor the impact and efficacy of stroke rehabilitation assessment and triage." The Stroke Evaluation Office and the Stroke Evaluation Rehabilitation Working Group worked with the Panel to provide performance indicators for stroke rehabilitation.

The Stroke Evaluation Rehabilitation Working Group has developed a Performance Measurement Manual for stroke rehabilitation that defines performance measures and

specific indicators for each of the standards developed by the Panel. The manual also includes operational definitions and inclusion criteria for each indicator, and available data sources for use in calculating the indicators. Some of the key indicators from this work are shown in Table 1.

Table 1: Key Indicators for System Evaluation

Standard	Dimension	Indicator
1	Screening and Assessment	Median time from hospital admission for acute stroke to initial rehabilitation assessment by relevant rehabilitation professionals during inpatient acute stay.
5	Screening and Assessment	Percentage change in standardized outcome measurement tools from admission to inpatient rehabilitation or other rehabilitation setting/program to discharge from inpatient rehabilitation or other rehabilitation setting/program.
7	Needs Definition	Frequency, duration and intensity of therapies received from rehabilitation professionals while in an inpatient, outpatient or community rehabilitation setting following stroke.
14	Accessible Care	Percentage of acute stroke patients discharged to inpatient rehabilitation.
17	Accessible Care	Proportion of patients who are discharged from acute care who receive a referral for outpatient programs, home-based care or community supportive services.
19	System Planning	A regional service provision model is in place and available.

The Case for Stroke Rehabilitation

This report has proposed significant changes in stroke rehabilitation. The Panel recognizes that such changes will require a significant investment in financial and human resources in stroke rehabilitation. At the same time, a case can be made to justify such an investment. While it was beyond the scope of the Panel's work to undertake a full health economic assessment of the benefits and costs, the Panel did find evidence of the potential benefits of more effective stroke rehabilitation.

With stroke rehabilitation services consistent with the standards recommended by the Panel, many stroke survivors can expect the following benefits:

- Increased independence in activities of daily living and a corresponding reduction in caregiver burden, and
- In many cases, a reduction in complications from the initial stroke and potentially even avoidance of a second stroke.

Estimating the financial benefits of improved treatments is difficult because there is little evidence to support rigorous cost/benefit analysis, and often the savings are not easily realized. For example, if a patient's length of stay is shortened, the cost of that bed does not disappear – it is simply reassigned to another patient. However, the availability of that bed could contribute to:

- Shorter wait times for other patients because inpatient beds are available sooner,
- The ability to service more patients with the same number of beds, which can help to increase service levels or meet growing demand, or
- The ability to avoid investing in additional infrastructure or human resources to increase service levels or meet growing demands.

In addition to using these resources more efficiently, improved care can also help the system to avoid costs of delivering care that would not be needed if the appropriate rehabilitation services were provided. For example, effective community-based stroke rehabilitation services can help to prevent readmissions to acute care. Alternatively, a stroke survivor could achieve sufficient functional gains that an admission to a LTC Home could be avoided or the cost of services provided by the CCAC could also be reduced.

An investment will be required to support regional systems for effective and more immediate transfer to the appropriate level of stroke rehabilitation and to enhance capacity to provide best practice care. The potential for savings to the system and the reduced burden on stroke survivors and their families far outweigh these costs.

Conclusions

Throughout Ontario, the stroke rehabilitation community is observing a renewed interest in rehabilitation in general and stroke rehabilitation in particular. The high incidence and prevalence of stroke and the high burden of the disease on the stroke survivor, family/caregivers, and the health care system will only grow as Ontario's population ages. Prevention and acute care alone will not be able to stem the growth in the number of people living with stroke in Ontario.

The Panel found that stakeholders were concerned about a widespread shortage of stroke rehabilitation services across the full continuum of care and the availability of human resources to fill existing positions. Effective health human resource strategies are required at both the regional and provincial level to ensure the stroke rehabilitation community can meet the need for care.

New evidence has been published since the 2000 Consensus Panel regarding effective strategies for stroke rehabilitation and the benefits of adopting evidence-based practice. Many of these publications confirm the best practices for inpatient stroke rehabilitation that were documented in the 2000 Consensus Panel report, which reinforces the need to translate this evidence to practice. During this time, however, there have been limited additions to the body of evidence regarding community-based stroke rehabilitation.

The LHINs have recognized the importance of access to appropriate and timely care, services for seniors and the frail elderly, chronic disease prevention and promotion and effective rehabilitation services. The standards and recommendations in this report are entirely consistent with the priorities for action articulated by the LHINs.

Ontario now has an opportunity to apply this new knowledge to make a significant and lasting difference on the burden of this debilitating disease. With cooperation and innovation and a will to succeed, the recommendations and standards can be achieved; the residents of Ontario deserve no less.

Recommendations

Adopt the Standards

Recommendation 1: That the MOHLTC consider and adopt the standards outlined by the Ontario Stroke Rehabilitation System Consensus Panel as the framework for planning, developing, funding and monitoring Stroke Rehabilitation across Ontario.

Recommendation 2: That the Ontario Association of Community Care Access Centres consider, adopt and continue to develop the Community Stroke Best Practice Guidelines for the use by all 14 CCACs in Ontario.

Recommendation 3: That the Canadian Council on Health Services Accreditation (the CCHSA) consider the incorporation of the Ontario Stroke Rehabilitation System Consensus Panel Standards into the accreditation framework and provide feedback to the Ontario Stroke System.

Create Needed Capacity to Deliver Stroke Rehabilitation

Recommendation 4: That, as an urgent first step, the Ministry of Health and Long-Term Care review all funding formulae to ensure they provide appropriate incentives to inpatient rehabilitation centres to accept patients with severe strokes.

Recommendation 5: That the Ontario Stroke System monitors progress in implementing the recommendations, support regional stroke programs to fulfill its role in implementation and advocate with the Ministry of Health and Long-Term Care and Local Health Integration Networks as necessary.

Develop Regional Systems

Recommendation 6: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing and implementing a plan based on the Panel's standards in order to meet the service needs of stroke survivors in their area.

Recommendation 7: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing a process for referral to the appropriate services and tracking where and when the appropriate service does not occur.

Recommendation 8: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing stroke rehabilitation service capacity to meet the Panel's standards and in facilitating interorganizational agreements that support having the right person in the right place at the right time.

Take Action to Relieve the Human Resource Shortage

Recommendation 9: That the Health Human Resources Strategy Division of the Ministry of Health and Long-Term Care, in the development of the Health Human Resources Plan, ensure that the plan takes into account the need to:

- Improve the retention and incentives in order to keep new grads in Ontario and specifically in stroke rehabilitation.
- Increase the enrollment for the education of physiotherapists, occupational therapists, speech-language pathologists, nurses and physiatrists, physiotherapy assistants, occupational therapy assistants and communicative disorders assistants across Ontario.
- Explore alternative approaches to building rehabilitation teams.
- Support the development of knowledge translation strategies for stroke rehabilitation professionals to develop and maintain expertise in stroke rehabilitation.
- Encourage educational institutions to endorse and deliver interprofessional education.

Facilitate Evaluation and Research

Recommendation 10: That the Ministry of Health and Long-Term Care support the development of an indicator framework and establish a provincial stroke rehabilitation service database that supports the integration of stroke rehabilitation services along the continuum of care.

Recommendation 11: That the Ministry of Health and Long-Term Care support continued research in stroke rehabilitation, particularly regarding the benefits of providing inpatient rehabilitation seven days per week.

Implementation Considerations

The Panel has defined a service model for assessment and referral for the stroke rehabilitation system and the associated standards within that system. Implementing these standards will take time and commitment from a large number of players.

Implementation must be planned and managed at a regional level because the challenges and priorities can vary significantly by region due to the different geographies. There are also

variations across regions in the availability of the needed human resources and existing programs, in local and regional practice patterns and in the regional priorities, all of which must be taken into consideration in a regional implementation plan. The Panel hopes that this report will provide the necessary information and motivation to begin the journey of building strong regional stroke rehabilitation systems.

1.0 Introduction

The burden of stroke is high in Ontario. Each year, about 24,000 patients present to hospitals in Ontario with signs and symptoms of stroke. Currently at least 90,000 Ontarians are living with the effects of stroke, such as motor, sensory, cognitive or communication deficits,[7] a number that is expected to grow with Ontario's aging population.

The probability of complete recovery after stroke is only 25%;[8] most patients (85%) survive the stroke, but many are left with severe long-term disabilities. For example, at three months after an acute stroke, approximately 20% of survivors remain primary wheelchair users.[9] For 60% of stroke survivors, walking is limited.[10]

The burden is also high for the family/caregiver, who is often a frail or elderly spouse. Research shows that providing care to a stroke survivor can be emotionally rewarding, but also distressing for the care provider.[11,12]

Stroke rehabilitation is essential to minimizing the overall burden of stroke for the stroke survivor and the family/caregiver and on the healthcare system.

The value of stroke rehabilitation for both the stroke survivor and family/caregiver cannot be understated. In the words of the spouse of a stroke survivor[13]:

> *"Rehab has given my husband a life to live. It has improved both his mobility and his communication. Slowly at first, then dramatically, and even today there is still improvement in his communication. This gives me a little more hope for tomorrow."*
>
> *"It can be an isolating experience, both recovering from a stroke and helping to care for a stroke survivor. Rehab is essential to our survival. The Stroke Rehab Team became part of our family, our life blood."*

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[7] Ministry of Health and Long-Term Care. (2000). Report of the Joint Stroke Strategy Working Group: Executive summary. Toronto: Ontario.

[8] Stegmayr B, Asplund K, Kuulasmaa K, Rajakangas AM, Thorvaldsen P, Tuomilehto J. (1997). Stroke incidence and mortality correlated to stroke risk factors in the WHO MONICA project: An ecological study of 18 populations. *Stroke*, *28*, 1367-1374.

[9] Hesse S, Werner C, von Frankenberg S, Bardelben A. (2003). Treadmill training with partial body weight support after stroke. Physical Medicine Rehabilitation Clinic North America. *14*, S111-S123. As reported in EBRSR, Module 9, 9th Edition.

[10] Pohl PS, Perera S, Duncan PW, Maletsky R, Whitman R, Studenski S. (2004). Gains in distance walking in a 3-month follow-up poststroke: What changes? *Neurorehabil Neural Repair*, *18*, 30-36. As reported in EBRSR, Module 9, 9th Edition.

[11] Singh M, Cameron J. (2005, September). Psychosocial aspects of caregiving to stroke patients. *Axone*, *27*(1), 18-24.

[12] Cameron JI, Cheung AM, Streiner DL, Coyte PC, Stewart DE. (2006, February). Stroke survivors' behavioral and psychologic symptoms are associated with informal caregivers' experiences of depression. *Arch. Phys. Med. Rehabil.*, *87*(2), 177-183.

[13] Jane Douglas Walters, spouse of a stroke survivor and member of the Panel.

Stroke rehabilitation is defined as follows:

"Stroke rehabilitation is a progressive, dynamic, goal-oriented process aimed at enabling a person with impairment to reach his or her optimal physical, cognitive, emotional, communicative and/or social functional level.

It is multidimensional consisting of prevention and treatment of medical complications, restoration of maximal independent functioning, facilitation of psychosocial coping and adaptation by the patient and family, promotion of community reintegration and enhancement of quality of life for stroke survivors.

Stroke rehabilitation relies on both remediational interventions designed to reduce neurological deficits and teaching compensatory techniques to enhance functional independence in the presence of neurologic impairment." [14]

With a more thorough and proactive approach to stroke rehabilitation, patient outcomes could be improved significantly, thereby reducing the burden of this disease on stroke survivors, their family/caregivers and the health care system.

1.1 Developments in Stroke Care and Stroke Rehabilitation in Ontario

In 1998, the Heart and Stroke Foundation of Ontario (the HSFO)[15] proposed the creation of a provincial strategy for stroke care to ensure that all Ontarians have access to the best quality stroke care. This initiative ultimately led to the establishment of the Coordinated Stroke Strategy, which facilitated the development of significant advances in the delivery of stroke care.

The initial focus of the Coordinated Stroke Strategy was on the hyper-acute phase of the stroke event. A Consensus Panel on Stroke Rehabilitation (the 2000 Consensus Panel) was convened in response to a need for further attention on stroke rehabilitation.

In follow-up to the release of the Consensus Panel on Stroke Rehabilitation 2000, six stroke rehabilitation pilot projects were funded by the MOHLTC to implement and evaluate the recommendations of the 2000 Consensus Panel report. These pilots were completed in December 2004. Three pilot projects (Central South, SCRIPT,[16] and Stroke Tele Rehabilitation) developed common assessment and triage tools for stroke rehabilitation. One project (West GTA) examined the patient transition from hospital to home. The other

[14] Consensus Panel on Stroke Rehabilitation. (2000, May). A report from The Consensus Panel on Stroke Rehabilitation to the Stroke Strategy Steering Committee, Heart and Stroke Foundation of Ontario. The definition is, in part, adapted from Roth EJ, Heinemann AW, Lovell LL, Harvey RL, McGuire JR, Diaz S. (1998). Impairment and disability: Their relation during stroke rehabilitation. *Arch. Phys. Med. Rehabil*., *79*, 329-335.
[15] A list of abbreviations is provided on the final page of this report.
[16] SCRIPT = Stroke Coordinated Referral Initiative Pilot.

two pilots (Southwestern Ontario and Southeastern Ontario) focused on enhanced rehabilitation services in the community.[17]

At the same time as the pilot projects, new evidence was documented regarding best practices and the potential improvement in patient outcomes and reduction in system costs with more effective stroke rehabilitation. With funding from the Canadian Stroke Network, Dr. Robert Teasell and his team from the University of Western Ontario began a review of the literature relating to stroke rehabilitation (The Evidence-Based Review of Stroke Rehabilitation or EBRSR).[18] Much of the new evidence reinforces the best practices that were identified by the 2000 Consensus Panel.

A recent journal article outlining the success of the Ontario Stroke System[19] reported that although great strides have been made in stroke care (e.g., a reduction in the number of acute inpatient hospitalizations in all stroke centres), there was also a reduction in the percentage of stroke survivors discharged from hospital who were referred for home care rehabilitation services.

The Canadian Stroke Network (CSN) also contributed to the emphasis on rehabilitation through the Stroke Canada Optimization of Rehabilitation through Evidence (SCORE) Project. The SCORE Project was designed to:

- Identify and eliminate therapies that are not effective,
- Identify and communicate gaps in knowledge about the effectiveness of common therapies and techniques,[20] and
- Implement existing evidence-based rehabilitation strategies.

In 2006, SCORE and the Canadian Stroke Quality of Care convened a joint consensus meeting on assessment and outcome tools as well as system indicators. This panel established the model for evaluation indicators that Ontario is currently using.

In 2003, the HSFO released its Best Practice Guidelines for Stroke Care,[21] which was followed by the Canadian Best Practice Recommendations for Stroke Care in 2006.[22] Both documents included detailed guidelines for stroke rehabilitation, based in large part on the growing body of evidence for stroke rehabilitation.

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[17] Recommendations from the pilot project are provided in Appendix K. For more information on the pilot projects, refer to www.heartandstroke.ca/profed

[18] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). *Evidence-based review of stroke rehabilitation* (9th Ed.). Canadian Stroke Network. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.

[19] Lewis M, Trypuc J, Lindsay P, O'Callaghan C, Dishaw A. (2006). Has Ontario's stroke system really made a difference? *Healthcare Quarterly*, *9*(4).

[20] The Evidence-Based Review of Stroke Rehabilitation was designed to address these first two tasks.

[21] www.heartandstroke.ca/profed

[22] Canadian Best Practice Recommendations for Stroke Care 2006. Developed by the Canadian Stroke Strategy, a joint initiative of the Canadian Stroke Network and the Heart and Stroke Foundation of Canada. Available at www.canadianstrokestrategy.ca

As part of the overall strategy to manage stroke care in Ontario, the MOHLTC approved and funded two positions for the stroke regions:

- The Community and Long-Term Care Specialist (2004), and
- The Regional Rehabilitation Coordinator (2005).

Although these developments were welcomed, there was still a sense in the stroke rehabilitation community that more could be done, including the development of a strategy to implement changes in practice based on the new evidence. Accordingly, the MOHLTC agreed to fund a Consensus Panel on the Stroke Rehabilitation System, which is the subject of this report.

These events and developments are summarized in Table 1. A more detailed description of the major events is provided in the following sections.

1.1.1 The Coordinated Stroke Strategy

In 1998, the HSFO proposed the creation of the "coordinated stroke strategy," a provincial strategy for stroke care to ensure that all Ontarians have access to the best quality stroke care, with the initial focus on access to tissue plasminogen activator (t-PA) when indicated. The Coordinated Stroke Strategy resulted in the establishment of the Ontario Stroke Strategy and Regional and District Stroke Centres that had the equipment, health care specialists, infrastructure and needed protocols to provide leadership for the development, implementation and integration of stroke care throughout their region and across all points in the continuum of stroke care.

1.1.2 Consensus Panel on Stroke Rehabilitation, 2000

The HSFO, in consultation with the MOHLTC, established a Consensus Panel on Stroke Rehabilitation (the 2000 Consensus Panel). The 2000 Consensus Panel included representatives of the MOHLTC, the HSFO and key stakeholders from across the province representing consumers, providers of health care and health insurance, planners and researchers.

The terms of reference of the 2000 Consensus Panel were to[23]:

- Define stroke and stroke rehabilitation;
- Describe the current system (public, private, regional, provincial, rural, northern, and care provided by families) and identify system barriers;
- Describe the need for stroke rehabilitation (individual/population);
- Summarize what experts currently recommend in stroke rehabilitation based on best evidence;
- Design a system for stroke rehabilitation (planning principles, system evaluation, performance outcomes and indicators); and

[23] Consensus Panel on Stroke Rehabilitation. (2000, May). A report from The Consensus Panel on Stroke Rehabilitation to the Stroke Strategy Steering Committee, Heart and Stroke Foundation of Ontario.

- Propose ways to close gaps in the provision of stroke rehabilitation, including in rural and northern Ontario.

Table 1: Chronology of Developments in Stroke Care Research and Policy in Ontario

Date	Event or Development
1998	The HSFO proposed the creation of a provincial strategy for stroke care. The Coordinated Stroke Strategy resulted in the establishment of the Ontario Stroke Strategy and Regional and District Stroke Centres
2000	Final Report of the Consensus Panel on Stroke Rehabilitation
2001	The Consensus Panel on the Management of the Hemiplegic Arm and Hand was convened by Susan Barreca at McMaster University
2001	The Evidence-Based Review of Stroke Rehabilitation was begun
2002	The MOHLTC funded the Stroke Rehabilitation Pilot Projects
2003	The HSFO released its Best Practice Guidelines for Stroke Care
2003	The Rehabilitation Education Program for Stroke (REPS) Web site was launched
2003	The Canadian Stroke Network (CSN) launched its Stroke Canada Optimization of Rehabilitation through Evidence (SCORE) Project
2004	The Stroke Rehabilitation Pilot Projects were completed
2004	The MOHLTC approved the Community and Long-Term Care Specialist positions
2005	The MOHLTC approved the Regional Rehabilitation Coordinator positions
2005	The MOHLTC funded the Consensus Panel on the Stroke Rehabilitation System
2005	Release of the Ontario Stroke Strategy Monitoring and Evaluation Report
2006	SCORE/Canadian Stroke Quality of Care consensus meeting was convened on stroke rehabilitation outcome tools and system performance indicators
2006	Canadian Best Practice Recommendations on Stroke Care were released

The 2000 Consensus Panel built its work on the review of over 600 articles on stroke rehabilitation completed by Dr. Robert Teasell and his team, which provided a solid foundation for understanding best practices in this area.

A status report of progress against the recommendations from the 2000 Consensus Panel is provided in Appendix A.

1.1.3 The Evidence-Based Review of Stroke Rehabilitation (EBRSR)

The Evidence-Based Review of Stroke Rehabilitation (EBRSR) was initiated in response to a recommendation in the 2000 Consensus Panel report for a process to maintain "timely and

accurate information on effective stroke rehabilitation, identifying ideas for further research, supporting continuous peer-review and encouraging improved evidence-based practice."

The goal of the EBRSR project was to develop an updated review of the published literature on stroke rehabilitation.[24] The EBRSR is updated on an ongoing basis and is currently in its ninth edition. The EBRSR was most recently updated in October 2006.

1.1.4 Best Practice Guidelines

In 2003, the HSFO released Best Practice Guidelines for stroke care. Within these guidelines, the HSFO identified four best practices for stroke rehabilitation management, four for transition management and four for community reengagement. These guidelines were based on the most recent evidence at the time, including some evidence that was not available to the 2000 Panel.[25]

In 2006, the Canadian Stroke Strategy, a joint initiative of the Canadian Stroke Network and the Heart and Stroke Foundation of Canada (HSFC), released best practice recommendations for stroke care. These recommendations included guidelines specific to stroke rehabilitation across the continuum of care.[26]

1.1.5 Funded Positions for the Stroke Regions

Community and Long-Term Care (CLTC) Specialists were engaged in 2004 to advance current practices and processes regarding stroke survivor transition to long-term and community care. Their focus is on identifying process improvements that support best practices in transition management and community reengagement.

In April of 2005, the MOHLTC approved 10 Regional Stroke Rehabilitation Coordinators. (The three Toronto Stroke Regions have three Coordinators with a dual role, both CLTC and Rehabilitation, called Stroke Rehabilitation and Community Re-Engagement Coordinators.) These positions were created in recognition of the value of focusing on the coordination of stroke rehabilitation programs at a regional level.

1.1.6 Stroke Evaluation Advisory Committee (SEAC)

Based on the work completed during the 2006 SCORE/Canadian Stroke Quality of Care Study meeting, a rehabilitation working group with SEAC members was formed. During 2006, this group developed an evaluation model for stroke rehabilitation that included the identification of several performance measures and specific quality indicators for stroke rehabilitation across the continuum of care and variety of settings where stroke rehabilitation is delivered.

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[24] The entire review is posted on a public Web site: www.ebrsr.com

[25] Coordinated Stroke Strategy. (2003). *Heart and Stroke Best Practice Guidelines for Stroke Care*. Heart and Stroke Foundation of Canada.

[26] Canadian Best Practice Recommendations for Stroke Care 2006. Developed by the Canadian Stroke Strategy, a joint initiative of the Canadian Stroke Network and the Heart and Stroke Foundation of Canada.

1.2 The Ontario Stroke System

With the four-year implementation phase of the Ontario Stroke Strategy completed, the Ministry of Health Promotion is now calling the model the Ontario Stroke System (OSS) and has confirmed an annual allocation of $30 million to support the development and growth of regional stroke systems.

The goal of the OSS is to decrease the incidence of stroke and improve patient care and outcomes for persons who experience stroke. This goal will be accomplished by reorganizing stroke care delivery across the continuum of care to ensure that all Ontarians have access to appropriate, quality stroke care in a timely manner. The system is expected to sustain an organized and comprehensive approach to the delivery of stroke care across the continuum according to evidence-based best practice.

More information is provided on the OSS in Appendix B.

Much of this funding for the OSS has been devoted to improving services during the acute phase of the stroke event; only a small percentage of the total funding made available was earmarked for stroke rehabilitation. With the new evidence becoming available, there is a growing commitment to developing an effective strategy to ensure that stroke rehabilitation in Ontario reflects this new evidence.

1.3 Stroke Rehabilitation System Consensus Panel 2007

The 2000 Panel focused its efforts on inpatient care. However, most stroke survivors, after a short inpatient stay, are discharged to the community and spend considerably more time during the recovery, rehabilitation, and return to community living phases than in the acute care phase.

In 2005, in response to this growing interest in stroke rehabilitation, MOHLTC funded a Stroke Rehabilitation System Consensus Panel (the Panel) with the following purpose:

> *The Consensus Panel will develop a framework and key stroke rehabilitation standards for the purpose of provincial policy development and regional planning as well as evaluation and performance monitoring of stroke rehabilitation services. The Panel will also identify the necessary tools and processes to support effective transitions to and from appropriate rehabilitation settings across the continuum.*

Specifically, the Panel was formed to:

- Describe and define the components of the Stroke Rehabilitation System in Ontario,
- Identify components of a triage system,
- Select the common assessment tools, and
- Take initial steps in the development of a province-wide data system for stroke rehabilitation.

The Panel's terms of reference are provided in Appendix C.

The Panel included members from relevant clinical areas (e.g., physiatry, physiotherapy, occupational therapy, speech-language pathology, nursing) from across the province and across the care continuum (e.g., acute, rehabilitation, long-term and community care), as well as a stroke survivor, spouses of stroke survivors, and administrators and researchers from the Canadian Stroke Network (CSN), the HSFO, the Canadian Institute for Health Information (CIHI) and one Local Health Integration Network (LHIN). OSS positions were also well represented with the inclusion of a Regional Program Manager, a District Stroke Coordinator, a Regional Rehabilitation Coordinator and a Community and Long-Term Care Specialist. A list of the Panel's members is provided as Appendix D.

The Panel members recognized early in their deliberations that the service provision model would be more meaningful for the stroke community if it were tied to key stroke rehabilitation standards. Therefore, the Panel undertook to develop these standards to complement the service provision model. The Terms of Reference were updated after the first meeting to reflect these changes.

The Panel defined stroke as an acute neurological dysfunction of vascular origin with sudden or at least rapid onset of symptoms and signs corresponding to the involvement of focal areas in the brain. Focal brain injury arising from vascular neck trauma is included.

Although the Panel's mandate does not explicitly apply to people who have experienced a transient ischemic attack (TIA), the principles and processes described in this report can be equally beneficial in addressing residual deficits that might be experienced from a mild stroke.

The scope of the Panel's work was limited to adult stroke survivors (i.e., over 18 years of age) in Ontario, but this in no way negates the importance of pediatric stroke rehabilitation and pediatric transitions into adulthood. Pediatric stroke services are addressed in a paper entitled, "Towards an Organized Approach to Pediatric Stroke within the Ontario Stroke System,"[27] which was reviewed by the Specialized Pediatric Advisory Committee and submitted to the MOHLTC to consider funding for a provincial pediatric resource.

The standards and recommendations in this report are intended to apply to all patients with stroke, including recurrent stroke. Indeed, Panel members reported that first strokes are often undetected and the first presentation is ultimately found to be a second or third stroke.

The Panel's focus was on formal stroke rehabilitation services. However, the Panel recognizes that rehabilitation does not end when the formal programs end. Self-care programs, recovery services and the full range of activities and services needed to restore the stroke survivor's quality of life all can make an important contribution to rehabilitation and recovery. Efforts to enhance chronic disease prevention and management also offer a significant opportunity to improve the support provided to stroke survivors.

[27] Heart and Stroke Foundation of Ontario. (2006, May). Towards an organized approach to pediatric stroke within the Ontario Stroke System.

The anticipated results of a successful Panel will be:

- Improved access to the appropriate intensity and duration of rehabilitation services,
- Enhanced understanding of the issues, which will lead to identification of needed improvements in the current system,
- Improvements in the delivery of existing services, and
- Data points identified in order to lay the foundation for a future province-wide data system.

While the ultimate goal is to ensure that all stroke survivors are able to access the most appropriate service in a timely fashion in a newly organized rehabilitation system, it is recognized that such a goal requires long-term planning and ongoing phasing, which in turn is dependent on and influenced by regional priorities and funding availability.

Some of the standards have a clinical focus and provide evidence-based care for stroke survivors, for which the primary audience is health care professionals. Other standards are intended more for health system leaders who are funding and planning the delivery of stroke rehabilitation services, with the intention of ensuring that adequate infrastructure and capacity are available to ensure timely and equitable access to appropriate and quality care.

The information and recommendations in this report are intended for the use of health care professionals across the care continuum working with stroke survivors in Ontario, health care administrators across the care continuum in Ontario, and funding bodies (i.e., MOHLTC and LHINs).

In the seven years since the 2000 Panel, the stroke community's understanding of stroke rehabilitation has increased significantly. It is expected that the Panel's recommendations will be revisited in three to five years as new research becomes available to further inform evidence-based practice.

1.4 Organization of this Report

The remainder of this report is organized as follows:

- Chapter 2 presents a summary of the Panel's approach to its work, including its vision, guiding principles and level of evidence used.
- Chapter 3 provides an overview of the trends in health care policy and funding – both general and specific to rehabilitation – that will influence the implementation of the Panel's recommendations.
- Chapter 4 presents a short description of how stroke care is organized in Ontario, and the Panel's definitions of stroke rehabilitation.
- Chapter 5 presents the gaps and challenges that were raised by stakeholders during the consultation process. The standards and recommendations that follow in the subsequent chapters propose solutions to closing these gaps.

- Chapter 6 presents the service provision model for assessment and referral for stroke rehabilitation.
- Chapter 7 presents the Panel's approach to developing the standards.
- The Panel's Standards are presented in Chapter 8, with a short summary of the evidence and some commentary on the rationale for each standard.
- Chapter 9 describes a proposal for evaluating performance against the standards.
- A brief overview of the benefits to stroke survivors and their families/caregivers, as well as the benefits to the health care system, is provided in Chapter 10.
- Final conclusions and recommendations are presented in Chapter 11.
- Considerations for the regional implementation plans are provided in Chapter 12.

2.0 Methods

2.1 Approach to the Work

The Panel met five times over a period of 15 months. The Panel's work was undertaken in five steps:

- The establishment of two working groups: the Components Working Group and an Assessment Tools Working Group,
- A review of existing guidelines and recommendations for stroke rehabilitation,
- Consultation with regional stakeholders throughout the process,
- Consensus building through consultations in January and February 2007, and
- A secondary review.

2.1.1 Background Work

In preparation for this Ontario Stroke Rehabilitation System Consensus Panel, two Working Groups were convened:

- A Components Working Group met to begin the development of definitions for the Panel's work and to describe the stroke survivor's journey – and associated gaps in the service continuum – for survivors with strokes of varying severity residing in different settings (e.g., large urban community versus rural community). Definitions specific to stroke rehabilitation were developed by looking at a variety of sources and then adopting or adapting them for stroke rehabilitation. The sources for these definitions are provided in Appendix F.
- An Assessment Tools Working Group met to develop background information for the Panel regarding triage (and associated assessment tools) and the movement of stroke survivors along the care continuum.

The Working Groups met via teleconference from August through November 2005 and were instrumental in helping to prepare for the Panel. Both were interdisciplinary and inter-regional. Please see Appendix E for a list of participants.

Both Working Groups assisted with much of the background thinking and planning behind the scenes. In addition, the Working Groups assisted with the development of background documents for the Panel to review. These documents were shared with the Panel members.

The Panel identified gaps in service delivery based on the Panel members' experience, building on the work of the Components Working Group and regional stakeholder consultations in August 2005. To the degree possible, the Panel quantified the impact of those gaps using data from the Stroke Evaluation Advisory Committee (SEAC) of the Ontario Stroke System. The Panel developed a service provision model and associated standards based on the gap analysis and the review of existing standards. The Panel also agreed on common assessment tools for the initial assessment of stroke survivors for the purpose of triage.

The Panel reviewed standards and guidelines from seven separate sources. These sources are listed in Appendix G. Based on this review, and a discussion of the most recent literature on stroke rehabilitation, the Panel adapted standards based on consensus opinion about the appropriateness and relevance of the guideline for this Panel's work. Where no existing guideline existed in an area of interest to this Panel, the Panel developed a new guideline based on the evidence, including the Panel members' consensus opinion.

The Panel relied on the Evidence-based Review of Stroke Rehabilitation (EBRSR)[28] and the more recent literature review conducted by Dr. Teasell documenting new research relating to stroke rehabilitation, with support from the Canadian Stroke Network (the Blueprint). [29] The SCORE project and the Canadian Stroke Strategy also conducted extensive reviews of existing guideline literature. This information was used to inform the Panel's discussions regarding standards and to document the case for investing in stroke rehabilitation.

Over the past few years, SEAC has developed a comprehensive stroke evaluation framework that includes all components of the stroke continuum, including rehabilitation. The Panel aligned itself with SEAC in the development of an evaluation framework for stroke rehabilitation and a strategy for province-wide data collection, evaluation and analysis.

2.1.2 Consultation with Regional Stakeholders

During August 2005, the HSFO Stroke Rehabilitation Consultant visited the 11 stroke regions in order to gain a better understanding of the current state of stroke rehabilitation across the province.

Overall, the visits were successful with active participation from the various regions. There was considerable discussion related to the gaps in the system. Many participants raised points that were brought forward for the Panel's consideration.

The definitions, service provision model and standards were reviewed with representatives from each of the 11 stroke regions in January and February 2007. Over 100 stroke care professionals across the province participated, representing physiatry, nursing, physiotherapy, occupational therapy, speech-language pathology, social work, dietetics and management. The participants also represented many roles within the health care system from the regional stroke teams, including care providers, Regional Stroke Rehabilitation Coordinators, Community and Long-Term Care Specialists, Program Managers and Regional Education Coordinators.

Feedback from these consultation sessions was incorporated into a draft report for the Panel.

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[28] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). *Evidence-based review of stroke rehabilitation* (9th Ed.). Canadian Stroke Network. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.

[29] Teasell R, Evans M, Jutai J, Foley N, Salter K. (2006, October). *A blueprint for stroke rehabilitation: Improving outcomes and maximizing efficiencies*. Prepared for the Canadian Stroke Network.

2.1.3 Consensus Building

The Panel's research, analysis and proposed standards were documented in a draft report for review and discussion by the Panel. For each proposed standard, the Panel considered the quality of the evidence as described in the literature to inform its deliberations.

At the first meeting, Panel members agreed on the following approach for decision making where the opinion was not unanimous. This approach is also documented in the Panel's Terms of Reference in Appendix C:

- The Panel would strive for unanimity,
- Where unanimity was not possible, decision making would occur by vote, with consensus being reached with at least 75% consent (of those present at the meeting), and
- Ample time would be allowed for full discussion to build consensus before voting.

At its final meeting, the Panel members reached consensus on each proposed standard and recommendation. The Panel's final recommendations are presented in this report.

2.1.4 Secondary Review

Once the Panel had reviewed the draft report and agreed on the final standards and recommendations, the report was circulated to a secondary review panel for input. Feedback from the secondary reviewers was incorporated into a final draft report for review by the Panel members. See Appendix H for a list of the secondary review members.

2.2 The Panel's Vision for Stroke Rehabilitation

This Panel endorses the vision of the 2000 Consensus Panel for stroke rehabilitation services:

> *Individuals who experience a stroke will have timely access to the appropriate intensity and duration of rehabilitation services. These services will be provided in a comprehensive and coordinated way to patients and families, by agencies and health care providers who are expert in stroke care and practice rehabilitation principles.*

2.3 Guiding Principles

The following principles guided the Panel's development of a stroke rehabilitation system for Ontario:

1. Stroke rehabilitation will be patient/client-centered and will meet the diverse and changing needs of stroke survivors and their families/caregivers.
2. Stroke survivors will have their rehabilitation potential assessed by experts and will have timely and appropriate access to stroke rehabilitation expertise throughout the care continuum. This access includes reaccessing stroke rehabilitation if and when the need arises.

3. Stroke rehabilitation is a specialized area. Stroke rehabilitation expertise will be demonstrated formally through certification or informally through recognized clinical leadership in the community. Expertise and competency will be maintained and enhanced by using rehabilitation principles, continuously working with stroke survivors, and engaging in continuing education. Clustering stroke survivors in each setting along the continuum of recovery and an interdisciplinary team approach both help to strengthen the development of rehabilitation expertise.
4. Stroke rehabilitation will incorporate high quality, accurate and timely information and information management into decision making.
5. New technologies such as telemedicine will be used to support rehabilitation consultation, education, and service to rural, northern and remote communities in all care settings.
6. Stroke rehabilitation will be research- and evidence-based.
7. Stroke rehabilitation requires new and innovative ways of delivering services based on existing resources. There is a need to be systems focused as well.

These guiding principles are the foundation on which the Panel's recommended standards were determined.

2.4 Levels of Evidence

The Panel assigned levels of evidence to its proposed standards based on the categories described in the EBRSR.[30]

Table 2: Levels of Evidence

Level 1 or Strong/Moderate	Supported by the results of two or more randomized controlled trials (RCTs) of at least "fair" quality (strong) or supported by a single RCT of at least "fair" quality (moderate).
Level 2 or Limited	Supported by at least one nonexperimental study (e.g., non-randomized controlled trial, cohort studies).
Level 3 or Consensus	In the absence of evidence, agreement by a group of experts on the appropriate treatment course. Note that these are unrated studies.

There is limited research or evidence available on stroke rehabilitation practice in the community. However, through the stakeholder consultations and from the input of the experts on the Panel, the Panel identified many common activities that are generally accepted as good practice. The value of reflective practice should not be underestimated. Experienced clinicians have a strong sense of what are appropriate treatment techniques or approaches for each stroke survivor, to assist with meeting rehabilitation goals. Standards based on reflective practice are identified as Level 3 evidence where a consensus opinion

[30] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). *Evidence-based review of stroke rehabilitation* (9th Ed.). Canadian Stroke Network. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.

was developed for the standard. The use of consensus opinion to support a standard is consistent with general practice.

3.0 Environmental Scan

The first chapter of this report describes the events and developments within the stroke rehabilitation community that led to the need for this Panel. Concurrent with these developments, several policy issues have arisen that will affect the implementation and funding of the Panel's recommendations. These developments are described below.

3.1 The MOHLTC's Health Care Transformation Agenda

The MOHLTC has identified five strategic directions for the health care system that will be the basis of a provincial strategic plan scheduled for release in spring 2007:

1. Renewed community engagement and partnerships in and about the health care system,
2. Improved health status of Ontarians,
3. Equitable access to the care and services needed, no matter where you live or your socio/cultural/economic status,
4. Improved quality of health outcomes, and
5. A framework for sustainability.

An important element in this Transformation Agenda was the devolution of the responsibility to plan, coordinate, integrate and fund health care services at a regional level, based on the advice of local communities. In October 2004, the Minister of Health and Long-Term Care announced the establishment of Local Health Integrated Networks (LHINs) to take on this regional role as part of an overall Health Care Transformation Agenda.

The stroke regions will need to work with each other and with the LHINs to plan for the implementation of the recommendations in this report and in negotiating the funding of incremental resources. More information on the challenges and opportunities of implementing this Panel's recommendations in the new funding environment is provided in Chapter 12.

In addition to the creation of LHINs, the MOHLTC has introduced a multi-year planning and funding framework, which includes a Hospital Annual Planning Submission (HAPS) and Hospital Accountability Agreement (HAA), which were both introduced in 2005/06. This framework requires hospitals to work towards a balanced budget. Since outpatient services are not explicitly funded in the hospital's global budget, the need to balance the global budget has resulted in the closure of many hospital-based outpatient rehabilitation clinics, which has reduced the system's capacity to deliver publicly funded ambulatory rehabilitation services.

There is also concern that the closing of some rehabilitation beds might be compromising access to appropriate and timely stroke rehabilitation services across the continuum of care.

3.2 Regional Priorities

Each LHIN was required to develop an Integrated Health Service Plan (IHSP), which is a three-year local strategic plan for health care service and delivery. The IHSP identifies the needs and subsequent goals and actions for creating an integrated, accessible, coordinated and locally-focused health system with a three- to five-year planning horizon. The IHSPs are generally high-level planning documents that will be reviewed on an annual basis.

Most LHINs identified two priority areas that are highly relevant for stroke rehabilitation:

- **Services for seniors or frail elderly**, which encompasses improved services for assessment, access to community services, services for family members and care providers (including respite), transportation, and improved primary care. There was also considerable discussion in the IHSPs about the transition from institutional care to ambulatory and home-based care and the need for seamless navigation through the range of services available to seniors.
- **Chronic Disease Prevention and Management (CDPM)**, which covers the adoption (or adaptation) of the MOHLTC's recently developed CDPM framework to create improvements in the delivery of care by focusing on integration, access and navigation throughout the system.

Some of the LHINs also included initiatives to address rehabilitation needs, from needs assessment to improving transitions between services. Many plans discussed issues and associated plans related to access to rehabilitation that included, for example, shortages of health human resources, excessive wait times for services, lack of funding for home care and transportation challenges.

The LHINs also documented priority areas for enablers, including the need for electronic health information, and improved coordination and integration of services.

3.3 CCAC Review

A central theme in the transformation agenda is the increased emphasis on providing care in the home rather than in an institution. In 2004, the MOHLTC invited the Honourable Elinor Caplan to lead an independent review of the competitive bidding process used by CCACs to secure agencies to deliver home care services.

The purpose of the review was to:

- Assess the impact of the procurement process on the quality and cost of care,
- Identify ways to improve the quality and continuity of home care services,
- Identify ways to increase stability in the workforce, and
- Identify ways to improve the procurement process.[31]

[31] Caplan, E. (2005, May). Realizing the potential of home care: Competing for excellence by rewarding results. A review of the competitive bidding process used by Ontario's Community Care Access Centres (CCACs) to select providers of goods and services.

The final report made 70 recommendations to enhance the quality of home care services, strengthen the home care workforce and improve the procurement process. The largest challenge for home care, according to the report, was the need for "consistent, accessible information that can provide a basis to measure client outcomes, disseminate research and best practices and report on overall home care performance."

The MOHLTC acted on all but two of the recommendations, which included a shift towards a funding formula for home care based on need, through a client-focused envelope funding formula, to be fully implemented by 2010.

The transformation agenda and the CCAC review contributed to a policy environment that intensified the focus on home care, which in turn provided further encouragement for taking a closer look at stroke rehabilitation, particularly those services that are required in the community.

3.4 Complex Continuing Care and Rehabilitation Provincial Leadership Council

The Ontario Hospital Association (the OHA) has also recognized the importance of rehabilitation in the continuum of health care. The Complex Continuing Care and Rehabilitation Provincial Leadership Council (OHA Council) was established in March 2005 with a mandate to advise the OHA on issues affecting complex continuing care (CCC) and rehabilitation in Ontario. The OHA Council is to provide a forum for shared communication and education.

The OHA Council recently released recommendations to optimize the role of CCC and rehabilitation services as part of the MOHLTC's transformation agenda by suggesting that a greater focus on these areas of care could alleviate pressures on the overall system of care.[32] The report includes recommendations for the integration of acute and post-acute care. According to the report, the roles that CCC and rehabilitation can play in an optimized system can only be achieved if their current role and capacity become better understood and integrated in health policy and in decision making at all levels of the health system. Effective policies for rehabilitation can contribute to better use of acute resources by preventing deterioration in the patient's condition and associated admissions to acute care.

[32] "Optimizing the Role of Complex Continuing Care and Rehabilitation in the Transformation of the Health Care Delivery System" is available at www.oha.com

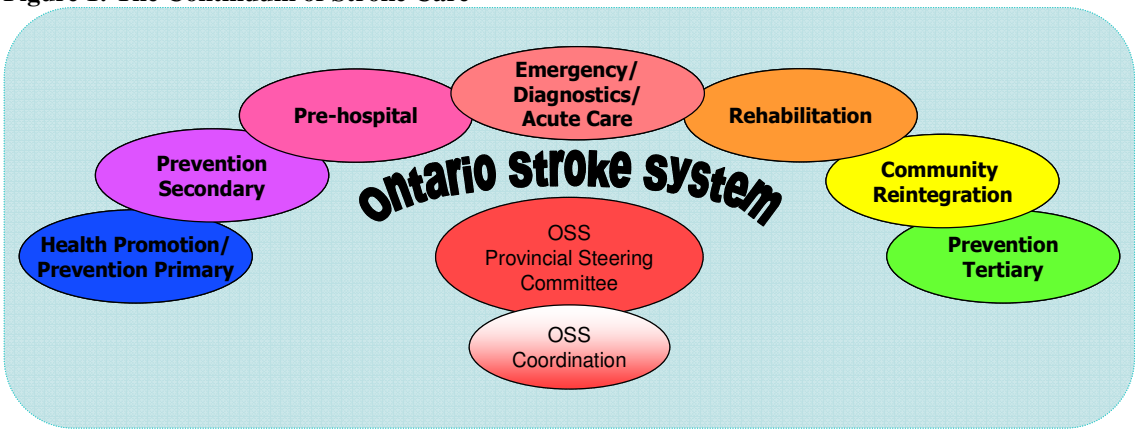
4.0 Current State of Stroke Rehabilitation in Ontario

This chapter provides a brief description of how stroke rehabilitation is organized around the continuum of stroke care. It also provides definitions the Panel developed to describe the components of stroke rehabilitation.

4.1 The Continuum of Stroke Care

The Ontario Stroke System originally defined the continuum of stroke care, as shown in Figure 1.

Figure 1: The Continuum of Stroke Care[33]



Although the diagram above shows rehabilitation as a single point in the continuum, in reality it stretches across the entire spectrum of care. Rehabilitation in an inpatient facility is only one part of the stroke survivor's journey. Comprehensive rehabilitation encompasses acute care, inpatient rehabilitation, health promotion, secondary and tertiary prevention, ongoing diagnostics and assessments, community reintegration and community-based rehabilitation, as shown in Figure 2.

In short, rehabilitation is a philosophy, not a location. Stroke rehabilitation can take place in any setting.

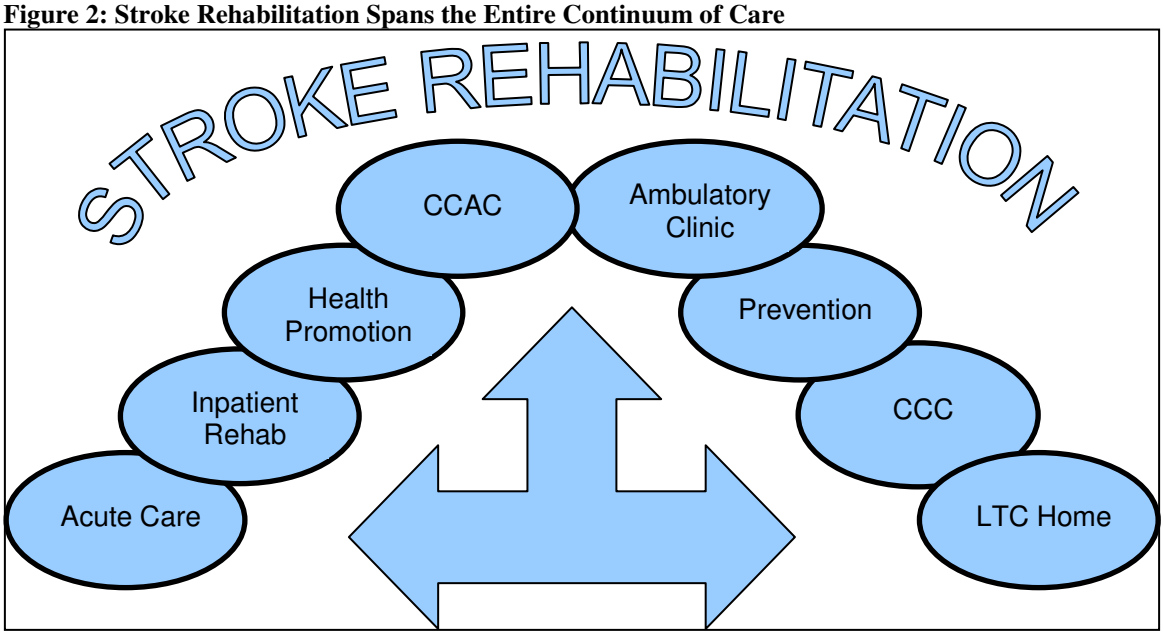
Stroke rehabilitation is a long process with many components, that are described according to the:

- Intensity of rehabilitation services (low or high),
- Duration of the services (long duration or short duration), and
- Nature of the services (slow stream, restorative).

[33] Source: Ontario Stroke System. (2006, October 27). Strategic accountabilities and reporting relationships.

The intensity, duration and nature of the rehabilitation services will change over time as the stroke survivor's functional and cognitive status improves and as his or her tolerance for therapy increases.

Figure 2: Stroke Rehabilitation Spans the Entire Continuum of Care



CCAC = Community Care Access Centre; CCC = Complex Continuing Care; LTC = Long-Term Care

4.2 Components of Stroke Rehabilitation

The Panel's mandate included defining the components of stroke rehabilitation. The Panel reviewed definitions of various stroke rehabilitation services, service providers and care settings in developing its own definitions.

4.2.1 Approach to Developing Definitions

Many definitions were adapted from documents specific to stroke rehabilitation, including the following:

- Stroke Rehabilitation Consensus Panel Report 2000,[34]
- Southwestern Ontario's Stroke Rehabilitation Pilot Project,[35]
- The SCRIPT project in Toronto,[36] and
- Low Tolerance Long Duration (LTLD) Stroke Demonstration Project.[37]

[34] Coordinated Stroke Strategy; Stroke Rehabilitation Consensus Panel Report. (2000, May). Submitted to the Heart and Stroke Foundation of Ontario, pp. 8-10.
[35] "A Regional Stroke Rehabilitation System: From Vision to Reality." (2004, December 2).
[36] SCRIPT Final Report. (2004, November). Stroke Coordinated Referral Initiative Pilot, Toronto.
[37] Low Tolerance Long Duration (LTLD) Stroke Demonstration Project, Final Report. (2006, June). GTA Rehab Network.

Other definitions were adapted from other sources that were not specific to stroke rehabilitation:

- Canadian Institute for Health Information, February 1999,
- Public Hospitals Act,
- Ontario Telemedicine Network,[38]
- Ontario Hospital Association,[39] and
- Canadian Stroke Strategy, Registry of the Canadian Stroke Network.

A number of definitions were adapted from sources dedicated to seniors or aging:

- Canadian Centre for Activity and Aging,[40] and
- Ontario Government Seniors Web site.[41]

The Panel also found some useful definitions in the published literature.[42]

4.2.2 Definitions for Stroke Rehabilitation

Using the definitions from the various sources noted in the previous section, the Panel reviewed them to determine if they were appropriate for stroke rehabilitation in Ontario. The adapted definitions were included in the regional consultations, and the resulting changes were provided to the Panel for approval.

These definitions are intended to be used in the interpretation of the Panel's standards. Although not all of the definitions can be presented in the body of this report, it is worth noting some of the definitions that are used frequently in the standards:

- The term "community" is used to define any residence outside of an acute or rehabilitation inpatient unit including the home, LTC Home, senior residences, retirement homes, supportive housing, group homes or assisted living.
- A "rehabilitation professional" is defined to include all regulated health care professionals that are trained in rehabilitation, including nurses, rehabilitation nurses, physiotherapists, occupational therapists, speech-language pathologists, physiatrists and social workers.
- The "interprofessional team" is defined to include the stroke survivor, family/caregivers, rehabilitation professionals and other health care providers working together in a collaborative manner.

The full list of definitions is provided in Appendix F.

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[38] http://www.otn.ca/
[39] Ontario Hospital Association. (2006, May). Optimizing the Role of Complex Continuing Care and Rehabilitation. Available at http://www.oha.com/
[40] http://www.uwo.ca/actage/
[41] http://www.health.gov.on.ca/english/public/program/ltc/15_facilities.html
[42] *British Medical Journal*. (1996). *312*, 71-72.

5.0 Gaps in the Existing Delivery of Stroke Rehabilitation

The Panel was convened in large part because stakeholders had identified gaps in the delivery of stroke rehabilitation services across the province.

Some of the more significant gaps are summarized below. Much of the information presented in this chapter, particularly the section on gaps in the system, is based on comments made by the stakeholders. Only themes that were broadly supported across the province as barriers to delivering timely and quality stroke rehabilitation services are mentioned in this report.

Wherever possible, these statements are supported with data provided by the Canadian Stroke Network and the Ontario Stroke Evaluation office.[43]

The gap analysis was instrumental in helping the Panel create a service provision model and stroke rehabilitation standards that are intended to address these gaps.

The issues raised can be grouped into four main categories:

1. The shortage of stroke rehabilitation services,
2. The shortage of stroke care professionals,
3. The need for more coordination across the continuum of care, and
4. The role of research and evaluation.

5.1 Shortage of Stroke Rehabilitation Services

The most common theme from the consultations was the shortage of formal stroke rehabilitation services across the entire continuum of care.

5.1.1 Shortage of Inpatient Rehabilitation Services

Many inpatient rehabilitation beds were closed following the Health Services Restructuring Commission. Stakeholders felt there is now a shortage of funded stroke rehabilitation beds (i.e., linked with acute and free-standing centres) in many communities across Ontario. A limited number of these inpatient beds provide rehabilitation services for the more severe stroke population, and access to these beds is inconsistent across the province.

Some stroke survivors do not receive inpatient rehabilitation due to lack of service availability, not lack of need. In Ontario:

[43] Data provided by the Stroke Evaluation Office are based on best available data from the National Rehabilitation Reporting System (NRS), Registry of the Canadian Stroke Network (RCSN) and other databases. The data are also based on cohorts of patients that may have specific inclusion criteria.

- Twenty-two percent of stroke patients discharged from acute care in regional stroke centres receive inpatient rehabilitation,[44] and 21% of all acute stroke inpatients across the province receive inpatient rehabilitation following their stroke.[45]
- SEAC[46] has reported that the median number of days from stroke onset to admission to inpatient rehabilitation was 11 days in 2005/06, which is down slightly from 13 days in 2003/04 and 12 days in 2004/05. The mean number of days ranges across LHINs in the province from 10 to 32 days.

FIM™ (Functional Independence Measure) scores for stroke patients entering inpatient rehabilitation are generally higher than expected.[47] For those patients entering directly from acute care, the median FIM™ score at admission is 80 (mean 78 ±24).[48] Those stroke survivors with scores of less than 70, who would also benefit from inpatient rehabilitation, are not consistently being admitted for inpatient rehabilitation. Survivors of a severe stroke are less often admitted to inpatient rehabilitation beds in Ontario, despite the strong evidence confirming that this practice would improve functional outcome and decrease mortality for this group.[49]

Local policies (e.g., bed management) can often affect access to inpatient services. For example:

- A lack of evidence-based and standard admission criteria is contributing to variation in access to stroke rehabilitation services.
- Clustering of stroke rehabilitation patients on one unit has been shown to foster the development of the providers' expertise in stroke care. Bed management issues have sometimes resulted in insufficient clustering of stroke rehabilitation patients in many hospitals.
- An inability to admit seven days per week is contributing to longer waits for admission to inpatient rehabilitation.
- Local physician practice and local pressures to keep beds occupied in small hospitals can contribute to stroke survivors in small communities not being referred for inpatient rehabilitation.

Access to inpatient rehabilitation for stroke survivors with special needs (e.g., requiring hemodialysis or peritoneal dialysis, complex wound management, tracheostomy care or intravenous therapy) can be limited in some institutional settings due to staffing levels and the lack of appropriately skilled nursing staff and institutional resources.

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[44] RCSN, FY2006, Q2.
[45] OSS Stroke Evaluation Office, NRS data, 2005-06.
[46] Stroke Evaluation Office/ICES. NRS data by LHIN 2005-06.
[47] A lower FIM score reflects a greater degree of functional impairment and, therefore, a greater burden of care.
[48] Ontario Stroke Evaluation Office, ICES. NRS analysis 2005-06.
[49] Bagg, S, et al. (2006). Toward benchmarks for stroke rehabilitation in Ontario, Canada. *Am. J. Phys. Med. Rehabil*., *85*(12), 971-976.

5.1.2 Shortage of Community-Based Rehabilitation Services

Stakeholders expressed concern that stroke survivors are often discharged home before being assessed for the appropriate level of rehabilitation services required (both inpatient and outpatient). Once at home, these stroke survivors have difficulty accessing rehabilitation services because rehabilitation tends to be thought of as an inpatient service, despite evidence that rehabilitation can increase function over an extended time frame post discharge to the community. Community-based stroke rehabilitation can also help to address family/caregivers needs for education, training and support.

According to current home care data in Ontario, the utilization of stroke rehabilitation services in the home varies across the province, with stroke survivors in the North and East regions in Ontario receiving significantly less homecare physiotherapy, occupational therapy, and speech-language therapies than in other regions.

The Southeastern Ontario stroke rehabilitation pilot project documented that stroke rehabilitation services in the community are severely limited, resulting in long wait times or the stroke survivor not being referred for those services in the community.

5.1.3 Availability of Rehabilitation Services in Complex Continuing Care

There are 54 health care facilities with Complex Continuing Care (CCC) beds in Ontario, and there are in excess of 3,000 beds in 13 freestanding facilities with over 2 million patient days of care provided annually in this sector.[50] CCC is very much a part of the continuum of care for stroke survivors who have complex issues and require ongoing management and stabilization prior to transfer to rehabilitation, home or long-term residential placement.

"The sector has transitioned to placing a growing emphasis on strengthening programs related to managing and/or maintaining individuals with multiple co-morbidities and functional impairments (through intensive rehabilitation or reactivation)."[51]

Stakeholders felt that, in general, stroke survivors in a CCC environment do not have the access to service to help build the tolerance to start rehabilitation, nor are they able to maintain the skills that were achieved in rehabilitation. Stakeholders also reported that severely impaired stroke survivors are often transferred to a CCC environment following a stay in acute care or rehabilitation to continue activation and conditioning while waiting for a slow stream bed or while longer-term placement is arranged. A considerable amount of rehabilitation and therapy services can be and is provided in some CCC facilities for stroke survivors who do not have the tolerance to participate in an intensive rehabilitation program or who, because of the nature and severity of their illness, are not yet Rehab Ready.[52] However, these services do not appear to be available consistently across the province.

[50] Hospital Report CCC 04-05.
[51] "Optimizing the Role of Complex Continuing Care and Rehabilitation in the Transformation of the Health Care Delivery System" is available at www.oha.com
[52] See Section 6.2.2 for a definition of Rehab Ready.

5.1.4 Shortage of Rehabilitation Services in LTC

Stakeholders felt that the funding for physiotherapy is inadequate for severely disabled stroke survivors, who are often directly admitted to a LTC Home without stroke rehabilitation. Although 22% of residents in LTC Homes are stroke survivors, there are few stroke rehabilitation services provided in these homes.

A recent pilot project at Castleview Wychwood Towers, a LTC Home in Toronto, made additional stroke rehabilitation services available to residents through a co-payment arrangement. The pilot was successful in showing that stroke survivors benefit from these services, with half the participants returning to their own home. One challenge for this project was that participants were required to pay the co-payment that applies to long-term care, and this requirement created a barrier to access for many individuals.

5.1.5 Shortage of Outpatient Rehabilitation Services

Stakeholders reported a shortage of publicly funded comprehensive and interdisciplinary outpatient services and day hospital programs (involving a range of intensity and duration) for stroke rehabilitation in parts of the province.

The Regional Rehabilitation Coordinators, in conjunction with the Ontario Stroke Evaluation Office, completed a survey of 159 publicly funded ambulatory rehabilitation clinics (including community, small rural, acute tertiary and freestanding rehabilitation hospitals) in February 2007. Among those who responded, the survey found that:

- Many of the clinics provide only a single outpatient service, most commonly physiotherapy. Occupation therapy and speech-language therapies are provided less often. Access to an interdisciplinary team is not widely available, even in day hospitals.
- About one-half of the clinics reported that, when there is a shortage of therapists in the acute care setting, the outpatient service is reduced to accommodate the need in acute care.
- One-third of the clinics reported that ambulatory and day hospital services had been reduced within the past five years.

There are wide variations in the availability of services between and within regions. Often, there are no services. For example, there are minimal speech-language services in northern areas of the province. Some services are being closed or operated at reduced levels due to hospital operational reviews, particularly since outpatient clinics do not have protected funding and are often targeted for closure when budget pressures become severe.

There are inadequate publicly funded services for the younger stroke population such as vocational services. These survivors often have competing demands of family, work and the effects of their stroke. Stakeholders also reported that vocational rehabilitation services, if available, are generally available only through private care providers. Often, stroke survivors are not even aware that such services exist.

There are limited resources for stroke survivors who have residual cognitive deficits or aphasia but do not require inpatient rehabilitation. Specifically, there is a shortage of community resources for psychological assessments and for the treatment of aphasia.

5.1.6 Shortage of Community Re-Integration Services

Once the stroke survivor has been discharged from formal rehabilitation services, there are few services to provide continued support, full transition to the community or assistance with re-integration into the community. Some of the areas of limited services include:

- Support groups for both the caregiver and the survivor,
- Respite for caregivers,
- Re-integration issues (e.g., accessible work, community activities),
- Timely and accessible transportation services, and
- Recreational therapy.

Stroke survivors and their families/caregivers report that their stroke care team is often not knowledgeable about the availability of community services.

5.2 Human Resource Challenges

Stakeholders, Panel members and secondary reviewers highlighted the shortage of stroke rehabilitation professionals in Ontario.

5.2.1 Shortage of Stroke Care Professionals

Many stakeholders reported that there are inadequate numbers of stroke rehabilitation professionals (e.g., physiatrists, occupational therapists, physiotherapists, speech-language pathologists, psychologists). The shortage of appropriately trained professionals is particularly acute in smaller communities and in rural and northern areas of the province. Stakeholders who participated in the regional consultation process also felt that there are not enough physiatrists to champion the stroke rehabilitation process.

Not all Ontarians have a primary care practitioner and, therefore, some stroke survivors do not have access to this resource to coordinate their care in the community.

5.2.2 Shortage of Stroke Care Expertise

Even when rehabilitation professionals are available, they sometimes do not have access to the needed education and training in stroke rehabilitation:

- There are knowledge gaps among physicians regarding the provision of acute care for stroke patients, stroke rehabilitation and community re-integration.
- There are limited opportunities for the stroke survivors' families/caregivers to acquire the skills they need to care for a stroke survivor.

Achieving expertise in stroke rehabilitation requires training in many domains (e.g., physical, cognitive and perceptual, mood) and requires a significant investment of time over

a long period of time. It is especially difficult to acquire this training and experience in low-volume settings.

Some stakeholders felt that staff in community hospitals often do not have specialized training in ongoing stroke care, and patients can fall through the cracks and miss an opportunity for stroke prevention services and access to appropriate rehabilitation services.

Staff might have an interest in developing stroke expertise, but the opportunity is not always available (e.g., due to the program model or an opening may not be available). Other barriers to access are the cost of stroke educational programs as well as replacement costs. Further, there are insufficient postsecondary programs in stroke rehabilitation.

5.3 Coordination along the Continuum of Care

Stakeholders reported a lack of coordination and communication of care as stroke survivors move through the continuum of care, including that information does not move with them.

Different admission criteria for different programs and a lack of understanding about admission criteria result in confusion among care providers when determining a plan of care for the stroke survivor. For stroke survivors in the community, another problematic area is identifying the processes to access rehabilitation resources in their community. For example, patients might be referred to several services or facilities, with no central referral system. This can cause confusion and difficulties in accessing the services.

Once the stroke survivor is in the community, there is limited long-term follow up for assessment or reassessment to determine ongoing rehabilitation needs. Many stakeholders had concerns that it was difficult for stroke survivors to reenter the stroke rehabilitation system if their needs changed.

5.4 The Role of Research and Evaluation

5.4.1 Need for Quality Data to Support Research in Stroke Rehabilitation

There are limited data on stroke rehabilitation and outcomes outside of patients who are treated in designated inpatient rehabilitation beds. The Canadian Institute of Health Information (CIHI) manages several databases that provide information on patients as they move through the continuum of designated and funded beds in Ontario.[53] The CCAC also has a database for all home-based care services provided in Ontario. Many local databases exist that track information on stroke rehabilitation outside designated facilities, but these sources are not usually accessible on a provincial level and do not have standardized mechanisms for data collection.

[53] For example, the National Rehabilitation Reporting System (NRS), National Ambulatory Care Reporting System (NACRS), Discharge Abstract Database (DAD), the Minimum Dataset (MDS) and the Resident Assessment Instrument Home Care (RAI-HC).

The Ontario Stroke Evaluation Office has developed models to link stroke patient information contained in the administrative databases and stroke registries such as the Registry of the Canadian Stroke Network (RCSN) to monitor the continuity of care and inform quality improvement priority planning. Data are not currently available in the National Rehabilitation Reporting System (NRS) or other administrative databases for inpatient rehabilitation for stroke survivors in nondesignated rehabilitation beds.

5.4.2 Need to Support Research in Stroke Rehabilitation

There is limited appreciation of the impact that rehabilitation services can make on patient outcomes. There is also limited understanding of how significant the net cost savings can be when best practices are employed.

The Stroke Evaluation Office and SEAC have just completed an extensive and comprehensive analysis of stroke rehabilitation based on the NRS and other available databases. This work should lead to identification of potential research questions and evaluation of best practices as outlined in the standards recommended by this Panel.

5.4.3 Use of Evidence-Based Practice

There are pockets of strong evidence to guide practice in stroke rehabilitation; however, for many aspects of stroke rehabilitation, evidence-based knowledge is not well established. Where evidence does exist, there is not always a consistent application of evidence in clinical practice. There are variations across inpatient rehabilitation centres on many performance measures.

The service delivery model for stroke rehabilitation is not well defined. There are limited treatment guidelines to determine what therapies are required, at what intensity and for how long. Stakeholders participating in the consultations felt that length of treatment often depends on funding allocations or human resources availability, rather than patient need.

6.0 Service Provision Model

One deliverable for the Panel was to identify the components of a triage system. The Panel found that the term "triage" was generally used in the hyper-acute phase of care (e.g., in the emergency department), and many stakeholders did not realize that the "triage" system was to apply across the entire continuum of care. In fact, the primary purpose of the triage system is to ensure that more stroke survivors will access rehabilitation services in a more efficient manner. It is important to consider the Panel's service provision model spanning the continuum of care and within the broad range of stroke rehabilitation services.

Therefore, the Panel has renamed this deliverable as the "service provision model for assessment and referral for stroke rehabilitation" or "the service provision model."

By implementing a service provision model and collecting consistent data across the province, the stroke community will be able to identify what type of rehabilitation services stroke survivors are accessing or are unable to access. This information will enable evaluation of the system's capacity to provide appropriate rehabilitation services for stroke survivors.

6.1 Definition of Triage

The Panel's service provision model provides the framework for triaging stroke survivors across the continuum of care. Triage, in this context, is an evidence-based stroke assessment process that matches the needs of the stroke survivor to the appropriate rehabilitation service across the entire continuum of care.

The Panel members felt that the triage principles should be used as guidelines only, as exceptions can and will occur. Rehabilitation professionals are encouraged to rely on their clinical judgment when defining a stroke survivor's need for rehabilitation. As well, triage decisions need to err on the side of giving stroke survivors a chance to demonstrate their ability to be successful in rehabilitation.

Triage should be carried out by rehabilitation professionals with expertise and experience in stroke rehabilitation. In all cases, an interprofessional team assessment is required.

6.2 The Service Provision Model

The service provision model is shown graphically in Figure 3. The proposed standards (as described in the following chapter) provide more detail on the processes (e.g., assessments) that are identified in the model. Appendix I illustrates how the service provision model works for four scenarios of stroke survivors with different needs.

The proposed service provision model is a starting algorithm to provide the foundation for a standardized approach for regional triage systems across the 11 stroke regions. It is expected that, within the general algorithm provided, the stroke regions will adapt the model as appropriate and develop more detail in the process as appropriate. The regional model should be developed within each region in a collaborative manner and include not only those

facilities designated as a Regional or District Stroke Centre but also LTC Homes, CCC programs and community hospitals. The Panel recommends that each stroke region have an explicit stroke rehabilitation service provision model in place to facilitate optimal access to rehabilitation services.

This model is intended to outline the preferred process for assessing and referring stroke survivors for rehabilitation. It is not intended to document existing processes, nor is it intended to be prescriptive of how each stroke region or care provider implements or manages these processes. Indeed, the stroke regions are encouraged to tailor this model to local and regional circumstances, while maintaining the general patient flow described in the model.

6.2.1 The Three-Step Process

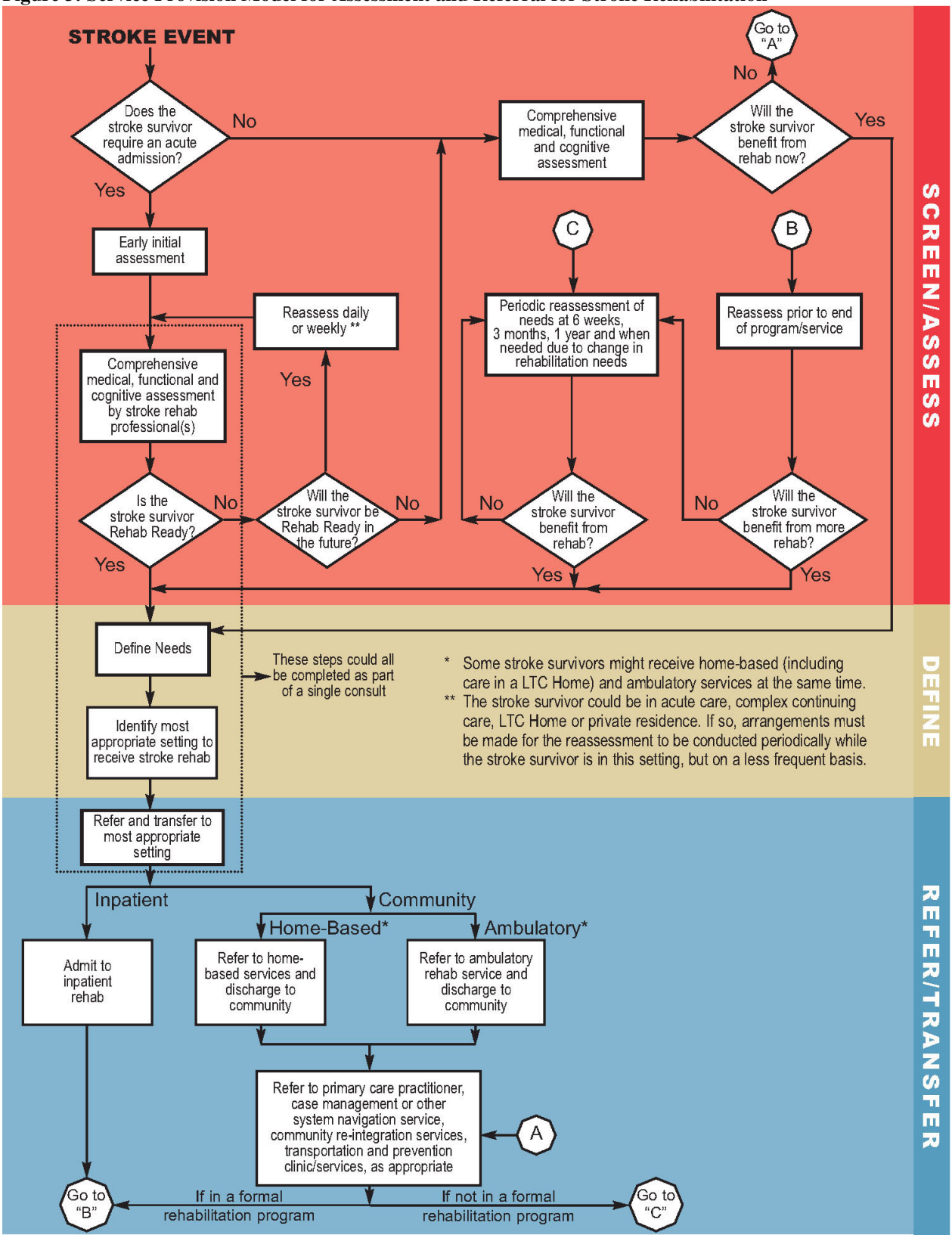
The Panel identified three major steps within the service provision model:

- **Screen/Assess.** The first step is to assess the stroke survivor to determine whether he or she will, at any time, benefit from stroke rehabilitation and, if so, if the stroke survivor is ready to begin post-acute rehabilitation (i.e., Rehab Ready).
- **Define.** Once it is determined that the stroke survivor is Rehab Ready, the next step is to define the patient's needs. These needs will be primarily determined based on functional and cognitive status and the stroke survivor's ability to tolerate the therapy.
- **Refer/Transfer.** Once the needs are defined, the rehabilitation professional(s) must determine the most appropriate setting for the stroke survivor to receive rehabilitation therapy and arrange for the referral once the stroke survivor is Rehab Ready and, if appropriate, the transfer.

This three-step process is not a one-time event. The service provision model suggests that a reassessment be conducted at the many points along the continuum of care:

- At the end of each program of stroke rehabilitation, the stroke survivor should be reassessed to determine whether he or she would benefit from further rehabilitation services. If so, the cycle of Reassess, Define, and Refer/Transfer begins again.
- In cases of severe stroke, the stroke survivor might be transferred out of acute care (e.g., to a LTC Home or a CCC unit) without being referred for rehabilitation. The service provision model suggests that these survivors should be reassessed periodically to determine whether their functional status or tolerance has improved sufficiently that he or she would benefit from stroke rehabilitation.
- Similarly, survivors of a mild stroke who were never admitted to an acute setting should have a periodic reassessment to determine whether there are any residual functional, cognitive or speech deficits that were not diagnosed immediately after the stroke event.

Figure 3: Service Provision Model for Assessment and Referral for Stroke Rehabilitation



- After the initial stroke rehabilitation services are completed and the stroke survivor has achieved the initial goals and/or outcomes, periodic reassessments are needed to determine whether additional services are required in the future (e.g., due to a deterioration in functional or cognitive status or a change in the stroke survivor's personal circumstances or rehabilitation goals).

These opportunities for delayed entry and/or reentry into stroke rehabilitation are a critical component of the proposed service provision model.

6.2.2 Definition of Post-Acute "Rehab Ready"

Stroke rehabilitation should begin immediately after the stroke event, while the stroke survivor is in an acute care setting.[54]

The following criteria are intended to determine whether the stroke survivor is ready to begin rehabilitation outside the acute care setting, which the Panel has defined as Rehab Ready. The Panel reviewed the GTA Rehab Network's Inpatient Rehabilitation Referral Guidelines and used these guidelines as a starting point for this work.

1. Readiness for Discharge from Acute Care

Before the stroke survivor can begin post-acute stroke rehabilitation, the probable cause of the stroke should have been determined, or at least explored (in the event the cause cannot be definitively determined). Using this information, a secondary prevention strategy should have been initiated prior to discharge from acute care.

2. Medical Stability

Post-acute stroke rehabilitation can only begin once the patient is medically stable. For the purpose of initiating rehabilitation outside of the acute care environment, the Panel has defined medical stability as follows:

- A clear diagnosis and co-morbidities have been established. Co-morbidities and health issues are being managed.
- Acute medical issues have been addressed.
- All medical investigations have been completed or initiated.
- Disease processes and/or impairments do not preclude participation in a rehabilitation program.

3. Ability to Learn

The ability to learn is a necessary prerequisite for successful rehabilitation. The stroke survivor must demonstrate both an ability to have carry-over of learning and comprehension sufficient to achieve rehabilitation goals.

[54] During the consultations with representatives of the stroke regions, the Panel found that stroke survivors in acute care settings were not consistently receiving stroke rehabilitation services.

The assessment of the ability to learn must involve the appropriate rehabilitation professionals. For example, neuropsychologists, physiotherapists, occupational therapists and speech-language pathologists can all provide important testing and insight into a stroke survivor's cognitive ability and ability to learn. For stroke survivors with aphasia and for those do not speak or understand English or French, appropriate communication strategies as well as clinical judgment should be employed to determine the ability to learn.

Determining the stroke survivor's ability to learn is often not a one-time assessment and might require that the rehabilitation team periodically reassess the stroke survivor's ability to learn. This may require the specialized skills of a psychologist or neuropsychologist.

4. Ability to Participate

The stroke survivor must be able to demonstrate an ability to participate in rehabilitation programs intended to restore function. When behavioural or active psychiatric issues are present, the behaviour or conditions must be managed with appropriate strategies. Behaviour problems as a result of stroke may be amenable to intervention.

The frequency and severity of depression among stroke survivors is a significant barrier to the rehabilitation process if not adequately addressed. Regular screening and access to psychiatric supports, if required, are essential.

5. Consent

The stroke survivor must be informed regarding the rehabilitation program and must have consented to participate. If the stroke survivor is deemed to be incapable to consent to the treatment plan, consent must be obtained from the substitute decision maker.

6.2.3 Factors to Consider in Defining Needs

1. Functional Status and Tolerance

The Panel defined two factors that must be considered in determining stroke rehabilitation needs:

- **Functional status.** The Panel recommends that the stroke survivor's functional status be determined using the AlphaFIM® instrument or FIM™ instrument or a description of functional ability, where a FIM™ instrument is not available.
- **Tolerance.** The stroke survivor's tolerance for rehabilitation therapy is the second factor for determining the most appropriate stroke rehabilitation therapy. Limited tolerance may be a result of physical endurance, emotional fatigue or limited attention or concentration.

The most appropriate setting for stroke rehabilitation varies by the severity of the stroke, the resulting functional impairment and the stroke survivor's tolerance.

For the purpose of the Panel's standards, the severity of a stroke is categorized according to early assessment (i.e., within five to seven days) results as follows:

- Mild stroke is defined as an early total function score of greater than 80 and motor function score of greater than 62, using the FIM™ instrument.
- Moderate stroke is defined as an early total function score of 40 to 80 and motor function score of 38 to 62, using the FIM™ instrument.
- Severe stroke is defined as an early total function score of less than 40 and motor function score of less than 38, using the FIM™ instrument.

These categories are summarized in Table 3.

Table 3: Categories of the Severity of the Stroke[55]

	Severity of the Stroke		
	Severe	**Moderate**	**Mild**
Early FIM™ score			
Total FIM™	< 40	40-80	> 80
Motor function	< 38	38-62	> 62

The stroke survivor's ability to tolerate therapy is a common admission criterion for many inpatient stroke rehabilitation programs. All regions should review these factors to ensure that no stroke survivors are denied inpatient rehabilitation because their initial tolerance does not meet these admission criteria. Patients turned down for rehabilitation on the grounds of low tolerance should be flagged for reassessment at a later date. These stroke survivors should not be denied admission because of capacity shortages. Admission criteria should be more inclusive across the care continuum (e.g., inpatient rehabilitation, community care access centres).

The Panel did not define any guidelines or tools for assessing tolerance. However, it did develop broad guidelines for when various settings for rehabilitation are appropriate based on functional status and tolerance, as shown in Table 4.

The reader is cautioned when using the guidelines in Table 4. Exceptions to these guidelines can and will occur; clinical judgment remains a key factor in determining the most appropriate rehabilitation therapy for a stroke survivor.

The reader is further cautioned that the setting identified might not always be available to the stroke survivor. In the case where inpatient therapy is not available, for example, the stroke survivor should at the very least receive stroke rehabilitation as an outpatient or in the community at the same level of intensity as would have been available in an inpatient unit. Currently, if the stroke survivor requires a single service (e.g., speech-language therapy), and it is not available as an outpatient service or in the community, some centres will occasionally admit the stroke survivor to an inpatient unit to receive the service. Stroke

[55] As summarized from the literature in EBSRS (9th Ed.), Module 4.

regions should plan for single-service therapy and determine a cost-effective alternative to inpatient admissions.

Table 4: Initial Triage Guideline

	Severity of Stroke			
	Severe	**Moderate**	**Mild**	
Functional status[56]				
Early total function score	< 40[57]	40-80	> 80[58]	
Motor function score	< 37	38-62	> 62	
Tolerance				
Minimum duration (per day)	1 hour	3 hours	45-60 minutes[59]	45-60 minutes
Frequency (per week)	3-5 times	5-7 times	3-5 times	3-5 times
Preferred rehabilitation setting	Inpatient	Inpatient	Home-based	Ambulatory

2. Goals

The Panel identified two factors that might influence the rehabilitation professional's recommendation regarding the most appropriate stroke rehabilitation service from the perspective of the patient's rehabilitation goals and the potential to achieve these goals:

- **Rehabilitation goals.** The rehabilitation goals that have been identified by the stroke survivor and/or family/caregivers should be specific, measurable, achievable, realistic and timely, as well as relevant and meaningful to the stroke survivor and family/caregiver. Rehabilitation services provided should be consistent with these goals.
- **Potential to improve.** The stroke survivor should demonstrate the potential to improve or maximize functional status with participation in a rehabilitation program. If, based on clinical expertise and evidence in the literature, the rehabilitation professional believes that the stroke survivor's condition is likely to benefit from rehabilitation, the patient should be given an opportunity to participate.

[56] Using the FIM™ instrument.

[57] Note: stroke survivors who are less than 55 years old with a severe stroke should be admitted to inpatient rehabilitation, regardless of FIM™ score. See Kugler C, Altenhoner T, Lochner P, Ferbert A, [Hessian Stroke Data Bank Study Group ASH]. (2003). Does age influence early recovery from ischemic stroke? *J. Neurol.*, *250*(6), 676-681. As summarized in *Evidence-based review of stroke rehabilitation: Background concepts in stroke rehabilitation*. Teasell R, Bayona N, Bitensky J. pp. 33-34.

[58] Stroke survivors can score >80 using the FIM™ instrument and still have, for example, cognitive or speech difficulties that will require an inpatient admission.

[59] Able to tolerate interventions, but not able to attend an ambulatory clinic (or ambulatory services are not available).

3. Setting Considerations

Two final factors are intended to help the rehabilitation professional determine the most appropriate setting for stroke rehabilitation depending on the stroke survivor's personal circumstances and the availability of services in the area:

- **Access to the preferred setting.** In some communities, there may not be sufficient critical mass of stroke survivors to warrant providing stroke rehabilitation services in the community. In these cases, an alternate setting should be proposed to ensure the stroke survivor receives the needed services.
- **Social support.** Absence of adequate social support should not be used to deny access to stroke rehabilitation. It may affect the setting in which the therapy is provided, but should not preclude the stroke survivor from participating in stroke rehabilitation. The Panel was told of situations where stroke survivors were not admitted to inpatient rehabilitation because there would be no ability to discharge the patient to the community after rehabilitation was complete. System changes are needed to ensure that this does not happen.

When a Stroke Survivor Is Not Rehab Ready

Stroke survivors with maximum dependence and poor prognosis for functional recovery may not ever be ready for rehabilitation. In such cases, rehabilitation interventions can focus on the education of family/caregivers and the provision of assistive devices or home accessibility supports. By preparing the family/caregiver to care for the stroke survivor in the home, the patient can be discharged home regardless of suitability for rehabilitation.

In some cases, the stroke survivor is sent to an alternative setting (e.g., ALC designation, CCC or LTC Home) until he or she is Rehab Ready. If this is the only solution available, then the stroke survivor should have access to and links with the stroke rehabilitation system.

7.0 Framework for the Standards

The Panel identified overarching principles for the development of standards for the stroke rehabilitation system in Ontario:

- Stroke survivors will have timely, equitable and consistent access to coordinated rehabilitation services to address issues/deficits that affect their physical, cognitive, communicative, visual, perceptual, sensory, psychosocial functioning, and community re-integration, based on patient and family/caregiver needs.
- Rehabilitation at all points along the care continuum will be evidence based where evidence is available and be provided by appropriate rehabilitation professionals and other health care providers with expertise in stroke rehabilitation.
- An interprofessional model of care will be used when assessing and treating all stroke survivors.

7.1 Major Themes for the Standards

The service provision model and the associated standards reflect six major themes relating to effective stroke rehabilitation:

1. **Screening and Assessment.** As proposed in the service provision model, assessments are required at key points along the continuum of care.
2. **Needs Definition.** For each stroke survivor, a formal plan based on findings of the assessment, identifies patient and family/caregivers goals and rehabilitation needs.
3. **Quality Care.** Stroke rehabilitation should be delivered in all settings by an interprofessional team with stroke expertise. Stroke survivors should receive the intensity and duration of stroke rehabilitation services as clinically indicated.
4. **Accessible care.** All stroke survivors who might benefit should have an opportunity to participate in rehabilitation, if clinically indicated.
5. **Timely care. Time is function.** Timely access to appropriate and quality stroke rehabilitation services is critical for achieving the maximum gains for stroke survivors. Stroke is a chronic disease. Without timely and appropriate rehabilitation, stroke can become a debilitating disease.
6. **System Planning.** The proposed standards create a standard for system planning both at the regional level (i.e., the service provision model) and at the provincial level (e.g., using data to plan, coordinate, integrate and set priorities for care).

Standards play an important role in setting the bar for service delivery and in understanding the needs of patient populations. When the Panel began its meetings in January 2006, there were no widely accepted clinical standards in stroke rehabilitation for Ontario, and the Panel felt that the service provision model would be more useful in the stroke community if it were supported by such standards.

7.2 Approach to Developing the Standards

The Panel defined the standard of care that it proposes the stroke community strive for over the next three to five years. The proposed standards are intended to be the "gold standard" of care.

The Panel recognized that current limitations in health human resources and supporting infrastructure will limit the ability to achieve these standards across the province in the suggested time frame of three to five years. Nevertheless, the Panel also felt it was imperative to have a "gold standard" to use for the planning of services and supporting resources, in order to communicate evidence-based stroke rehabilitation for all stroke survivors across the continuum of care. The development of these standards will also help the system to identify gaps in service and to set priorities for addressing those gaps.

To support the level of resources needed to meet these standards, a critical mass of stroke survivors would be required, otherwise the costs would outweigh the benefits. For rural or remote communities, where the critical mass is not available, innovative models of care are necessary to ensure these standards can still be met. These models might include the use of technology or telecommunications, the use of rehabilitation assistants, or a compromise in the setting of care (e.g., inpatient in a tertiary centre instead of outpatient in the community).

The Panel's approach to developing standards was to review existing standards and guidelines for stroke rehabilitation from the following sources:

- The Canadian Best Practice Recommendations for Stroke Care: 2006, prepared by the Canadian Stroke Network and the Heart and Stroke Foundation of Canada (noted as the Canadian Best Practice Recommendations or CCS BPR),
- The Heart and Stroke Foundation of Ontario's Best Practice Guidelines for transition management, rehabilitation management and community reengagement, 2003 (noted as HSFO BPG); (see Appendix K for a list of the relevant guidelines),
- Recommendations regarding evidence-based practice for stroke rehabilitation, as documented in published journal articles[60, 61] and unpublished research[62] (noted as EBRSR),
- Community Stroke Best Practice Guidelines (West GTA) for Community Care Access Centres (CCACs),[63]
- Recommendations from the six stroke rehabilitation pilot projects (see Appendix L for more details),
- Recommendations by the Registered Nurses Association of Ontario (RNAO) and the HSFO in "Stroke Assessment Across the Continuum of Care,"[64] and

[60] Teasell R, et al. Evidence-based practice and setting basic standards for stroke rehab in Canada. In E. J. Roth (Ed.)., *Grand rounds*.
[61] Teasell R, Foley N, Bhogal S, Bagg S, Jutai J. (2006). *Topics in Stroke Rehabilitation*, *13*(3), 59-65.
[62] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). Evidence-based review of stroke rehabilitation. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.
[63] Hladin, N. (2005, February). Community Stroke Best Practice Guidelines. West GTA Stroke Network.

- "AHA/ASA-Endorsed Practice Guidelines. Management of Adult Stroke Rehabilitation Care. A Clinical Practice Guideline."[65]

Wherever possible, the Panel adapted the existing guideline to be as consistent as possible with other sources. In most cases, revisions were made to the guideline to reflect the provincial context.

7.3 The Evidence Base

The literature for inpatient stroke rehabilitation is well established. However, there is little published evidence surrounding stroke rehabilitation in the community. The Panel felt it was important to have standards for the services provided to stroke survivors living in the community and, therefore, relied primarily on consensus opinion, current best practice and the results of the stroke rehabilitation pilot projects to develop these standards where no evidence was available.

[64] Heart and Stroke Foundation of Ontario and Registered Nurses' Association of Ontario. (2005). *Stroke assessment across the continuum of care*. Toronto: Heart and Stroke Foundation of Ontario and Registered Nurses' Association of Ontario.

[65] Duncan PW, Zorowitz R, Bates B, et al. (2005). AHA/ASA-Endorsed practice guidelines. Management of adult stroke rehabilitation care. A clinical practice guideline. *Stroke*, *36*, e100.

8.0 Standards for the Stroke Rehabilitation System

For each clinical standard, a short summary of the evidence is presented, followed by the standard. The full details of the underlying evidence are well documented in the material reviewed by the Panel and are not repeated in this report. Additional commentary has been included where the Panel felt clarification was needed to explain the rationale for the standard or to assist in the interpretation of the standard.

The standards are repeated in Appendix J for reference.

8.1 Screening and Assessment

8.1.1 Early Initial Assessment for Rehabilitation

There is evidence that the timely initiation of stroke rehabilitation can contribute to improved outcomes. An early assessment is a necessary prerequisite for the timely initiation of stroke rehabilitation.

The Canadian Best Practice Recommendations state that early consultation with rehabilitation professionals can contribute to reduced risk of complications. An additional benefit is early planning for transition or discharge from acute care to specialized rehabilitation units or to the community.

The EBRSR states that "there is consensus (Level 3) opinion that screening for possible admission to a rehabilitation program should be as soon as the stroke survivor's neurological and medical condition permits."[66]

Standard #1: *All patients admitted to hospital with acute stroke will have an early initial rehabilitation assessment by relevant rehabilitation professionals as soon as possible after admission (Evidence Level 1) within the first 24-48 hours (Evidence Level 3). Weekends will not limit "time to assessment." (adapted from CSS BPR 5.1a)*

This initial screening will sometimes take place before the patient's condition has stabilized. A more comprehensive assessment is also required over the next few days to make the determination for Rehab Readiness. (See Figure 3, the Service Provision Model, which shows an early initial assessment and a later comprehensive assessment.)

As part of this assessment, the clinician(s) will determine whether the stroke survivor is an appropriate candidate for inpatient stroke rehabilitation. For example, the patient may not be expected to survive the stroke, or, alternatively, may be ready for discharge home.

[66] Teasell R, et al. *Evidence-based review of stroke rehabilitation: Managing the stroke rehabilitation triage process* (6th Ed.). p. 5.

This early initial assessment by rehabilitation professionals is to determine readiness for rehabilitation (i.e., it is an assessment to triage the stroke survivor to the appropriate setting). The acute care clinicians should also continue with their assessments to treat the stroke survivor and provide interventions as appropriate within the acute care environment.

The term "assessment by relevant rehabilitation professionals" refers to having the appropriate or relevant professional(s) assess the stroke survivor. For example, stroke survivors with a speech problem should be assessed by a speech-language pathologist (SLP); survivors with a mobility problem should be assessed by a physiotherapist (PT). An interprofessional team assessment is required for all cases.

Facilities have taken different approaches to identifying who should conduct the assessment. In some instances, a rehabilitation professional from the rehabilitation unit or facility does the initial assessment of the stroke survivors. In other instances, it is the acute stroke team. In small acute hospitals, the stroke survivor may be assessed by the one physiotherapist in the building. Each region will develop a method that works given the available resources and other considerations; however, the Panel does recommend that the professional who completes the assessment be trained in stroke rehabilitation. (See Standard #9.)

Currently in some organizations (e.g., The Toronto Western Hospital), rehabilitation professionals must assess their stroke patients within 24 hours. A "Code Stroke" is initiated for the relevant rehabilitation professionals to alert the team that a person with a stroke has been admitted. While this service is not yet provided on weekends, it does demonstrate the recognition of the importance of this standard.

8.1.2 Assessment for Stroke Survivors Not Admitted to Hospital

Stroke survivors who have experienced a mild stroke are not generally admitted to hospital. However, the Panel believes that all stroke survivors should have a comprehensive assessment by stroke rehabilitation professionals to determine the need for therapies, whether they were admitted to hospital or not.

The Canadian Best Practice Recommendation 5.1b states that "All people with acute stroke not admitted to hospital should undergo a comprehensive outpatient assessment(s) which includes a medical evaluation and functional assessments, preferably within two weeks."

Standard #2: *All stroke survivors (excluding TIAs) who are not admitted to hospital or who are discharged home from acute care will undergo an ambulatory or home-based screening assessment, which includes a medical, functional and cognitive assessment, by professionals with expertise in stroke, within two weeks. (Evidence Level 1); (adapted from CSS BPR 5.1b)*

An important reason for this screening assessment is that survivors of a mild stroke might be discharged home with, for example, residual deficits in cognition or speech. These residual deficits need to be properly assessed and treated so that the stroke survivor can attain full

recovery. This assessment could be conducted by a primary care practitioner with expertise in stroke or at a stroke prevention clinic.

Stroke survivors who are discharged from the emergency department can be referred to a secondary prevention clinic (where one is available). The clinic staff should be able to identify the deficit(s) and then refer the stroke survivor for further assessment by rehabilitation professionals as needed. This model of care, with rehabilitation specialists on call if required during a clinic visit, is currently used at the Toronto Western Hospital Stroke Prevention Clinic. Where no secondary prevention clinic is available, arrangements should be made to ensure that the emergency department physicians know how to refer the stroke survivor to outpatient services or the CCAC for rehabilitation services.

8.1.3 Reassessment of Rehabilitation Needs

HSFO BPG 16 states the case for periodic reassessment of rehabilitation needs as follows: "Assist the stroke survivor and family to develop and implement an evolving care plan by conducting 6-week, 3-month, and 1-year follow-up assessments of all aspects of health status, community participation, and links to prevention services."

Standard #3a: *Survivors of a severe or moderate stroke who are not initially considered eligible for inpatient stroke rehabilitation, once Rehab Ready, will be reassessed at regular intervals for their rehabilitation needs. (Evidence Level 3)*

Standard #3b: *As clinically indicated, a primary care practitioner, CCAC case manager, physiatrist or relevant rehabilitation professional will conduct a periodic reassessment of rehabilitation needs of the stroke survivor at six weeks, three months, one year and as needed. This assessment and client goals will provide the basis for a comprehensive plan of care to be developed, implemented and updated with the stroke survivor and family/caregivers. (Evidence Level 3); (adapted from HSFO BPG 16)*

Standard #3a applies to those stroke survivors who have not yet participated in inpatient stroke rehabilitation. The stroke survivor's tolerance for rehabilitation might improve as time goes by, so it is important to reassess periodically.

Standard #3b recognizes the need to periodically reassess all stroke survivors for their rehabilitation needs to ensure that the stroke survivor's status does not deteriorate or that the survivor can achieve his or her maximum potential. Rehabilitation needs might change for any number of reasons:

- There may not be any rehabilitation needs initially, but these might develop over time, even up to five years following the stroke, as the stroke survivor might become better prepared for rehabilitation once adjusted to life after the stroke. For example, as the stroke survivor develops a better understanding of his or her disabilities or limitations, the rehabilitation goals might change. A need for vocational services or driving assessments might not be identified in the immediate period post-stroke.
- If the stroke survivor's functional status deteriorates, an assessment is needed to determine whether rehabilitation can help to slow or reverse this situation.

- New techniques and equipment might have become available for stroke rehabilitation, in which case a reassessment can help to determine whether there is a new treatment for the stroke survivor.

Stroke survivors should have access to these periodic reassessments regardless of where they reside (e.g., in their home, a LTC Home, transitional care bed, or CCC bed). (Refer to Standard #13.) Within these settings, the Medical Director of the facility, family physician or care team should ensure that these patients receive an assessment. In determining whether a stroke survivor is Rehab Ready, the care provider may want to consult with an interprofessional stroke team (e.g., at the associated inpatient stroke unit).

There may be an opportunity to use technology to develop a recall system to notify the rehabilitation professionals when a stroke survivor should be scheduled for a follow-up assessment.

8.1.4 Reentry

Stroke survivors and stroke rehabilitation professionals from across the province identified many common gaps. One such gap is the inability of stroke survivors to gain access to the stroke rehabilitation system once discharged from any point in the continuum.

Standard #4: *Stroke survivors should have a mechanism to access or reaccess the rehabilitation environment, if clinically indicated, regardless of the time that has elapsed since the stroke. (Evidence Level 3)*

If the reassessment (Standards #3a and #3b) finds that the stroke survivor would benefit from rehabilitation, the stroke survivor should be able to then receive the required service(s). The reassessment process does not necessarily mean that the stroke survivor will be referred for inpatient stroke rehabilitation, or any other form of rehabilitation. Referrals should be made only when indicated.

Having the ability to gain access to the stroke rehabilitation system is an imperative. Mechanisms for this process will vary regionally and may include rehabilitation referral systems, primary care practitioners, CCAC case managers, physiatrists, and, of course, other stroke rehabilitation professionals. The service itself also needs to be more open and transparent in order to support reentry.

If the recommended course of therapy in an inpatient rehabilitation unit exceeds 21 days, a stroke survivor from a LTC Home would lose his or her bed in the Home. If a resident of a LTC Home is deemed to be an appropriate candidate for inpatient rehabilitation, consideration must be given to the ramifications of the 21-day policy so that the stroke survivor can receive the necessary services without loss of residency status.

8.1.5 Standardized Assessment Tools

The Canadian Best Practice Recommendations (5.1) point to the need for standardized, valid assessments in determining the stroke survivor's functional status and impairments. The

findings from two of the stroke rehabilitation pilot projects (i.e., Central South and SCRIPT) also identified the need for a triage tool and/or protocol.

Standard #5*: Stroke related impairments and functional status will be evaluated by rehabilitation professionals trained in stroke rehabilitation using standardized, valid assessments. (Evidence Level 2); (adapted from CSS BPR 5.1c)*

The Panel recommends that the FIM™ or AlphaFIM® tools be used for this assessment, or a description of functional ability, where a FIM™ instrument is not available.

The Canadian Stroke Network and HSFO together formed a Canadian Best Practices in Stroke Rehabilitation Outcomes Consensus Panel in February 2006 to look at outcome tools for stroke rehabilitation. This national panel used the International Classification of Functioning (ICF) domain of body structure and function and the ICF domains of activity and participation and determined quality indicators of process of care that apply to rehabilitation. The members in this national panel looked at "assessment to treat" rather than "assessment to triage." (See Appendix M for the report of the Expert Panel on Canadian Best Practices in Stroke Rehabilitation Outcomes: Report of the Expert Panel, which includes a list of the tools.)

8.2 Needs Definition

8.2.1 Comprehensive Plan

The HSFO Best Practice Guidelines and the Canadian Best Practice Recommendations both support the need for a comprehensive rehabilitation plan for each stroke survivor. The Blueprint[67] supports this recommendation as well.

Standard #6: *The interprofessional team will develop a comprehensive rehabilitation plan with each stroke survivor that reflects the severity of the stroke, the needs and goals of the stroke survivor, and the family/caregiver and home environment. (Evidence Level 3); (adapted from HSFO BPG 12 and CSS BPR 5.2)*

The service provision model, as outlined in Chapter 6, provides the initial step for this standard in defining a process to determine the appropriate type of rehabilitation, taking into consideration the severity of the stroke, the stroke survivor's tolerance, and other factors such as the goals of the stroke survivor. The comprehensive rehabilitation plan also takes into consideration other aspects of the treatment plan and includes:

- A commitment to continuity of care throughout the entire stroke continuum,
- Care delivered by an experienced and dedicated interdisciplinary team of health care professionals,

[67] Teasell R, Evans M, Jutai J, Foley N, Salter K. (2006, October). A blueprint for stroke rehabilitation: Improving outcomes and maximizing efficiencies. Prepared for the Canadian Stroke Network.

- A focus on recognition and optimal management of co-morbidities and complications,
- Early initiation of goal-directed treatment that enhances the stroke survivor's abilities and minimizes disabilities,
- Implementation of a secondary stroke prevention program,
- Routine and systematic assessment of progress and adjustment of treatment,
- A focus on the importance of education for the stroke survivor, the family and the caregiver,
- Attention to and screening for psychological and social issues affecting the stroke survivor, the family and the caregiver,
- Thorough early discharge planning to ensure effective community reengagement and early resumption of home, family, recreational, and vocational roles, wherever possible, and
- Stroke survivor and family/caregiver education about the possibility of discharge, not to home, but to an alternative care facility.[68]

8.2.2 Appropriate Intensity and Duration of Therapies

The Blueprint concludes, based on recently published studies, that "greater intensities of rehabilitation therapies result in improved stroke outcomes. The combination of high-intensity therapies provided early in the course of the stroke recovery provides the greatest benefit."[69]

In addition, the AHA/ASA-Endorsed Practice Guidelines for the Management of Adult Stroke Rehabilitation Care recommend that "the patient receive as much therapy as 'needed' to adapt, recover, and/or reestablish the pre-morbid or optimal level of functional independence."[70]

[68] The Heart & Stroke Foundation of Ontario's Best Practice Guidelines for transition management, rehabilitation management and community re-engagement, 2003

[69] Teasell R, Evans M, Jutai J, Foley N, Salter K. (2006, October). A blueprint for stroke rehabilitation: Improving outcomes and maximizing efficiencies. Prepared for the Canadian Stroke Network.

[70] Duncan P, et al. (2006). Management of adult stroke rehabilitation care; A clinical practice guideline. *Stroke*, *36*, e107.

Standard #7: *Stroke survivors will receive the appropriate intensity and duration of clinically relevant therapies across the care continuum based on individual need and tolerance. (Evidence Level 1); (adapted from HSFO BPG 13 and CSS BPR 5.3)*

a) *Mild stroke: Stroke survivors discharged to the community will be provided with ambulatory services for one hour of each appropriate therapy, two to five times per week, as tolerated by the patient and as indicated by patient need. If only one discipline is required (e.g., speech-language pathology), then the stroke survivor will be provided with that one service. (Evidence Level 3)*

b) *Moderate stroke: Survivors of a moderate stroke will receive a minimum of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 3)*

c) *Severe stroke: Survivors of a severe stroke who are Rehab Ready will receive the frequency and duration of therapy that can be tolerated; the interprofessional team will increase the frequency and duration as tolerance improves to a minimum target of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 1)*

Evidence suggests that more intensive therapy results in improved outcomes; thus, including therapeutic activities in the stroke survivor's daily routine is imperative. (See also Standard #8, which includes the need for a stimulating environment for stroke rehabilitation.)

The Panel highlights the importance (see Recommendation 11) of having a funded large-scale research project to look at the efficacy of seven-day therapy for stroke survivors. The evidence does suggest that therapy that is timely, intense and frequent has the greatest benefit for the stroke survivor with improved outcomes. However, the Panel could not find any relevant research to support a standard to provide therapy seven days a week and thus recommends that research to prove or disprove this hypothesis be given a high priority.

The Panel recognizes that most centres cannot currently provide inpatient therapy seven days a week. If a centre increases services to seven days a week, it must have incremental funding to achieve this standard. Patient outcomes will not improve by merely reassigning the same number of therapists across seven days rather than five, without an increase in the number of therapy hours provided.

Further, the expectation is that providing therapy seven days per week will accelerate recovery. To justify the investment in more intense therapy, inpatient units will need to see a concomitant reduction in the average length of stay.

The Panel also recognizes that weekend passes are an important element of rehabilitation for stroke survivors that assist the stroke survivor and family/caregivers to make the adjustment to the home environment.

Where no therapy is provided on weekends, rehabilitation professionals should be encouraged to organize activities on the weekend that will promote a more stimulating environment, including weekend passes, activities with volunteers or social activities (e.g., playing cards). Weekends are also an opportunity for stroke survivors and family/caregivers to try some of the rehabilitation exercises together, as families often play a central role in rehabilitation.

Although therapy should be delivered throughout the continuum of care, the intensity of that therapy will vary as the stroke survivor's tolerance increases and the functional performance improves. The evidence suggests that the intensity of therapy should be increased as the stroke survivor's tolerance for therapy increases.

8.3 Quality Care

8.3.1 Stroke Rehabilitation Unit

The Canadian Best Practice Recommendations (5.2) state "All patients with stroke who are admitted to hospital and who require rehabilitation should be treated in a comprehensive or rehabilitation stroke unit by an interdisciplinary team."

Kalra et al.[71] reported that more intensive stroke specific care provided on a stroke unit was superior to care provided on a general ward.

Based on a review of the literature, the EBRSR concluded that "In animal studies, complex or enriched environments result in a greater number of synapses and an increase in dendritic branching, specific to the area of cortex being stimulated."[72] The EBRSR continues to explain the importance of increased activity and a complex and stimulating environment in improving recovery and functional outcomes. Despite this evidence, even recent research[73] shows that stroke survivors in an inpatient stroke rehabilitation unit spend much of their time idle and alone.

Standard #8: *All stroke survivors who would benefit from inpatient stroke rehabilitation will be treated in a stroke rehabilitation unit or geographically defined unit with a stimulating environment. (Evidence Level 1); (adapted from CSS BPR 5.2 and the Blueprint)*

A major contributing factor to the improvement in outcomes is from clustering stroke survivors into a single area, allowing clinical staff to develop expertise in stroke rehabilitation.

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[71] Karla L, Evans A, Perez I, Knapp M, Swift C, Donaldson N. (2005). A randomized controlled comparison of alternative strategies in stroke care. *Health Technology Assessment*, *9*(18). As summarized in the Blueprint.
[72] Teasell R, Bayona N, Bitensky J. Evidence-based Review of stroke rehabilitation: Background concepts in stroke rehabilitation and Appendix 8 (9th Ed.). Available at www.ebrsr.com
[73] Bernhardt J, Dewey H, Thrift A, Donnan G. (2004). Inactive and alone: Physical activity within the first 14 days of acute stroke unit care. *Stroke*, *35*(4), 1005-1009.

During the consultation process, it was suggested on several occasions that the improved outcomes from clustering stroke patients might also apply to stroke rehabilitation delivered in CCC facilities or LTC Homes. Administrators and clinicians are encouraged to consider clustering of stroke patients to build clinical expertise among the care providers.

A stimulating environment takes into consideration both the activities the stroke survivor undertakes and the environment itself. Goals should be integrated into the stroke survivor's activities in the inpatient unit or ambulatory clinic and in the home.

Every effort should be made to maximize the opportunities for creating a rehabilitation environment that facilitates participation in activities as an integral part of daily routines every day of the week. Stroke survivors should not be limited to their room, looking at four walls or watching television. A stimulating environment is therapeutic (rather than clinical), where activities are energizing and refreshing and arouse the senses.

Improvements to the environment might include encouraging patients to play cards together or providing a well-furnished lounge or access to a computer. An additional benefit of this type of space is the informal support groups that are likely to develop for stroke survivors and family members. This could also be used as a patient/family resource library. Recreation therapists, physiotherapy assistants, occupational therapy assistants, communicative disorders assistants, personal support workers, volunteers and family/caregivers can all be enlisted to help create a stimulating environment.

Self-management can also help to provide a stimulating environment for rehabilitation. For example, stroke survivors can also be taught to do exercises independently when no formal therapy is scheduled.

8.3.2 Expertise in Stroke Rehabilitation

The Canadian Best Practice Recommendations suggest that post-acute stroke care should be delivered by rehabilitation professionals with experience in post-stroke care.

The evidence for using an interprofessional team with experience in stroke rehabilitation, compared to a general medical ward or community care, is well documented in the literature. The evidence demonstrates that better clinical outcomes are achieved when there has been a coordinated, interdisciplinary evaluation and rehabilitation is received on a stroke rehabilitation unit.[74]

[74] Langhorne P, Duncan P. (2001). Does the organization of postacute stroke care really matter? *Stroke*, *32*, 268-274.

Standard #9: *Once it is determined that a stroke survivor will benefit from:*

- *Inpatient rehabilitation and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 1)*
- *Community rehabilitation (i.e., home-based or ambulatory) and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 3); (adapted from CSS BPR 5.2)*

The Southeastern Ontario stroke rehabilitation pilot project confirmed the importance of the care being delivered by therapists with stroke rehabilitation expertise. The RNAO/HSFO Stroke Assessment Across the Continuum of Care has recommended that nurses working in areas with a focus on stroke should have enhanced stroke assessment skills.

The interprofessional team does not need to be available in person. The use of videoconferencing or other models for the delivery of care can be used where there is insufficient critical mass to support having the resources available locally.

Regardless of the setting in which the stroke survivor receives these services (e.g., inpatient, outpatient, at home), the stroke care should be delivered by a variety of rehabilitation professionals and health care providers with experience in stroke rehabilitation.

8.3.3 Collaborative Practice

There is strong evidence that the use of an interprofessional team contributes to improved outcomes. The Canadian Best Practice Recommendations further articulate what professions should be included on the interprofessional team. The Panel has modified this list slightly to include three levels of access:

- The core interprofessional team of rehabilitation professionals.
- The expanded team of professionals to which the core team (including the stroke survivor and family/caregiver) should have access on an as-required basis.
- Consultation services to which the core team (including the stroke survivor) should have access on an as-required basis.

Standard #10: *Post-acute stroke care will be delivered using a collaborative practice model. The interprofessional team will consist of a core team with clinical expertise including the stroke survivor and family/caregivers, primary care practitioner, physiatrist, rehabilitation nurse, nurse, physiotherapist, occupational therapist, speech-language pathologist and social worker. The team will have access to a psychologist, a recreation therapist, a spiritual care provider, a dietitian, a pharmacist, a discharge planner, and consults for vocational, driving and video fluoroscopic swallowing assessments, orthoses, augmentative communication, and complex seating. (Evidence Level 3); (adapted from CSS BPR 5.2)*

The "core" interprofessional team will consist of appropriate levels of these disciplines, as identified by the Stroke Unit Trialists' Collaboration.[75] This standard will help to define the membership of a core team that is needed to provide the minimum scope of services for stroke rehabilitation.

Across the care continuum, from the first day post stroke, interprofessional collaboration is key to delivering optimal stroke rehabilitation. In some instances (e.g., the OHIP-funded physiotherapy provided to residents in LTC Homes or the single-service provision model used in CCACs), only a single service is provided to stroke survivors. Rehabilitation in general is a team effort; with stroke survivors, it is imperative that they have access to a rehabilitation team with experience in stroke care.

8.3.4 Task-Specific Stroke Rehabilitation

The Canadian Best Practice Recommendations (5.3) include a recommendation that repetitive and intense use of novel tasks will challenge the patient to acquire necessary motor skills. The Blueprint supports this recommendation with the following conclusion: "Task-specific therapeutic approaches allow for the best recovery with improved FIM™ scores, improved discharge destination and shorter lengths of hospital stay."

Two recent studies[76, 77] support this conclusion, demonstrating that although repetition is a major component of successful rehabilitation, the learning of new, meaningful skills is a more important factor.

Standard #11: *Therapy will include repetitive and intense use of novel tasks that challenge the stroke survivor to acquire necessary skills during functional tasks and activities. The interprofessional team, along with the family/caregiver and volunteers, will promote the practice of skills gained in therapy into the stroke survivor's daily routine and will reinforce increased stroke survivor participation and activity. (Evidence Level 1); (adapted from CSS BPR 5.3 and the EBRSR)*

The inclusion of meaningful skills in the treatment program goes a long way to capturing and sustaining the stroke survivor's interest and participation. This approach will also enable the stroke survivor to measure progress in a way that is relevant and personal, encouraging the stroke survivor's participation and leading to faster recovery.

[75] Stroke Unit Trialists' Collaboration. (1997, April 19). Collaborative systematic review of the randomised trials of organised inpatient (stroke unit) care after stroke. *BMJ*, *314*(7088), 1151-1159.
[76] Page SJ. (2003). Intensity vs. task specificity after stroke: How important is intensity? *Am. J .Phys. Med. Rehabil*., *82*(9), 730-732.
[77] Hesse S, Werner C, von Frankenberg S, Bardeleben A. (2003). Treadmill training with partial body weight support after stroke. *Phys. Med. Rehabil. Clin. N. Am*.,*14*(1 suppl), S111-S123.

8.3.5 Education for the Interprofessional Team, Stroke Survivors, Family/Caregivers and Volunteers

Throughout the consultations, stakeholders emphasized the importance of education for stroke survivors, their families/caregivers, rehabilitation professionals and other health care providers.

The 2000 Panel (Recommendation 10), the Blueprint, and the Southwestern Ontario and Southeastern Ontario stroke rehabilitation pilot projects all endorsed the importance of educational opportunities.

Standard #12a: *The interprofessional team will have access to stroke rehabilitation education and professional development modules in order to support the standards and other evidence-based practice initiatives. These educational opportunities will be evidence based, current and user friendly and will incorporate knowledge translation strategies. (Evidence Level 3)*

Currently, there are limited educational opportunities in stroke rehabilitation for health care providers.

This Panel hired a consultant to develop a Stroke Rehabilitation Resource Guide due to the importance of education in stroke rehabilitation. This guide will help rehabilitation professionals and health care providers access information about stroke rehabilitation in a user-friendly format.[78]

Many health care providers across the care continuum do not often receive paid time off to attend educational events. The Panel recommends, therefore, that strategies be put into place to enable knowledge acquisition (e.g., incentives to take the courses) and also knowledge translation into their everyday work. Education sessions for health care providers should be available in both French and English, accessible for professionals in remote communities, feasible and financially supported by the MOHLTC. Where appropriate, distance learning strategies should be used.

The Canadian Best Practice Recommendations (2.1) include a recommendation on patient and caregiver education, which the Panel adapted in Standard #12b.

[78] The guide is available at the Heart and Stroke Foundation of Ontario's Professional Education Web site, at www.heartandstroke.ca/profed

Standard #12b: *Stroke survivors, family/caregivers and volunteers should be provided with information and education at all stages of care across the continuum (prevention, acute care, rehabilitation, community reintegration). It should address: the nature of stroke and its manifestations, signs and symptoms, impairments and their impact and management, risk factors, planning and decision making, resources and community support. (Evidence Level 1); (adapted from CSS BPR 2.1)*

Information and education should be interactive, timely, up to date, provided in a variety of languages and formats (written, oral, counselling approach), and specific to stroke survivor and family/caregiver needs. (Evidence Level 1/2); (adapted from CSS BPR 2.1)

It is important for the stroke rehabilitation services, including educational sessions, to be delivered in a manner that makes them "communicatively accessible." This is especially important for stroke survivors with aphasia, other communication disorders due to stroke and/or language barriers. (See Section 8.4.2 for a definition of communicative access.) Sessions for stroke survivors and family/caregivers should be made available in more languages.

Universities and professional colleges have participated in some of these types of initiatives in the past. It may be possible to engage them again in the development and implementation of the educational materials.

8.4 Accessible Care

8.4.1 Equitable Access to Service

The MOHLTC has identified five strategic directions for the health care system that will be the basis of a provincial strategic plan scheduled for release in spring 2007. One of these directions is "equitable access to the care and services needed, no matter where you live or your socio/cultural/economic status."

Ontario residents might reside in an urban or rural setting, the sparsely-populated north or the densely-populated south, a private residence or an institution. The Panel agrees that stroke survivors should have the option of receiving stroke rehabilitation services close to home, regardless of where they reside. This standard provides guidance to the regional stroke teams for the development of regional triage systems.

Standard #13: *All stroke survivors, regardless of where they live, will have equitable access to the same standard of care at the appropriate intensity and duration. (Evidence Level 3)*

A central theme in recent developments in health care policy in Ontario is to provide the needed care as close to the patient's home as possible. Ontario's geography has many areas that are too sparsely populated to warrant having clinical resources on-site to provide stroke rehabilitation (either hospital-based or home-based). Therefore, the Panel believes that health technology (e.g., telemedicine) and creative and innovative models of care can help to

extend the reach of limited rehabilitation professionals into these communities. Innovative approaches to delivering care, including outreach models, can also help to deliver services in remote locations.

Telemedicine

The use of telemedicine networks has proven to be one effective approach to increasing the knowledge of local care providers as a result of working with experts from larger centres. In addition, an outreach model for more formal education sessions would help to address many of the gaps identified by stakeholders (e.g., availability of stroke professionals, expertise, and training). This approach works well in rural regions. The enhanced use of videoconferencing can help providers access the expertise they need while enabling patients to receive care closer to home. It can also help stroke survivors and their families/caregivers access the care and/or services they need.

The Ontario Telemedicine Network and the Ontario Stroke System have jointly formed a Telestroke Working Group. One upcoming project will be in stroke rehabilitation and will address complex case consultations, linking expertise, and supporting transitions across the full continuum.

The North & East GTA stroke rehabilitation pilot project identified the use of telemedicine as an effective enabler for delivering ongoing monitoring of stroke survivors who were repatriated to remote areas of the province. "Telerehab" is gaining popularity in the rehabilitation community and is now being piloted to assess the feasibility of having a rehabilitation professional matched with a rehabilitation assistant (i.e., physiotherapy assistants, occupational therapy assistants, and communicative disorders assistants) using videoconferencing.

The Panel recognizes that there are some regulatory barriers to videoconferencing for some therapies.[79] These regulatory bodies should be encouraged to develop processes for effective and safe telemedicine consultations among the members of the interprofessional team.

Models of Care to Reach Remote Areas

Given the shortage of rehabilitation professionals across Ontario, the Panel realizes that the stroke rehabilitation community will need to find more efficient ways to deliver care, especially to remote or sparsely-populated areas. One potential approach is to use rehabilitation assistants. The College of Physiotherapists standards support the assignment of physiotherapy care to support personnel, including personal support workers who have completed on-the-job training that is physiotherapy specific or to individuals who hold a diploma or degree in health-related disciplines such as kinesiology or nursing.

Rehabilitation professionals should not overlook the abilities of personal support workers, other health care professionals and the stroke survivor's family/caregivers in delivering these services in locations where there is little access to a rehabilitation team.

[79] The College of Physiotherapists of Ontario is currently addressing the issue of using videoconferencing between a physiotherapist and a physiotherapy assistant to deliver rehabilitation services.

In the Southeastern Ontario stroke rehabilitation pilot project, it was found that personal support workers without education in rehabilitation did not contribute to improved outcomes for stroke survivors. Therefore, the Panel believes that it is imperative that these assistants be trained in general rehabilitation principles as well as in stroke rehabilitation principles.

8.4.2 Access to Rehabilitation after Moderate and Severe Strokes

The EBRSR provides a compelling case that survivors of a moderate to severe stroke should receive rehabilitation on stroke inpatient units. [80]

Bagg et al. also noted that stroke survivors with a severe physical disability (FIM-function-related group [FRG] 1 and 3) clearly make significant gains in function with rehabilitation.[81]

Standard #14: *Stroke survivors of a moderate or severe stroke who are Rehab Ready and have rehabilitation goals will be given an opportunity to participate in inpatient stroke rehabilitation. (Evidence Level 1)*

For moderate strokes, there is Level 1 evidence that inpatient rehabilitation improves outcomes. Therefore, all stroke survivors of a moderate stroke should be offered an opportunity to participate in inpatient rehabilitation.

For severe strokes, there is also Level 1 evidence of the benefits of inpatient rehabilitation. However, it is sometimes more difficult with these stroke survivors to determine with certainty whether they are truly Rehab Ready or not. In these situations, the stroke survivor should be admitted to an inpatient rehabilitation program, and the interprofessional team should continue to assess Rehab Readiness. If the team finds that the stroke survivor is not ready (e.g., does not demonstrate an ability to learn), then the rehabilitation can be ended and a plan put in place to safely discharge the stroke survivor to home or to the next level of care.

The Panel heard concerns that many survivors of severe stroke were discharged to LTC Homes without the benefit of a trial in stroke rehabilitation. The Panel believes that all stroke survivors "should have timely access to the appropriate intensity and duration of rehabilitation services," as stated in its vision. The discharge of stroke survivors to a LTC Home without a trial period of stroke rehabilitation should only happen as an exception, if, for example, the person has severe cognitive or behavioural impairments that interfere with that person's ability to participate and learn immediately after the stroke event.

The Panel recognizes that some inpatient stroke rehabilitation units are reluctant to accept a stroke survivor if there is a risk that the patient will not be discharged home at the end of the

[80] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). *Evidence-based review of stroke rehabilitation* (9th Ed.). Canadian Stroke Network. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.
[81] Bagg S, et al. Toward benchmarks for stroke rehabilitation in Ontario, Canada. *Am. J. Phys. Med. Rehabil.*, *85*(12), p. 975.

rehabilitation program, and there might be a delay in securing an ALC or LTC bed when the rehabilitation services are completed. Barriers to accessing these downstream resources are currently limiting access to inpatient rehabilitation for this population for whom the evidence shows there would be benefits. These barriers need to be addressed at the regional level.

There is evidence that stroke survivors in the FIM FRG 2 group (i.e., with severe cognitive impairments and who are older than 75 years of age) do not tend to benefit from stroke rehabilitation, and are unlikely to be discharged to the community in the absence of a capable and supportive caregiver. Before a final determination of rehabilitation needs for this patient population, rehabilitation professionals with the appropriate diagnostic and treatment skills must first establish whether these cognitive symptoms are reversible. For these stroke survivors, rehabilitation can be limited to the therapy needed to achieve specific rehabilitation goals (e.g., teach caregivers pivot transfers), with little expectation that the FIM™ score will change with therapy.[82] These stroke survivors can be offered continued therapy in LTC Homes, post-discharge from CCC and/or inpatient rehabilitation. This approach was used at Castleview Wychwood Towers in Toronto, which offers a program tailored for this FIM FRG 2 group with the philosophy that "recovery does not have an ending."

It is important that stroke rehabilitation services be delivered in a manner that makes them communicatively accessible. "Communicative access" requires accommodations or adaptations including:

- Verbal interaction techniques (e.g., speaking clearly, using basic but adult language, adding gestures),
- Alterations to printed materials (e.g., using pictographic images, adjustments in font, key words), and
- Acknowledging the competence of the individual.

By employing supportive communication techniques with stroke survivors and by offering supportive communication skill building to family/caregivers, there may be considerable improvements to the stroke survivor's life.

8.4.3 Access to Rehabilitation in LTC Homes and Other Institutions

As noted earlier, 22% of residents in LTC Homes are stroke survivors. Currently, these residents have no access to an interprofessional model of care, but many would benefit from stroke rehabilitation services, as demonstrated in the Southwestern Ontario stroke rehabilitation pilot project. This pilot project successfully utilized both ambulatory services and an outreach model of care for LTC Home residents.

[82] Bagg S, et al. Toward benchmarks for stroke rehabilitation in Ontario, Canada. *Am. J. Phys. Med. Rehabil.*, *85*(12), p. 975.

Standard #15: *Once in a LTC Home, Complex Continuing Care unit or Alternate Level of Care bed, residents should have access to stroke rehabilitation services as clinically indicated and based on the stroke survivor's goals through either ambulatory, outreach or CCAC if it is not available in-house. (Evidence Level 3)*

When a stroke survivor is transferred to a CCC facility or to a LTC Home without a trial of inpatient stroke rehabilitation, the care team at that location should match therapy to the stroke survivor's tolerance. Once tolerance improves to the extent that it appears that the stroke survivors can benefit from more intense rehabilitation than the CCC facility or LTC Home can provide, then the stroke survivor should be reassessed for eligibility for inpatient rehabilitation and referred if appropriate. (See Standards #3 and #4.)

For physiotherapy providers that have signed an agreement with the MOHLTC and the LTC Home to provide OHIP funded physiotherapy services in the home, one of the conditions of the contract is that all physiotherapy services must be provided within the Home. If a stroke survivor submits a claim to OHIP for services that were not provided in the LTC Home, the physiotherapy provider would be in breach of contract with the Ministry and the LTC Home. It is important that services provided to residents, including stroke survivors, be identified and included in the service agreement with the physiotherapy provider in order to address any potential barriers to the rehabilitation services required for stroke survivors.

The Panel is concerned about the practice of transferring stroke survivors to an alternative level of care (ALC) bed if the patient is not Rehab Ready. Once these stroke survivors are transferred to ALC beds, their stroke rehabilitation needs may not be met. Although the Panel understands the economics underlying this transfer, the members are concerned that these stroke survivors are not receiving timely stroke rehabilitation once they are Rehab Ready.

Stroke survivors in LTC Homes, CCC units or ALC beds should all be provided with the frequency and duration of therapy that they can tolerate, as indicated by patient need and as identified by the interdisciplinary team.

8.4.4 Access to Home-Based Stroke Rehabilitation

The Canadian Best Practice Recommendations (5.6) support continued access to specialized stroke care and rehabilitation post discharge. The EBRSR[83] found strong evidence that "stroke patients with mild to moderate disability, discharged early from an acute hospital unit, can be rehabilitated in the community by an interdisciplinary stroke rehabilitation team and attain similar functional outcomes when compared to patients receiving inpatient rehabilitation."

The Southeastern Ontario stroke rehabilitation pilot project investigated the effects of timely enhanced community-based rehabilitation services on outcomes and found that increased function was maintained for one year and that hospital readmissions were reduced by 50%.

[83] EBRSR Module 7.

Standard #16: *Stroke survivors who are discharged to the community with home-based stroke rehabilitation services will be provided with these services as per available evidence-based guidelines. (Evidence Level 3)*

The West GTA Stroke Network, in collaboration with four Community Care Access Centres (CCACs), recently prepared detailed evidence-based guidelines for community-based care.[84] The guidelines are intended to facilitate discussion, collaboration, decision making and mutual understanding between case managers and service providers as they develop individual treatment and service plans. These guidelines implicitly acknowledge the value of stroke rehabilitation services post-discharge.

The need for rehabilitation services does not end with discharge from an inpatient stroke unit. In fact, community rehabilitation is an integral part of the stroke survivor's successful recovery. Home-based therapy can be provided in a LTC Home, house, apartment or wherever the stroke survivor resides and is provided primarily by CCACs. Other methods for delivery of home-based therapy include outreach services (from a hospital or rehabilitation facility) and private rehabilitation.[85]

Service levels vary across the province. Many smaller communities do not have a sufficient number of stroke survivors to support part-time resources. A shortage of rehabilitation professionals often limits access to care, or at least timely access to care, particularly in smaller communities and in Northern Ontario.

Where human resource limitations in any setting preclude access to the appropriate level of service, the stroke survivor should be able to receive the correct intensity and duration of therapies in another setting. Home-based therapy should be available as indicated by patient need and as identified by the interdisciplinary team.

8.4.5 Community Supports

The Canadian Best Practice Recommendations (6.1a) state that "Stroke survivors and their caregivers should have their individual psychosocial and support needs reviewed on a regular basis." In addition to reviewing these needs, the Panel feels that adequate supports should be provided to address the identified needs. This is consistent with the HSFO best practice guidelines that describe the need for strategies that include an education component to address caregiver burden (#14) and community support programs (#18 and #19).

The recently produced Community Stroke Best Practice Guidelines also describe the need for strategies to help the stroke survivor and family/caregiver to cope with the burden of stroke post discharge.

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[84] Hladin, N. (2005, February). Community Stroke Best Practice Guidelines. West GTA Stroke Network. These guidelines are available at www.heartandstroke.ca/profed. Look under Ontario Stroke System / Professional Resources / Long-Term Care/Community / NEW! Community Stroke Best Practices Guidelines (2005).

[85] The delivery of these services by private provider is outside the scope of the Panel's work.

Kalra et al.[86] showed that formal training of caregivers during rehabilitation was associated with less caregiver burden, better psychological outcomes in patients and caregivers, higher quality of life in patients and caregivers, and reduced overall costs of health and social care.

Standard #17: *Interprofessional teams will facilitate linkages for stroke survivors and their family/caregivers after discharge to services in the community, including:*

- *Physical help, caregiver training and education, and psychosocial counselling, where needed. (Evidence Level 1); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)*
- *Access to primary care practitioners, case management or other system navigation service, respite care, educational opportunities, emotional help, wellness, vocational counselling, access to stroke resources, driving safety evaluation, transportation services, peer support groups, community re-integration services, prevention clinic/services and financial support, where needed. (Evidence Level 3); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)*

Once the stroke survivor returns home, a large burden is placed on family/caregivers. Thus, it is important to ensure that they receive social supports, including education. It is also important that this education be delivered when the stroke survivor and family/caregiver are able to receive the information, which will vary from individual to individual. Vocation counselling is key to the younger stroke survivors' successful re-integration into the community and includes not only counselling regarding the traditional work environment but also re-integration into the family and life roles (e.g., a mother who survived a stroke who needs to care for her children).

Hospital outreach services and ambulatory settings, CCACs, stroke support groups, primary care practitioners and religious groups can all play a role in supporting this standard.

8.5 Timely Care. Time is Function.

A recent study[87] of early intervention in animals has demonstrated improved outcomes. Another recent study from 2005, the Post-Stroke Rehabilitation Outcomes Project (PSROP), found that "earlier and more aggressive therapy is better, controlling for patient differences."[88]

[86] Kalra L, Evans A, Perez I, et al. (2004). Training carers of stroke patients: Randomized controlled trial. *BMJ*, *328*, 1099.
[87] Biernaskie J, Chernenko G, Corbett D. (2004). Efficacy of rehabilitative experience declines with time after focal ischemic brain injury. *J. Neurosci*, *24*(5), 1245-1254.
[88] DeJong et al. (2005). Opening the black box of poststroke rehabilitation: Stroke rehabilitation patients, processes, and outcomes. *Arch. Phys. Med. Rehabil.*, *86*(Suppl.2).

Standard #18*: The wait time from when the stroke survivor is Rehab Ready and referred to rehabilitation services until the start of all appropriate rehabilitation services should be no more than:*

- *Two business days for inpatient stroke rehabilitation, and*
- *Five days for both ambulatory and home-based stroke rehabilitation. (Evidence Level 3)*

These wait times are relevant for each time the stroke survivor transfers to the next phase of care. Ideally, there should be no waiting for stroke rehabilitation services once the stroke survivor is Rehab Ready and referred for services. All Panel members agreed that an immediate start of rehabilitation will yield the best outcomes. However, the Panel recognizes that the current health care system will need to change to ensure sufficient capacity to meet the standard and to eventually meet the target of no waiting time.

The Panel believes that it is important to initiate stroke rehabilitation in the acute care environment. Early intervention is so important that it should not be delayed until the stroke survivor is transferred to an inpatient rehabilitation unit or discharged to the community. Delaying access to stroke rehabilitation until the stroke survivor is discharged from acute care will have negative functional implications for the stroke survivor.

During the consultations, the Panel heard that in some regions, the wait time for ambulatory stroke rehabilitation services was up to one year. Given what the stroke community now knows about the benefits of timely access to rehabilitation, these waits are not acceptable.

The assessment and management of stroke and other conditions continue during rehabilitation. Stroke survivors are sometimes transferred before all diagnostic investigations are completed in order to expedite stroke rehabilitation in an inpatient rehabilitation setting. While the stroke survivor is, then, able to begin therapy in a timely manner, there are both increased costs and a loss of therapy time resulting from transferring the patient back to the referring organization for the tests. Situations like this will arise and the stroke region will need to develop policies and procedures for optimizing the process.

8.6 System Planning

8.6.1 Standardized Service Provision Model

The service provision model defines specific steps that should be taken to ensure that all stroke survivors have access to enter and/or reenter the stroke rehabilitation system as needed. All regions should adopt the service provision model recommended by the Panel. They are encouraged to tailor it as necessary to reflect local conditions, while keeping the key message of screen/assess, define and refer/transfer, as described in Section 6.2.1.

Standard #19: *Each stroke region will have an explicit stroke rehabilitation service provision model in place in order to facilitate optimal and timely access to rehabilitation services. (Evidence Level 3)*

8.6.2 Using Data to Plan, Coordinate, Integrate and Prioritize Care

It is not possible to monitor how well the stroke system is performing without reliable and timely data on clinical outcomes and service utilization. The Central South stroke rehabilitation pilot project recognized the need for a data collection system to support the planning, coordination, integration and prioritization of stroke rehabilitation services.[89]

Standard #20: *Clinical and service utilization data will be used to plan, coordinate, integrate and prioritize regional stroke rehabilitation services and ensure equitable access based on patient need. (Evidence Level 3)*

The introduction of a provincial health record that follows the stroke survivor along the continuum would contribute significantly to improved access to quality data for stroke rehabilitation. The Panel feels it is important to ensure that stroke data are included in any provincial initiative to develop an electronic patient record.

[89] Recommendations 2 and 3 of the Central South report.

9.0 Province-Wide Information System

As the stroke rehabilitation community begins to implement the standards proposed in this report, health care providers, administrators and funders will need to:

- Understand how well the system (or region) is performing against the established standards (e.g. time to initial assessment).
- Analyze what has changed for stroke survivors, in both qualitative and quantitative terms, once the standards have been implemented. For example, key evaluation questions may include: Are stroke survivors able to remain in the community longer? Are stroke survivors able to resume previous life roles? Are caregivers experiencing less strain?
- Determine whether stroke survivors were able to access the recommended services, which services were accessed, and what barriers to access still exist within and across regions and LHINs.
- Use the data for continuous quality improvement at both a clinical and system level. The Panel recommends that the stroke rehabilitation community understand and use the data being generated by the Stroke Evaluation Office to improve how, when and where care is being delivered.
- Determine the cost of care and identify efficiencies in the delivery of stroke rehabilitation in the community.

The Stroke Evaluation Rehabilitation Working Group is currently completing a review of stroke rehabilitation based on performance measures selected at the SCORE/CSQCS consensus meeting in February 2006 and the Canadian Stroke Strategy Information and Evaluation framework. The Stroke Evaluation Rehabilitation Working Group has been looking at trends over the past three years (2003/04 to 2005/06) in the core performance areas of:

- Integration,
- Access,
- Outcomes, and
- Innovation and education.

The evaluation framework also looks at a number of perspectives, ranging from the stroke survivor and family/caregivers to the health care organizations, regions, LHINs and the province, and the integration of service at all levels.

9.1 Performance Measurement Manual

The Panel's mandate included defining "a core set of performance indicators for implementation across the province in order to monitor the impact and efficacy of stroke rehabilitation assessment and triage." The Stroke Evaluation Office and the Stroke Evaluation Rehabilitation Working Group worked with the Panel to provide performance indicators for stroke rehabilitation.

The Stroke Evaluation Rehabilitation Working Group has developed a Performance Measurement Manual for stroke rehabilitation that defines performance measures and specific indicators for each of the standards developed by the Panel. (See Appendix N.) The manual also includes operational definitions and inclusion criteria for each indicator, and available data sources for use in calculating the indicators. This manual is intended to help standardize the approach to the evaluation of stroke rehabilitation against the standards, thereby increasing consistency in data and the ability to compare performance across groups.

As noted in the Performance Measurement Manual, there is currently a lack of data available for many of the indicators. This manual clearly identifies where gaps in data access exist and will serve as a foundation for setting priorities around data needs and building capacity for more comprehensive data collection in stroke rehabilitation across Ontario.

9.2 Sample Indicators

The Panel has identified six indicators that can provide a quick summary of progress against key standards. These indicators are provided in Table 5.

Table 5: Key Indicators for System Evaluation

Standard	Dimension	Indicator
1	Screening and Assessment	Median time from hospital admission for acute stroke to initial rehabilitation assessment by relevant rehabilitation professionals during inpatient acute stay.
5	Screening and Assessment	Percentage change in standardized outcome measurement scores from admission to inpatient rehabilitation or other rehabilitation setting/program to discharge from inpatient rehabilitation or other rehabilitation setting/program.
7	Needs Definition	Frequency, duration and intensity of therapies received from rehabilitation professionals while in an inpatient, outpatient or community rehabilitation setting following stroke.
14	Accessible Care	Percentage of acute stroke patients discharged to inpatient rehabilitation.
17	Accessible Care	Proportion of patients who are discharged from acute care who receive a referral for outpatient programs, home-based care or community supportive services.
19	System Planning	A regional service provision model is in place and available.

9.3 Data Gaps for the Proposed Evaluation Measures

At this time, a provincial stroke rehabilitation database does not exist. The development and use of indicators to monitor stroke rehabilitation services is challenged by significant gaps in

the availability of useful data. The Stroke Evaluation Office is expanding on work conducted by the Central South Stroke Region in defining prerequisites for a stroke rehabilitation database to develop a rehabilitation data system to complement the NRS.

In an acute inpatient care setting immediately after admission, there are no data available on the timeliness of assessments and referrals to inpatient or community-based rehabilitation, the intensity, duration and nature of services provided, or standardized tools or scores for assessment and functional outcomes.

In the inpatient rehabilitation setting, reliable data are not readily available on the intensity, duration and nature of services provided, the rehabilitation plan, stroke survivor education provided, whether a patient was treated on a stroke rehabilitation unit or not, or a description of the care environment. Also, there are no data for rehabilitation that is provided in nondesignated rehabilitation units.

For day hospitals, outpatient ambulatory and other community settings, data are not available for:

- The timeliness of assessments and referrals,
- The intensity, duration and nature of services provided,
- Standardized tools or scores for assessment and functional outcomes,
- Details about the care environment,
- Access to related services including primary care and social supports,
- Education for the stroke survivor,
- Fitness to drive and vocational assessments, and
- Caregiver burden.

10.0 The Case for Stroke Rehabilitation

This report has proposed significant changes in stroke rehabilitation. The Panel recognizes that such changes will require a significant investment in financial and human resources in stroke rehabilitation. At the same time, a case can be made to justify such an investment. While it was beyond the scope of the Panel's work to undertake a full health economic assessment of the benefits and costs, below is some information that is presented to make the case for an investment in stroke rehabilitation.

10.1 Benefits for the Stroke Survivor and Family/Caregiver

Without effective rehabilitation, stroke is a debilitating disease. With stroke rehabilitation services consistent with the standards recommended by the Panel, many stroke survivors can expect the following benefits:

- Increased independence in activities of daily living and a corresponding reduction in caregiver burden. With increased access to evidence-based services, every stroke survivor should achieve his or her maximum potential.
- In many cases, a reduction in complications from the initial stroke and potentially even avoidance of a second stroke.

With at least 90,000 stroke survivors in Ontario, a number that can be expected to grow with Ontario's aging population, even a small improvement will affect many people. Stroke is a leading cause of disability in the elderly, therefore, with the aging population, improvements in stroke rehabilitation will affect a large percentage of the population.

Achieving these benefits is, of course, dependent on access. The Panel recognizes that access to care is extremely important. Through the implementation of the proposed standards, all stroke survivors will have:

- Improved access to needed rehabilitation services. The expansion of service capacity as recommended by the Panel will ensure that all stroke survivors and their families have access to evidence-based best practice for stroke rehabilitation.
- Equity of access across the province. All stroke survivors and their family/caregivers will have the same access to needed rehabilitation services.

The above-noted benefits of accessible and effective stroke rehabilitation can also result in a net financial benefit to the health care system, even after an initial investment is made in enhancing services and increasing capacity, which is the topic of the next section.

10.2 System Benefits

The availability of supports and services post-discharge can have a significant effect on patient outcomes and system costs.

Estimating the financial benefits of improved treatments is difficult because there is little evidence to support rigorous cost/benefit analysis, and often the savings are not easily

realized. For example, if a patient's length of stay is shortened, the cost of that bed does not disappear – it is simply reassigned to another patient. However, the availability of that bed could contribute to:

- Shorter wait times for other patients because inpatient beds are available sooner,
- The ability to service more patients with the same number of beds, which can help to increase service levels or meet growing demand, or
- The ability to avoid investing in additional infrastructure or human resources to increase service levels or meet growing demands.

In addition to using these resources more efficiently, improved care can also help the system to avoid costs of delivering care that would not be needed if the appropriate rehabilitation services were provided. For example, effective community-based stroke rehabilitation services can help to prevent readmissions to acute care. Alternatively, a stroke survivor could achieve sufficient functional gains that an admission to a LTC Home could be avoided or the cost of services provided by the CCAC could also be reduced.

The stroke rehabilitation pilot project in Southeastern Ontario demonstrated that the provision of good community-based rehabilitation reduced hospital readmissions. The pilot project in Southwestern Ontario demonstrated that a stroke rehabilitation outreach team could help stroke survivors achieve sufficient functional gains to avoid admission to a LTC Home.

The literature supports the findings from these two pilots and also suggests a number of other opportunities for cost avoidance and direct savings. The Panel had the benefit of a review of the literature and identification of these opportunities in the Blueprint.[90]

The Blueprint analysis places the emphasis on cost and budget information for inpatient rehabilitation. While limited research has been conducted regarding cost/benefits of community-based stroke rehabilitation, the pilot projects highlighted above suggest further opportunities for system benefits.

The following examples of system savings, which are taken from the Blueprint and explained in more detail in Appendix O, are for illustration only. They are not intended to address the many factors that affect the length of inpatient stay of an individual patient:

- A potential reduction in the average length of stay (ALOS) in acute care of seven patient days per patient through timely admission to inpatient rehabilitation.
- A potential reduction in the ALOS of eight days per patient in inpatient rehabilitation due to more intensive therapy.
- A potential reduction in the ALOS of ten days per patient in inpatient rehabilitation and six fewer admissions to institutional care at discharge due to the benefits of a dedicated stroke rehabilitation unit.

[90] Teasell R, Evans M, Jutai J, Foley N, Salter K. (2006, October). A blueprint for stroke rehabilitation: Improving outcomes and maximizing efficiencies. Prepared for the Canadian Stroke Network.

- A potential reduction in the ALOS of two days per patient in inpatient rehabilitation and the avoidance of readmissions to acute care (averaging four days for each discharged patient) due to the benefits of early supported discharge.

Rehabilitation therapies are a relatively small part of the overall cost of inpatient rehabilitation. The cost of the inpatient bed including nursing costs is by far a greater burden on the unit's budget than providing therapies. The Blueprint argues that a small investment in more intense or more appropriate rehabilitation therapies can contribute to a significant savings by shortening the length of stay.

The reader should note that the potential savings described in the Blueprint are not intended to be a comprehensive assessment of the total benefits and costs of implementing the Panel's recommendations. These examples are merely illustrative of the tremendous potential for financial benefits of a more rigorous approach to stroke rehabilitation.

The reader is also cautioned that these benefits are not necessarily additive. For example, if the average length of stay in an inpatient rehabilitation unit is reduced due to one change (e.g., providing specialized stroke care), then the reduction in the length of stay from another change (e.g., early admissions) may or may not be realized. No research has been conducted on the potential benefit when these strategies are combined.

10.3 Conclusion

An investment will be required to support regional systems for effective and more immediate transfer to the appropriate level of stroke rehabilitation and to enhance capacity to provide best practice care. The potential for savings to the system and the reduced burden on stroke survivors and their families far outweigh these costs.

11.0 Conclusions and Recommendations

11.1 Conclusions

Throughout Ontario, the stroke rehabilitation community is observing a renewed interest in rehabilitation in general and stroke rehabilitation in particular. The high incidence and prevalence of stroke, the high burden of the disease on the stroke survivor, family/caregivers, and the health care system will only grow as Ontario's population ages. Prevention and acute care alone will not be able to stem the growth in the number of people living with stroke in Ontario.

The Panel found that stakeholders were concerned about a widespread shortage of stroke rehabilitation services across the full continuum of care and the availability of health care professionals to fill existing positions. Effective health human resource strategies are required at both the regional and provincial level to ensure that the stroke rehabilitation community can meet the need for care.

The Panel also heard of a need for more coordination across the continuum of care and of an enhanced role for research and evaluation.

New evidence has been published since the 2000 Consensus Panel regarding effective strategies for stroke rehabilitation and the benefits of adopting evidence-based practice. Most of these publications confirm the best practices for inpatient stroke rehabilitation that were documented in the 2000 Consensus Panel report, which reinforces the need to translate this evidence to practice. During this time, however, there have been limited additions to the body of evidence regarding community-based stroke rehabilitation.

The Local Health Integration Networks (LHINs) have recognized the importance of access to appropriate and timely care, services for seniors and the frail elderly, chronic disease prevention and promotion and effective rehabilitation services. The standards and recommendations in this report are entirely consistent with the priorities for action articulated by the LHINs.

Ontario now has an opportunity to apply this new knowledge to make a significant and lasting difference on the burden of this debilitating disease. With cooperation and innovation and a will to succeed, the recommendations and standards can be achieved; the residents of Ontario deserve no less.

11.2 Recommendations

The recommendations are listed in Appendix P for easy reference.

11.2.1 Adopt the Standards

By convening this Panel, the MOHLTC has supported the development of the stroke service provision model. This report provides concrete standards for the implementation of the stroke service provision model for the stroke rehabilitation system in Ontario. The Panel now requests that the MOHLTC formally accept these standards.

Leadership by the MOHLTC at the provincial and LHIN level as the steward of the health care system is essential to ensuring these standards can be achieved.

Recommendation 1: That the MOHLTC consider and adopt the standards outlined by the Ontario Stroke Rehabilitation System Consensus Panel as the framework for planning, developing, funding and monitoring Stroke Rehabilitation across Ontario.

The importance of community rehabilitation is clear. As noted, Community Service Best Practice Guidelines have been developed and tested for use by CCACs.

Recommendation 2: That the Ontario Association of Community Care Access Centres consider, adopt and continue to develop the Community Stroke Best Practice Guidelines for the use by all 14 CCACs in Ontario.

The accreditation process plays a significant role in monitoring the performance of the system; the Panel sees a strong role for the Canadian Council on Health Services Accreditation (CCHSA) to ensure that these standards are achieved.

Recommendation 3: That the Canadian Council on Health Services Accreditation (the CCHSA) consider the incorporation of the Ontario Stroke Rehabilitation System Consensus Panel Standards into the accreditation framework and provide feedback to the Ontario Stroke System.

11.2.2 Create Needed Capacity to Deliver Stroke Rehabilitation

Most regions in the province are currently unable to meet many of the standards outlined in this report. Reasons for the shortfall in capacity include the lack of available stroke rehabilitation programs and services and the need for more appropriate funding formula to encourage care providers to meet these standards. The shortage of health human resources is addressed in the next section.

Recommendation 4: That, as an urgent first step, the Ministry of Health and Long-Term Care review all funding formulae to ensure they provide appropriate incentives to inpatient rehabilitation centres to accept patients with severe strokes.

During the consultations, concerns were expressed that any incremental funding must be used for the purpose of implementing the standards as outlined in this report. Incremental funding must be earmarked for stroke rehabilitation services and not simply added to the hospitals' global budgets. Unless they are protected funds, there is a risk that stroke rehabilitation services (particularly outpatient services) could be reduced or eliminated if the hospital is experiencing fiscal difficulties.

Recommendation 5: That the Ontario Stroke System monitors progress in implementing the recommendations, support regional stroke programs to fulfill its their role in implementation and advocate with the Ministry of Health and Long-Term Care and Local Health Integration Networks as necessary.

11.2.3 Develop Regional Systems

The standards in this report provide a first step in the planning for improved delivery of stroke rehabilitation services in Ontario. Within each stroke region, there is a need for the regional team to work with its respective Local Health Integration Network(s) to build a true stroke rehabilitation system by identifying current capacity, opportunities to build on these capacities and significant gaps that need to be addressed.

The Ontario Stroke System plays a role in ensuring that the Panel's findings and recommendations contribute to change in how care is delivered. Through its regional stroke teams, the OSS can monitor, at a regional level, progress in the adoption of the standards and improvements in stroke rehabilitation across the province.

Recommendation 6: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing and implementing a plan based on the Panel's standards in order to meet the service needs of stroke survivors in their area.

Recommendation 7: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing a process for referral to the appropriate services and tracking where and when the appropriate service does not occur.

Recommendation 8: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing stroke rehabilitation service capacity to meet the Panel's standards and in facilitating interorganizational agreements that support having the right person in the right place at the right time.

11.2.4 Take Action to Relieve the Human Resource Shortage

One of the most common themes in the gap analysis was the critical shortage of rehabilitation professionals with stroke expertise. To address this shortage, Ontario needs:

- An effective recruitment and retention program for identified professionals.
- Adequate funding not only to support the current level of services, but also to meet the service levels implicit in the Panel's recommendations.
- Accessible educational programs to allow rehabilitation professionals and other health care providers to develop expertise in stroke rehabilitation, and funding incentives to ensure that the costs of providing these courses is not a barrier to access.

Recommendation 9: That the Health Human Resources Strategy Division of the Ministry of Health and Long-Term Care, in the development of the Health Human Resources Plan, ensures that the plan takes into account the need to:

- Improve the retention and incentives in order to keep new grads in Ontario and specifically in stroke rehabilitation.
- Increase the enrollment for the education of physiotherapists, occupational therapists, speech-language pathologists, nurses and physiatrists, physiotherapy assistants, occupational therapy assistants and communicative disorders assistants across Ontario.
- Explore alternative approaches to building rehabilitation teams.
- Support the development of knowledge translation strategies for stroke rehabilitation professionals to develop and maintain expertise in stroke rehabilitation.
- Encourage educational institutions to endorse and deliver interprofessional education.

The Panel also encourages the MOHLTC, in partnership with the health professional regulatory colleges and professional associations, to consider developing an education and/or certification program for stroke rehabilitation skills.

11.2.5 Facilitate Evaluation and Research

The need for quality data and supported research in stroke rehabilitation – particularly for services provided in the community, was another major theme in the consultations.

Recommendation 10: That the Ministry of Health and Long-Term Care support the development of an indicator framework and establish a provincial stroke rehabilitation service database that supports the integration of stroke rehabilitation services along the continuum of care.

Recommendation 11: That the Ministry of Health and Long-Term Care support continued research in stroke rehabilitation, particularly regarding the benefits of providing inpatient rehabilitation seven days per week.

12.0 Implementation Considerations

The Panel has defined a service model for assessment and referral for the stroke rehabilitation system and the associated standards within that system. Implementing these standards will take time and commitment from a large number of players. This chapter presents a few of the key considerations in the development of regional implementation plans for the service provision model and associated standards.

12.1.1 The Need for Regional Implementation Plans

Implementation must be planned and managed at a regional level because the challenges and priorities can vary significantly by region. Some regions, particularly in Northern Ontario, have small populations spread over large geographic areas. Others, particularly in the Greater Toronto Area, serve a predominantly urban population, with a greater supply of tertiary services and the human resources required to deliver stroke care, although the dense population also creates challenges in meeting the demand for care.

The issues related to having a critical mass of stroke survivors to warrant an investment in services and programs and to provide the needed human resources to deliver those services are far more severe in rural and remote areas of the province. Therefore, these regions might place a higher priority on developing innovative ways to deliver care across a broad geography as discussed in the commentary for Standard #13. Or, depending on the unique circumstances within a region, planners might consider developing strategies to encourage stroke survivors to consider electing to receive rehabilitation services away from their own region.

Some regions have already identified some of the issues described in this report through regional initiatives. For example, the West GTA supported the development of Community Stroke Best Practice Guidelines, and several other regions are also now working with these guidelines. These regions may now want to focus their implementation plans on areas were the gaps have not yet been addressed.

Regional solutions will depend, in large part, on the services currently available and existing local and/or regional practice patterns. The mechanisms that are developed to support the interdisciplinary teams, relationships with primary care practitioners and how health care professionals coordinate across the continuum and across care environments, for example, will be unique to each region.

The Stroke Regions are well positioned to work with the newly developed LHINs in the planning of regional stroke services. However, the relationship with the LHINs has its own complications:

- The 11 Stroke Regions are different from the 14 LHINs. For some regions, the boundaries are the same or very close (e.g., Northwest, Northeast, Champlain, Southeast). However, two Stroke Regions (Central East and West GTA) cross three LHIN boundaries, and three Stroke Regions (Toronto West, Southeast Toronto and North & East GTA) are all at least in part within the Toronto Central LHIN

boundary. The Stroke Regions will have to work together when dealing with their LHINs.

- The regional priorities for action will have to be aligned with the LHIN priorities as articulated in the Integrated Health Service Plans (IHSPs) recently released by the LHINs. Regional work plans will have to be integrated with the LHIN action plans that are currently being prepared.
- The LHIN structure is new, and it is not clear yet how the LHINs will work with disease-specific groups. Aligning the Stroke Regions' implementation plans with the LHINs' priorities and action plans might require that the Stroke Regions work with other disease-specific groups or broader networks (e.g., rehabilitation networks, geriatric programs, chronic disease prevention and management programs).

12.1.2 Human Resources Challenges

Stakeholders identified shortages of key rehabilitation professionals in all regions across the province, with some regions experiencing more acute shortages than others. Without adequate numbers of these service providers, no region will be able to achieve these service levels. The importance of a human resource strategy – both at a provincial and at a regional level – to support the implementation of these standards cannot be understated. These strategies need to understand:

- The number of stroke rehabilitation professionals in Ontario, and the projected number based on current trends such as the number of professionals graduating and retiring each year, and
- The distribution (e.g., geographical location and practice setting) of these professionals.

12.1.3 Accountability for Implementation

Ontario is in the process of a major shift in who has responsibility for health care. The Ministry of Health and Long-Term Care, as the steward of the health care system, will continue to set policy. Many of these policies will impact the capacity to deliver the standard of care outlined in this report.

At a provincial level, the Ontario Stroke System is led by the Provincial Steering Committee, which in turn is supported by sub committees, including the Rehabilitation and Community Engagement Sub Committee. The Provincial Steering Committee will monitor the progress in implementing the Panel's proposed standards. The relevant Sub Committees will all have a role, with the Rehabilitation and Community Engagement Sub Committee playing the lead role in providing its advice to the Provincial Steering Committee, the Ontario Regional Education Group (OREG) developing professional education resources and the Stroke Evaluation and Advisory Committee (SEAC) overseeing the development of a performance measurement system.

Implementation is shifting to a more regional focus. There are Regional Stroke Steering Committees for each of the Stroke Regions. They have a critical role in working with the service providers in their respective areas to develop regional plans and provide advice to

their LHIN. The Regional Steering Committees are supported by a regional stroke team including a Rehabilitation Coordinator and a Community and Long-Term Care Specialist to assist with the work of developing and implementing regional plans.

12.1.4 Managing Expectations

A key challenge for the Stroke Regions will be to maintain a balance between communicating the service standards we wish to achieve, while at the same time recognizing that the human and financial resources to meet all of these standards are not available. Stroke survivors, families/caregivers and all health care professionals who deliver stroke rehabilitation services need to understand that these standards are the goal towards which we are working. How quickly we can achieve this goal will depend on the priority given to stroke rehabilitation by the Ministry of Health and Long-Term Care, the LHINs and service providers. The Panel hopes that this Report will provide the necessary information and motivation to begin the journey of building strong regional stroke rehabilitation systems.

APPENDIX A: Summary and Update of Recommendations of the 2000 Consensus Panel

This appendix presents each of the 15 recommendations made by the 2000 Consensus Panel (shown below in italics). After each recommendation, there is a short report on progress against the recommendation since the report was released.

Development of Regional Stroke Rehabilitation Systems

1. *Regional stroke rehabilitation systems be established that are linked to broader stroke networks and regional rehabilitation networks, to ensure a collaborative approach that is consistent with the vision for stroke rehabilitation presented in this report. This vision recognizes the importance of comprehensive and coordinated stroke rehabilitation that includes community supports such as transportation and housing. (Source: The 2000 Consensus Panel)*

Some regional rehabilitation systems (networks) have been established in the province, some are in development stages: Ottawa, the Greater Toronto Area (GTA), Northeastern Ontario and Hamilton.

The 11 stroke regions have funded positions (Regional Program Managers, Regional Rehabilitation Coordinators, and Community and Long-Term Care Specialists) that meet regularly to facilitate coordination across regions.

Components of the Continuum

2. *Hospitals with rehabilitation beds establish dedicated stroke units that include both short and long-duration stroke rehabilitation beds. The regional stroke rehabilitation systems should monitor the demand for and use of these beds to determine appropriate benchmarks that will ensure access for stroke patients. (Source: The 2000 Consensus Panel)*

A number of dedicated stroke rehabilitation units exist in the province, and as well, some complex continuing care (CCC) units and long-term care (LTC) Homes have beds that are dedicated to stroke. Monitoring of demand and use varies region to region. Some regional rehabilitation networks play a role in monitoring through regular inventories of capacity.

3. *The Ministry of Health and Long-Term Care recognize that stroke rehabilitation includes a broad range of conditions, some of which require highly specialized services, and that the specialized component of stroke rehabilitation be reflected in regional bed allocations in the regional rehabilitation facilities. (Source: The 2000 Consensus Panel)*

A shortage of specialized stroke rehabilitation services exists within the province. The severity of the shortage varies by region; some regions do not have sufficient numbers of designated rehabilitation beds, let alone beds dedicated to the rehabilitation of stroke survivors.

Ambulatory and Home-Based Stroke Rehabilitation

4. *The regional stroke systems monitor waiting lists and other indicators of need for ambulatory and home-based stroke rehabilitation, to determine the reinvestments required to meet regional needs and to recommend to the Ministry of Health and Long-Term Care the resources that should be allocated to meet these needs. (Source: The 2000 Consensus Panel)*

Two stroke rehabilitation pilot studies (Southwestern Ontario [SWO] and Southeastern Ontario [SEO]) addressed aspects of the need and efficacy of ambulatory/home-based rehabilitation services. The two pilot projects identified that both investments and reinvestments are required, but that these services are cost effective.

Reductions in outpatient rehabilitation services in many areas of the province, as a result of the Hospital Annual Planning Submission (HAPS), present significant challenges.

5. *The Ministry of Health and Long-Term Care fund pilot projects to identify best practices for home-based stroke rehabilitation. These pilot projects should examine best practices in a range of settings including urban, rural, northern and remote locations. (Source: The 2000 Consensus Panel)*

Three of the six stroke rehabilitation pilot projects examined best practices for home-based and community stroke rehabilitation:

- Southeastern Ontario – Discharge Link Project
- West GTA – Navigating the Seams
- Southwestern Ontario – Regional Stroke Rehabilitation System

Mechanisms to Coordinate Care Across the Continuum

6. *Hospitals, community care access centres and other health care providers work in partnership to improve the coordination of stroke rehabilitation, especially in the transition from hospital to community-based care. The Ministry of Health and Long-Term Care should consider providing resources to support these initiatives. (Source: The 2000 Consensus Panel)*

Coordination of stroke rehabilitation among and between hospitals, community care access centres (CCACs) and other health care providers will likely improve with the advent of the LHIN(s). According to health care professionals, transitions remain a key gap for stroke survivors.

7. *Hospitals, community care access centres and other health care providers work in partnership to develop guidelines for stroke rehabilitation including care pathways across organizations, paying special attention to hand-off points so that a seamless continuum of care is created. (Source: The 2000 Consensus Panel)*

Through its stroke rehabilitation pilot project, West GTA developed Community Stroke Best Practice Guidelines. Also, the Toronto CCAC is currently doing a randomized control trial to evaluate the impact of a multidisciplinary team on stroke survivors in the community. This two-year study is funded by the Canadian Institutes of Health Research (CIHR). The guidelines are being used as part of the evaluation.

Transition Information Plan (TIP) is an interdisciplinary tool to enable the transfer of information when patients transition from acute to long-term care settings. TIP comprises stroke-specific rehabilitation strategies and stroke-specific functional information.

8. *The Ministry of Health and Long-Term Care mandate the provincial use of an objective assessment tool(s) for stroke rehabilitation based on a modified Functional Independence Measure. This tool(s) should be used by stroke rehabilitation providers across the continuum to ensure reliable, standardized and comprehensive assessments. (Source: The 2000 Consensus Panel)*

The National Rehabilitation Reporting System (NRS), which is FIM™ based, is now being used across the province for designated rehabilitation facilities, mandated in October 2002.

Information

9. *The Ministry of Health and Long-Term Care support the development of a stroke rehabilitation information system to monitor the provision of stroke rehabilitation. This system should include a data set based on the conceptual framework of the International Classification of Impairments, Disabilities and Handicaps, and a modified Functional Independence Measure. (Source: The 2000 Consensus Panel)*

The stroke rehabilitation information system was not developed and remains a key gap in the current system, as stroke rehabilitation occurs across the continuum and thus coordination among the diverse data sets is required.

Professional Support

10. *Regional centres and local units provide outreach services to support the education of professional caregivers and enhanced consultations throughout regional stroke rehabilitation systems. The Ministry of Health and Long-Term Care should endeavour to support these outreach activities. (Source: The 2000 Consensus Panel)*

A total of $60,000/year has been allocated to education for each stroke region. Each stroke region has a Regional Education Coordinator.

The Ontario Regional Educators Group (OREG), as a sub committee of the OSS Steering Committee, is developing a comprehensive Professional Education Atlas that crosses the continuum. Rehabilitation aspects of the Atlas include:

- Evidence-Based Review of Stroke Rehabilitation (CD and Web, 2004)
- Implementing a Regional Vision for Stroke Rehabilitation. Handbook for Regional Stroke Rehabilitation Coordinators (Print, 2006)

- Management of the Post Stroke Arm and Hand. Treatment Recommendations of the 2001 Consensus Panel (Print, Workshop, 2001)
- Modifying the Home After Stroke (Print, 2005)
- Moving Towards a Regional Stroke Rehabilitation System (Print, 2001)
- Practices in Stroke Rehabilitation (Humber College Course, 2002)
- Rehabilitation Education Program for Stroke (University of Toronto Web, Workshop, 2002)
- Stroke and Physical Activity (Workshop, 2005)

Currently, the enhanced teams at the regional stroke centers do not provide consultations in the regions. The teams provide enhanced rehabilitation services in acute care and provide some education consultations. Also, two regions, Central East and Northeastern Ontario, do not have enhanced teams.

The Southwestern Ontario pilot project provided evidence that an outreach team has a positive impact on patient outcomes.

Research

11. The Ministry of Health and Long-Term Care and the Heart and Stroke Foundation of Ontario fund stroke rehabilitation research, with Ontario's Academic Health Science Centres playing a role in coordinating the research agenda. Source: The 2000 Consensus Panel

The Ministry of Health and Long-Term Care has allocated $1.4 million (of the $30 million allotment) for stroke research. Of projects currently funded and money spent to date ($6.3 million), 21% is rehabilitation and 29.5% is community, including LTC, some of which include rehabilitation components. For the projects recommended for 2006/07 but not yet approved for funding, 40% of the projects are rehabilitation related.

12. The Ministry of Health and Long-Term Care and the Heart and Stroke Foundation of Ontario jointly support an ongoing program to review and summarize the evidence of stroke rehabilitation research, with the purpose of maintaining timely and accurate information on effective stroke rehabilitation, identifying areas for further research, supporting continuous peer review, and encouraging improved evidence-based practice. (Source: The 2000 Consensus Panel)

The Evidence Based Review of Stroke Rehabilitation (EBRSR) is in its 9th edition and is being used by providers across the province in the development of rehabilitation programs and interventions. It was used in the development of standards by the Canadian Stroke Strategy (CSS) and continues to be used in a variety of projects such as SCORE, the Canadian Stroke Network (CSN) and StrokEngine. The EBRSR is sponsored by the CSN and the Heart and Stroke Foundation of Canada.

Human Resources

13. The Ministry of Health and Long-Term Care, in partnership with the health care field, develop a provincial human resources plan that will ensure the education of a sufficient number of appropriate stroke rehabilitation caregivers to support the vision and recommendations of this report. (Source: The 2000 Consensus Panel)

The Minister of Health and Long-Term Care announced on May 3, 2006, that the McGuinty government is improving health care for Ontario families by investing $45 million this year in an innovative strategy designed to ensure the right supply and mix of health care professionals. It is unclear what impact this may have on rehabilitation services.

Future Work

14. The Heart and Stroke Foundation of Ontario (HSFO) establish a Consensus Panel with the participation of the Ministry of Health and Long-Term Care (MOHLTC) to

1) Develop models for addressing community integration including the psychosocial and practical needs of stroke survivors and their families, and

2) Identify the role of the HSFO, MOHLTC and other key institutions and organizations in assisting communities to eliminate barriers, support community reintegration, and develop effective strategies to meet the needs of stroke survivors. (Source: The 2000 Consensus Panel)

Ten Community and Long-Term Care Specialist positions have been funded across the province. Their role is to develop and implement a plan in the provision of stroke best practices within Long-Term Care Homes and the community within their region.

15. The Heart and Stroke Foundation of Ontario continue to play an advocacy role linked to other organizations and initiatives like the Canadian Stroke Network. (Source: The 2000 Consensus Panel)

Heart and Stroke Foundation of Ontario continues to be engaged in a variety of initiatives related to advocacy and implementation of best practices throughout the 11 stroke regions. It is collaborating with other organizations such as CSN and CSS in moving the stroke strategy forward.

APPENDIX B: The Ontario Stroke System

The four-year implementation phase of the Ontario Stroke Strategy is now over. The Ministry of Health Promotion is now calling the ongoing efforts the Ontario Stroke System (OSS) and has confirmed an annual allocation of $30 million to support the development of regional stroke systems.

The goal of the OSS is to decrease the incidence of stroke and improve patient care and outcomes for persons who experience stroke. This will be accomplished by reorganizing stroke care delivery across the continuum of care to ensure that all Ontarians have access to appropriate, quality stroke care in a timely manner. The system is expected to sustain an organized and comprehensive approach to the delivery of care across the continuum according to evidence-based best practice.

The functions of the OSS include:

- Knowledge transfer and capacity building,
- Fostering innovation and system change,
- Identifying best practices,
- Setting standards and targets,
- Making recommendations on funding allocations,
- Recommending opportunities and approaches for integration and coordination of service delivery,
- Identifying emerging issues, and
- Managing data.

The OSS promotes a model that is:

- Comprehensive: improve stroke services across the entire continuum of care, from prevention programs to long-term care or community settings.
- Integrated: essential services and providers function as a unified whole; formal linkages established across the continuum of care and across Ontario to minimize duplication of services and optimize existing resources.
- Evidence-based: build on practices and care that have been supported by scientific evidence, or are considered the gold standard ("best practice") according to prevailing knowledge.
- Province-wide: available to all Ontarians in all parts of the province (through designations, telemedicine etc.).

During 2005/06, the MOHLTC transferred the management of the OSS from a centralized provincial approach to a regional provider approach with central governance. A Provincial Stroke Steering Committee has been formed to oversee and guide the OSS, consistent with the guiding principles and established system of care and service delivery. The Steering Committee has established five subcommittees to oversee specific aspects of stroke care:

- Ontario Regional Education Group (OREG),

- Stroke Evaluation Advisory Committee (SEAC),
- Rehabilitation and Community Engagement Sub Committee,
- Research Sub Committee, and
- Health Promotion and Prevention Sub Committee.

APPENDIX C: Terms of Reference for the Ontario Stroke Rehabilitation System Consensus Panel

Purpose

- The Consensus Panel will develop a framework and key stroke rehabilitation standards for the purpose of provincial policy development and regional planning as well as evaluation and performance monitoring of stroke rehabilitation services. The Panel will also identify the necessary tools and processes to support effective transitions to and from appropriate rehabilitation settings across the continuum.

Objectives

A. Describe and define the components of the Stroke Rehabilitation System in Ontario:
   - It is important for the Consensus Panel to review and agree upon the components in the stroke rehabilitation system, and to identify key patient and system-level indicators for each component.
   - In order to begin this work with a common starting point, it is important to ensure that all the players across the province and across the various continuums of care are using the same vocabulary and definitions.

B. Identify components of a Triage system:
   - The Consensus Panel will review in detail the current knowledge and existing evidence available on this subject area.
   - The Consensus Panel will develop an algorithm to allow for Regional Triage systems that have a standardized approach.

C. Select the common Assessment Tools:
   - The Consensus Panel will select appropriate and feasible assessment tools for the purpose of standardization and will identify intended purpose and context for their use.

D. Take the initial steps in the development of a province-wide data system for stroke rehabilitation:
   - This will be very important in that there will then be clear documentation of needs and gaps in rehab service and will provide information related to access to rehab service for different levels of stroke severity and across the different parts of the care continuum
   - Identify data points to be consistently collected, how the data will be used, the questions that need to be answered, and a core set of performance indicators for implementation across the province in order to monitor the impact and efficacy of stroke rehabilitation assessment and triage. (If this entails additional data collection, then will need to include resource implications in the final recommendation.) This section will be dependent upon the decisions made in subsections A to C above.

E. Develop standards for stroke rehabilitation in Ontario.

Membership

- Members:

→ Note: membership must represent all OSS regions where possible and also represent the entire continuum of care; members need to understand the subject matter and be aware of new initiatives:
  - Physicians (including physiatrists)
  - Rehabilitation Professionals, including Nursing
  - Program Administrators and Health Planners
  - Clinical Epidemiologist
  - Health Services Researcher
  - Educational Institution representative with stroke rehabilitation expertise (e.g., Universities)
  - LTC representative
  - CCAC representative
  - Program Manager, DSC coordinator, and Regional Stroke Rehabilitation Coordinator
  - Member from the OSS Rehabilitation and Community Engagement Sub Committee
  - Chair of the OSS SEAC Sub Committee
  - HSFO representative
  - LHIN representative
  - Stroke Survivor/Family

Roles and Responsibilities

- It is expected that all Panel members:
  - Attend each meeting
  - Read the provided literature and come prepared to each meeting
  - Be prepared to make decisions
  - Take action on any required steps as determined in the meetings
  - Report back to respective region to inform the network on the progress of the consensus panel and to obtain consultation/input as required

Decision-Making

- Decision-making will occur by vote, with consensus being reached with at least 75% consent (with those present)
- The Panel will strive for unanimity
- We will have ample discussion and take the time to build consensus before voting

Meetings

- Time Frame:
  - It is anticipated that there will be approximately four meetings; each meeting will be one full day in length
  - There may also be task groups formed to discuss more in-depth issues
- Location:
  - Meetings will typically be held at the HSFO offices at 1920 Yonge Street, 4th floor

- Term:
    - The Panel will commence meeting in January 2006 and will hopefully have its work completed by December 2006

Expenses

- Expenses will be covered if necessary for Consensus Panel members.

Reporting

- The Panel, through the HSFO, will report findings and decisions to the Ontario Stroke System Rehabilitation and Community Engagement Sub Committee.

Minutes

- Minutes shall be kept of all meetings and will be distributed to the Panel members in a timely fashion.

APPENDIX D: Ontario Stroke Rehabilitation System Consensus Panel Membership

Hume Martin, Chair, President and CEO, Rouge Valley Health System

Barb Ansley, Manager, Research and Program Evaluation, Rehabilitation Program, Hamilton Health Sciences

Stephen Bagg, MD, Physiatrist, Medical Director of the In-Patient Stroke Rehabilitation Service, St Mary's of the Lake Hospital; Queen's University

Mark Bayley, MD, Physiatrist, Medical Director, Neuro Rehabilitation Program, Toronto Rehabilitation Institute

Katherine Berg, PhD (PT), Associate Professor and Chair, Department of Physical Therapy, University of Toronto

Jane Douglas Walters, Spouse of Stroke Survivor

Rhonda Galbraith, Program Director (Stroke Program), St. John's Rehabilitation Hospital

Anthony Graham, MD, Physiatrist, Medical Director Rehab Program, Sudbury Regional Hospital

Heather Heaman, Reg. CASLPO, S-LP (C), Speech-Language Pathologist, President, Heaman Communication Services

Diane Hiscox*, Regional Program Manager, Northwestern Ontario Stroke Region, Thunder Bay Regional

Nadia Hladin*, BSc (PT), Regional Program Manager, West GTA Stroke Region and Chair, Rehabilitation and Community Engagement Sub Committee, Trillium Health Centre

Patrick Hurteau, OT Reg. (Ont), Community and Long-Term Care Stroke Coordinator, Champlain Stroke Region and representative from the Ontario Society of Occupational Therapy

Darren Jermyn, Regional Stroke Program Manager, Sudbury Regional Hospital, Northeastern Ontario Stroke Region

Ian Joiner, BSc (PT), MPA, Registered Physiotherapist, Manager, Rehabilitation and Mental Health, Canadian Institute for Health Information

Mary Lewis, BA, MSW, Director, Government Relations and Health Partnerships, Heart and Stroke Foundation of Ontario

Patrice Lindsay, RN, PhD, Performance and Standards Specialist, Canadian Stroke Network

Mimi Lowi-Young, MHA, Dip. Bus. Admin., FACHE, FCCHSE, CEO, Central West LHIN

Cally Martin, BSc (PT), MSc (Rehabilitation), Regional Stroke Program Manager, Kingston General Hospital, Southeastern Ontario Stroke Region and representative from the

Ontario Physiotherapy Association

Donna Michaels, Executive Director, Kennedy Lodge

Kay Morrison, RN, BScN, Director of Client Services, Simcoe County Community Care Access Centre

Marc Paquette, MA, Reg. CASLPO, Speech-Language Pathologist Regional Stroke Rehabilitation Coordinator, Regional Stroke Centre, Ottawa Hospital-General Campus, Champlain Stroke Region

Mary Solomon, BSc (PT), District Stroke Coordinator, Grey Bruce

Lois Beamish Taylor, Reg PT, HonsBSc (Psych), BHSc (PT), Director, Closing the Gap Healthcare Group, Rehab Express and Care Plus

Robert Teasell, MD, Chair and Chief of the Department of Physical Medicine and Rehabilitation; Medical Director of the Stroke Rehabilitation Unit at Parkwood, St. Joseph's Health Care London and the Schulich School of Medicine, University of Western Ontario

Margo Gaye Walsh, BSc (OT), MBA, Vice President, Patient Services, Bridgepoint Health

Jon Erik Ween, MD, MS Scientist, Kunin-Lunenfeld Applied Research Unit. Director, Stroke Clinic, Brain Health Clinic, Baycrest Centre for Geriatric Care. Assistant Professor, Department of Medicine, Division of Neurology, University of Toronto Faculty of Medicine

Bill and Ina Mae Winterburn, Stroke Survivor and Spouse

Helen Zipes, BSc (PT), MBA, Clinical Director – Rehabilitation Program, The Ottawa Hospital – The Rehabilitation Centre and representative of the Rehabilitation Network of Champlain

Ex officio members:

Caroline Gangji, BSc (PT), MBA, Project Manager, Heart and Stroke Foundation of Ontario

Marcella Sholdice, MBA, Report Writer, Heart and Stroke Foundation of Ontario

** Joined the Panel while it was in progress.*

APPENDIX E: Working Group Memberships

Membership of the Components Working Group:

Christine Anderson, Director, Rehabilitation Program, Hamilton Health Sciences

Nancy Boaro, Advanced Practice Leader, Neuro Rehabilitation Program, Toronto Rehabilitation Institute

Sharon Crossan, Clinical Leader, Providence Healthcare

Darren Jermyn, Regional Stroke Program Manager, Sudbury Regional Hospital

Cally Martin, Regional Stroke Program Manager, Kingston General Hospital

Rick McMillan, MD, Physiatrist, Hotel Dieu Shaver Health and Rehabilitation Center

Mary Solomon, District Stroke Coordinator, Grey Bruce Health Services

Deanna M. Sullivan, Charge Physiotherapist, Red Lake Margaret Cochenour Memorial Hospital

Sharon Trottman, Community and Long-Term Care Specialist, Trillium Health Centre

Membership of the Assessment Tools Working Group:

Barb Ansley, Manager, Research and Program Evaluation, Rehabilitation Program, Hamilton Health Sciences

Stephen Bagg, MD, Physiatrist, Medical Director of the In-Patient Stroke Rehabilitation Service, St Mary's of the Lake Hospital; Queen's University

Stacey Carty, Occupational Therapist, Royal Victoria Hospital, Barrie

Daniel A. DeForge, MD, Physiatrist-in-Chief, The Rehabilitation Centre; Head, Division of Physical Medicine and Rehabilitation, University of Ottawa; Head, Division of Rehabilitation, The Ottawa Hospital

Kay Morrison, Director of Client Services, Simcoe County Community Care Access Centre

Joan Shaw, Clinical Educator, Rehabilitation (Allied Health), Trillium Health Centre

Nicola Tahair, SCRIPT Project Coordinator, Consultant with the Toronto West Stroke Network

Denise Taylor, Physiotherapist, St. Joseph's Care Group, Thunder Bay

Robert Teasell, MD, Chair and Chief of the Department of Physical Medicine and Rehabilitation; Medical Director of the Stroke Rehabilitation Unit at Parkwood, St. Joseph's Health Care London and the Schulich School of Medicine, University of Western Ontario

Anna Yuen, Occupational Therapist, Providence Healthcare

Membership of the Stroke Evaluation Rehabilitation Working Group:

Mr. Nizar Ladak, BA, MEd**,** Senior Director, Performance, Contract & Allocation, Central East Local Health Integration Network

Barb Ansley, Manager of Research and Program Evaluation, Rehabilitation Program, Hamilton Health Sciences

Nancy Jones, BSc (PT), MSc, Regional Stroke Rehabilitation Coordinator SEO Regional Stroke Strategy, Kingston General Hospital

Linda Kelloway, RN, MN, CNN(c), Stroke Program Consultant, Canadian Stroke Network

Nathania Liem, MD, MSc, Physiatrist, Windsor Regional Hospital – Regional Rehabilitation Program

Patrice Lindsay, RN, PhD, Performance and Standards Specialist, Canadian Stroke Network

Cally Martin, BSc (PT), MSc (Rehabilitation), Regional Stroke Program Manager, Kingston General Hospital, Southeastern Ontario Stroke Region and representative from the Ontario Physiotherapy Association

Jocelyne McKellar, MSW, RSW, Stroke Rehab & Community Re-engagement Coordinator, Toronto West Stroke Network, University Health Network – Toronto Western Hospital

Deb Willems, BSc (PT), MSc (PT), Regional Rehabilitation Coordinator, Southwestern Ontario Stroke Strategy, St. Joseph's Health Care London, Parkwood Hospital

APPENDIX F: Definitions for Stroke Rehabilitation in Ontario

Sources

Many definitions were adapted from documents specific to stroke rehabilitation, including the following:

- Stroke Rehabilitation Consensus Panel Report 2000[91]
- Southwestern Ontario's Stroke Rehabilitation Pilot Project[92]
- The SCRIPT project in Toronto[93]
- Low Tolerance Long Duration (LTLD) Stroke Demonstration Project[94]

Other definitions were adapted from other sources that were not specific to stroke rehabilitation:

- Canadian Institute for Health Information, February 1999
- Public Hospitals Act
- Ontario Telemedicine Network[95]
- Ontario Hospital Association[96]
- Canadian Stroke Strategy, Registry of the Canadian Stroke Network

A number of definitions were adapted from sources dedicated to seniors or aging:

- Canadian Centre for Activity and Aging[97]
- Ontario Government Seniors Web site[98]

The Panel also found some useful definitions in the published literature.[99]

[91] Coordinated Stroke Strategy. (2000, May). Stroke Rehabilitation Consensus Panel Report; Submitted to the Heart and Stroke Foundation of Ontario, pp. 8-10.
[92] A regional stroke rehabilitation system: From vision to reality. (2004, December 2).
[93] SCRIPT Final Report. Stroke Coordinated Referral Initiative Pilot, Toronto. (2004, November).
[94] Low Tolerance Long Duration (LTLD) Stroke Demonstration Project, Final Report. (2006, June). GTA Rehab Network.
[95] http://www.otn.ca/
[96] OHA. (2006, May). Optimizing the role of complex continuing care and rehabilitation. http://www.oha.com/
[97] http://www.uwo.ca/actage/
[98] http://www.health.gov.on.ca/english/public/program/ltc/15_facilities.html
[99] *British Medical Journal*. (1996) *312*, 71-72.

Stroke Rehabilitation Definitions

All of the abbreviations used in the definitions are spelled out in the List of Abbreviations at the end of this report.

Acute Stroke Care	Care provided in a hospital during the early stages following a stroke, including surgery, intensive care and rehabilitation. The focus is on making a diagnosis, preventing complications, initiating rehabilitation and achieving medical stability.
Adult Day Service	Provides recreation, socialization, respite and other related services for stroke survivors who reside in the community. The service does not include rehabilitation therapy (e.g., PT, OT, SLP).
Alternate Level of Care (ALC)	A designation (while in an acute care hospital) made at the time when acute medical services are no longer required and the patient is ready for discharge to inpatient rehabilitation, LTC or the community. This designation also applies while in an inpatient rehabilitation unit when the patient is ready for discharge to LTC or the community.
Ambulatory Care Services	The person resides in the community but attends one or more ambulatory therapeutic services or specialized clinics (e.g., seating clinics, orthotics). These services may be provided within a hospital or in the community.
Assisted Living	Refers to group homes, retirement homes, and supervised living settings.
Clinical Expertise	The proficiency and judgment that clinicians acquire and maintain through clinical experience, clinical practice and ongoing professional development.
Community	Any residence outside of an acute or rehabilitation inpatient unit including the home, LTC Home, senior residences, retirement homes, supportive housing, group homes or assisted living.
Community (Re)-Integration Services	Services to support the reorganization of physical, psychological and social characteristics so that an individual can resume well-adjusted living after stroke. Component services include health management, life roles, social network, environment, communication, mobility, wellness and caregiver support.
Community (Re)-engagement	See Community (Re)-Integration.
Community-Based Rehabilitation	See Home-Based Rehabilitation.

Complex Continuing Care	A specialized inpatient program of care providing services for medically complex patients whose condition requires a hospital stay, regular on-site physician care and assessment and active care management by specialized staff.
Day Hospital	Comprehensive, coordinated and specialized rehabilitation services for persons living in the community. Services are provided by a specialized team that could include: MD, OT, PT, nursing, SW, SLP, dietitian, psychologist, recreational therapist, and vocation therapist, depending on the needs of the person with stroke.
Evidence-Based Practice	Evidence-based medicine is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients. The practice of evidence-based medicine means integrating individual clinical expertise with the best available external clinical evidence from systematic research.
Home-Based Rehabilitation	Rehabilitation therapies received wherever the individual resides (e.g., in a LTC Home, private residence and work environment), provided by CCAC, hospital outreach program or private provider.
Inpatient Stroke Rehabilitation	The facility provides a comprehensive, coordinated and evidence-based inpatient stroke rehabilitation service.
Interdisciplinary Care	See Interprofessional Care.
Interprofessional Care	A philosophy and process of care that integrates the specialized knowledge of multiple professionals. There is shared decision making, collaboration, flexible leadership and sharing of information as members work in a patient- and family-focused care team to achieve desired outcomes.
Interprofessional Team	Includes stroke survivors, families/caregivers, nurses, physiotherapists, occupational therapists, speech-language pathologists, social workers, physiatrists, physicians, primary care practitioners, dietitians, recreation therapists, PTAs, OTAs, CDAs, PSWs, pharmacists, spiritual advisors and psychologists.
Long-Term Care (LTC) Homes	Long-term care homes are designed for people who require the availability of 24-hour nursing care and supervision within a secure setting. In general, LTC homes offer higher levels of personal care and support than those typically offered by either retirement homes or supportive housing.
Mild Stroke	Early Total Function Score > 80 and Motor Function Score > 62, using the FIM™ instrument (i.e., within 24-48 hours). Note: Mild stroke patients include those who may appear normal but have high level executive functioning difficulties. The FIM™ instrument may not be sensitive enough for this patient population.

Moderate Stroke	Early Total Function Score of 40-80 and Motor Function Score 38-62, using the FIM™ instrument (i.e., within 24-48 hours).
Outreach Services	Client-specific consultation and/or training/education to service providers in hospitals, LTC Homes, CCACs, and other similar agencies that care for stroke survivors. Outreach is provided primarily to service providers and secondarily to client/family. Can be delivered by multiple methods (e.g., in person at the referral source site, over the phone, or via telemedicine).
Prevention Clinic/ Services	An ambulatory clinic or service that provides individualized interdisciplinary, evidence-based prevention programs and approaches to stroke prevention for those patients at high risk of initial or recurrent stroke. These clinics need to have rapid access to diagnostic testing.
Post-acute	The period of time when the stroke survivor is no longer receiving care in an acute care setting.
Rehabilitation	A goal-oriented and often time-limited process that enables an individual with impairments and disabilities to identify and reach his/her optimal mental, physical and/or social functional level. Rehabilitation provides opportunities to the individual, through a client-focused partnership with family, providers and the community, to accommodate a limitation or lack of function. Rehabilitation focuses on abilities and aims to facilitate social integration and independence. Rehabilitation, in addition to being goal oriented, is outcome driven. Rehabilitation can be provided in a variety of settings and stages of recovery.
Rehabilitation Nurse	A nurse who has obtained certification in Rehabilitation Nursing by the Canadian Nursing Association and uses the designation of CRN(C).
Rehabilitation Professionals	Includes nurses, rehabilitation nurses, physiotherapists, occupational therapists, speech-language pathologists, physiatrists and social workers.
Rehabilitation Ready	The following criteria are evaluated (see Service Provision Model for more details): • Readiness for discharge from acute care • Medical stability • Ability to learn • Ability to participate • Consent

Restorative Care	Restorative Care helps people who live in LTC Homes to achieve the best quality of life possible by maximizing their existing abilities. Staff in LTC Homes work with residents to promote their highest level of functioning – through individualized programs, feeding/eating programs, functional activities or optimal communication and social interaction between staff and residents.
Severe Stroke	Early Total Function Score < 40 and Motor Function Score < 37, using the FIM™ instrument (i.e., within 24-48 hours).
Stroke	An acute neurological dysfunction of vascular origin with sudden or at least rapid onset of symptoms and signs corresponding to the involvement of focal areas in the brain. Focal brain injury arising from vascular neck trauma is included.
Stroke Rehabilitation	Stroke rehabilitation is a progressive, dynamic, goal-oriented process aimed at enabling a person with impairment to reach his or her optimal physical, cognitive, emotional, communicative and/or social functional level. It is multidimensional consisting of prevention and treatment of medical complications, restoration of maximal independent functioning, facilitation of psychosocial coping and adaptation by the patient and family, promotion of community reintegration and enhancement of quality of life for stroke survivors. Stroke rehabilitation relies on both remediational interventions designed to reduce neurological deficits and teaching compensatory techniques to enhance functional independence in the presence of neurologic impairment.
Stroke Rehabilitation Unit	Key features include: • Staff with a specialist interest in stroke or rehabilitation • Routine involvement of the family/caregivers in the rehabilitation process • Coordinated care from a multidisciplinary team, including meetings at least once each week • Information provided to patients and family/caregivers • Regular programs of education and training
Telemedicine	The use of videoconferencing and advanced information communication technologies to deliver clinical, educational and administrative services.
Tolerance	Ability to participate in therapies without undue fatigue.

Transition	A multi-directional process by which a person moves from one health care system component to another along the continuum of rehabilitation services.
Triage	Evidence-based, specialized stroke assessment and referral process that matches the needs of the person with the appropriate, evidence-based, best practice stroke care service, across the continuum.

APPENDIX G: Existing Guidelines and Recommendations for Stroke Rehabilitation

1. The Canadian Best Practice Recommendations for Stroke Care: 2006, prepared by the Canadian Stroke Network and the Heart & Stroke Foundation.[100]
2. The Heart & Stroke Foundation of Ontario's Best Practice Guidelines for transition management, rehabilitation management and community reengagement, 2003.[101]
3. Recommendations by Dr. Robert Teasell regarding evidence-based practice for stroke rehabilitation, as documented in published journal articles[102,103] and unpublished research.[104]
4. Community Stroke Best Practice Guidelines (West GTA) for Community Care Access Centres (CCACs).[105]
5. Recommendations from the six stroke rehabilitation pilot projects. (See Appendix L for more details.)
6. Recommendations by the Registered Nurses Association of Ontario (RNAO) and HSFO for "Stroke Assessment Across the Continuum of Care."[106]
7. AHA/ASA-Endorsed Practice Guidelines. Management of Adult Stroke Rehabilitation Care. A Clinical Practice Guideline.[107]

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[100] Canadian Best Practice Recommendations for Stroke Care 2006. Developed by the Canadian Stroke Strategy, a joint initiative of the Canadian Stroke Network and the Heart and Stroke Foundation of Canada.
[101] http://profed.heartandstroke.ca/
[102] Teasell R, et al. Evidence-based practice and setting basic standards for stroke rehab in Canada. In E. J. Roth MD (Ed.), *Grand rounds*.
[103] Teasell R, Foley N, Bhogal S, Bagg S, Jutai, J. (2006). Topics in stroke rehabilitation 206, *13*(3), 59-65.
[104] Teasell R, Foley N, Salter K, Bhogal S, Jutai J, Speechley M. (2006). Evidence-based review of stroke rehabilitation. Available at http://www.ebrsr.com/index_home.html. Accessed February 11, 2007.
[105] Hladin N. (2005, February). Community Stroke Best Practice Guidelines. West GTA Stroke Network.
[106] Heart and Stroke Foundation of Ontario and Registered Nurses' Association of Ontario. (2005). *Stroke assessment across the continuum of care*. Toronto: Heart and Stroke Foundation of Ontario and Registered Nurses' Association of Ontario.
[107] Duncan PW, Zorowitz R, Bates B, et al. (2005). AHA/ASA-Endorsed practice guidelines. Management of adult stroke rehabilitation care. A clinical practice guideline. *Stroke*, *36*, 3100-e143.

APPENDIX H: Membership of the Secondary Review Panel

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Chris O'Callaghan, Region Manager, Southwestern Ontario Stroke Strategy

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APPENDIX I: Service Provision Model – Examples of Patient Journeys

The Panel's service provision model for assessment and referral for stroke rehabilitation is described in Chapter 5 and presented graphically in Figure 3 in the body of this report.

This appendix provides four examples of a patient journey using the service provision model for assessment and referral for stroke rehabilitation to illustrate how a stroke survivor might experience this process. A short description of the four scenarios is provided below. On the following pages, the service provision model is repeated for each scenario, highlighting how the stroke survivor would move through the process.

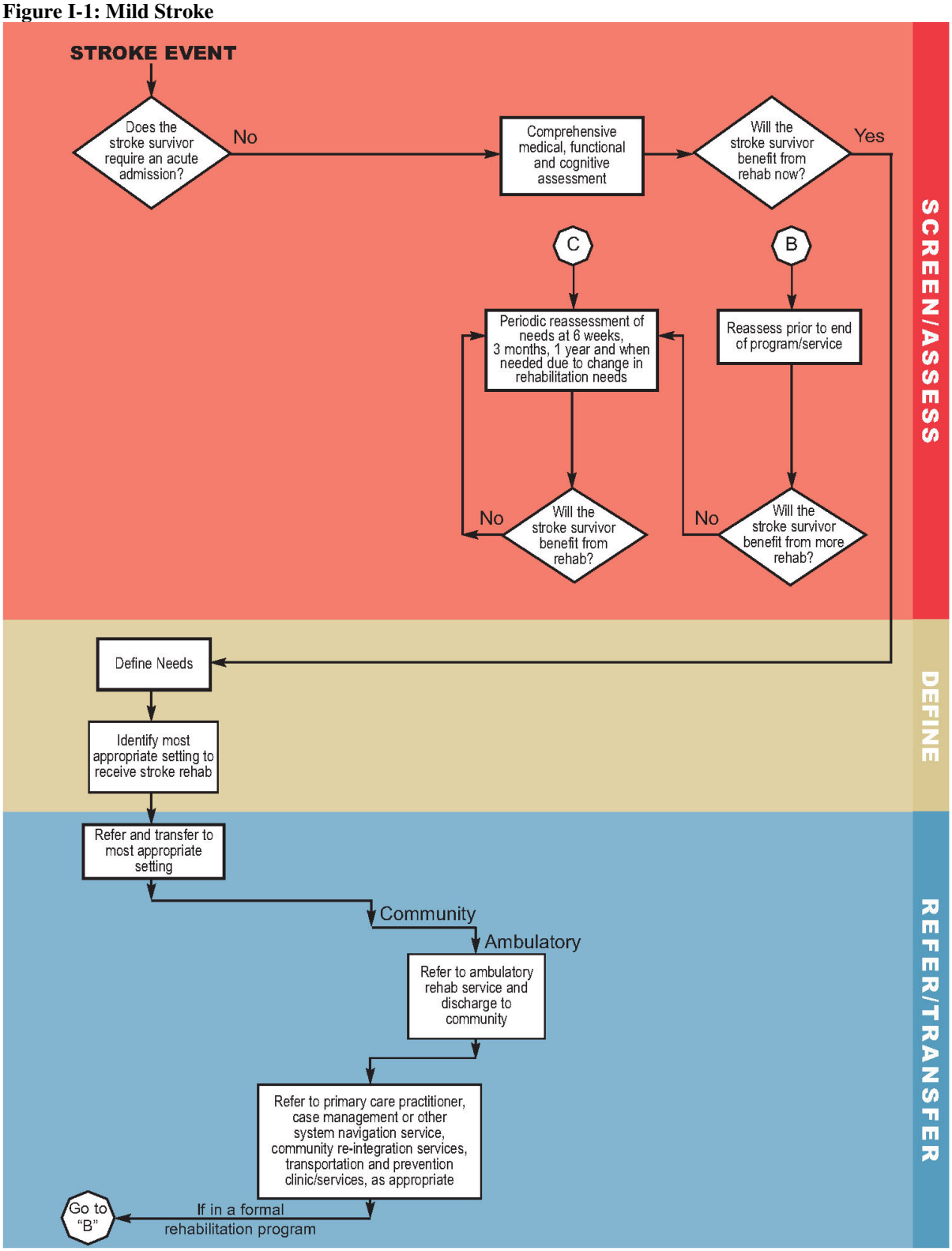
The scenarios presented below have been simplified to illustrate how to use the model. The Panel recognizes that, in practice, the stroke survivor's journey through the system is often much more complicated.

Scenario 1: Mild Stroke

Screen/Assess	The stroke survivor does not require an acute admission and is referred for a comprehensive medical, functional and cognitive assessment.
Screen/Assess	It is determined that the stroke survivor will benefit from rehabilitation.
Define	Based on the outcome of the assessment, the rehabilitation professional determines that the stroke survivor is Rehab Ready and meets the criteria for rehabilitation services in an ambulatory setting.
Refer/Transfer	The rehabilitation professional then refers the stroke survivor to the appropriate services.
Screen/Assess	The stroke survivor is reassessed at the end of the formal rehabilitation program and no further rehabilitation needs are identified.
Screen/Assess	The stroke survivor is reassessed periodically, but no further rehabilitation needs are identified.

This journey is shown graphically in Figure I-1.

Figure I-1: Mild Stroke

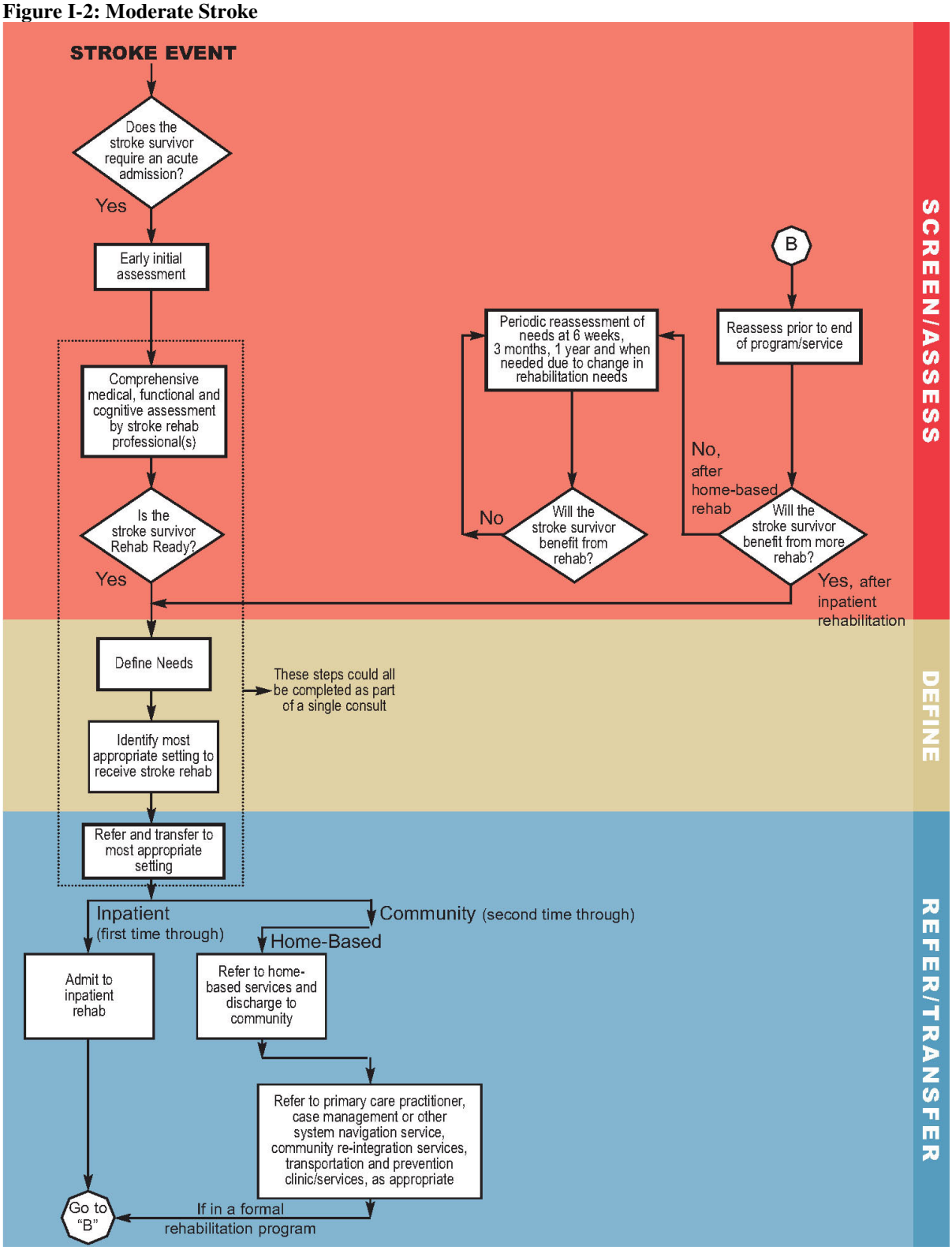


Scenario 2: Moderate Stroke

Screen/Assess	The stroke survivor requires an acute admission and is deemed Rehab Ready.
Define	Based on the outcome of the assessment, the rehabilitation professional determines that the stroke survivor meets the criteria for inpatient rehabilitation.
Refer/Transfer	The rehabilitation professional then refers the stroke survivor to a stroke rehabilitation unit.
Screen/Assess	The stroke survivor is reassessed at the end of the formal rehabilitation program, and it is determined that the stroke survivor would benefit from additional rehabilitation.
Define	Based on the outcome of the assessment, the rehabilitation professional determines that the stroke survivor meets the criteria for home-based stroke rehabilitation services.
Refer/Transfer	The stroke survivor is discharged home and referred to home-based services for rehabilitation and other support services.
Screen/Assess	At the end of the home-based rehabilitation program, the stroke survivor is reassessed and no further rehabilitation needs are identified.
Screen/Assess	The stroke survivor is reassessed periodically, but no further rehabilitation needs are identified.

This journey is shown graphically in Figure I-2.

Figure I-2: Moderate Stroke



Scenario 3: Severe Stroke

Screen/Assess The stroke survivor requires an acute admission. It is determined that the patient is not Rehab Ready, but is expected to benefit from rehabilitation once stabilized and is reassessed periodically until ready.

Define Based on the outcome of a reassessment, the rehabilitation professional determines that the stroke survivor meets the criteria for inpatient rehabilitation.

Refer/Transfer The rehabilitation professional then refers the stroke survivor to a stroke rehabilitation unit.

Screen/Assess The stroke survivor is reassessed at the end of the formal rehabilitation program, and it is determined that the stroke survivor would benefit from additional rehabilitation.

Define Based on the outcome of the assessment, the rehabilitation professional determines that the stroke survivor meets the criteria for home-based stroke rehabilitation services.

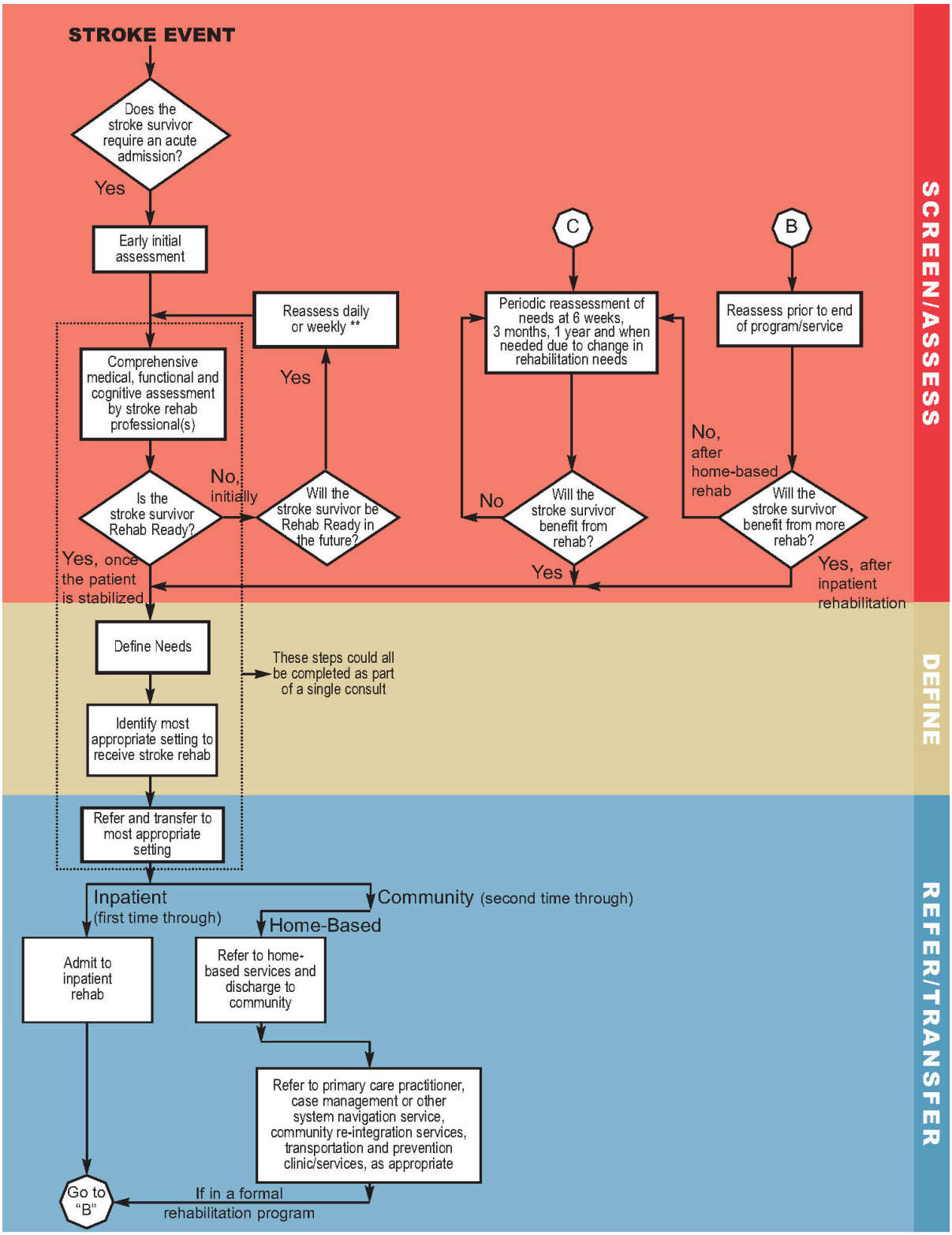
Refer/Transfer The stroke survivor is transferred to a LTC Home and referred for rehabilitation in that setting.

Screen/Assess At the end of the home-based rehabilitation program, the stroke survivor is reassessed and no further rehabilitation needs are identified.

Screen/Assess The stroke survivor is reassessed periodically, but no further rehabilitation needs are identified.

This journey is shown graphically in Figure I-3.

Figure I-3: Severe Stroke

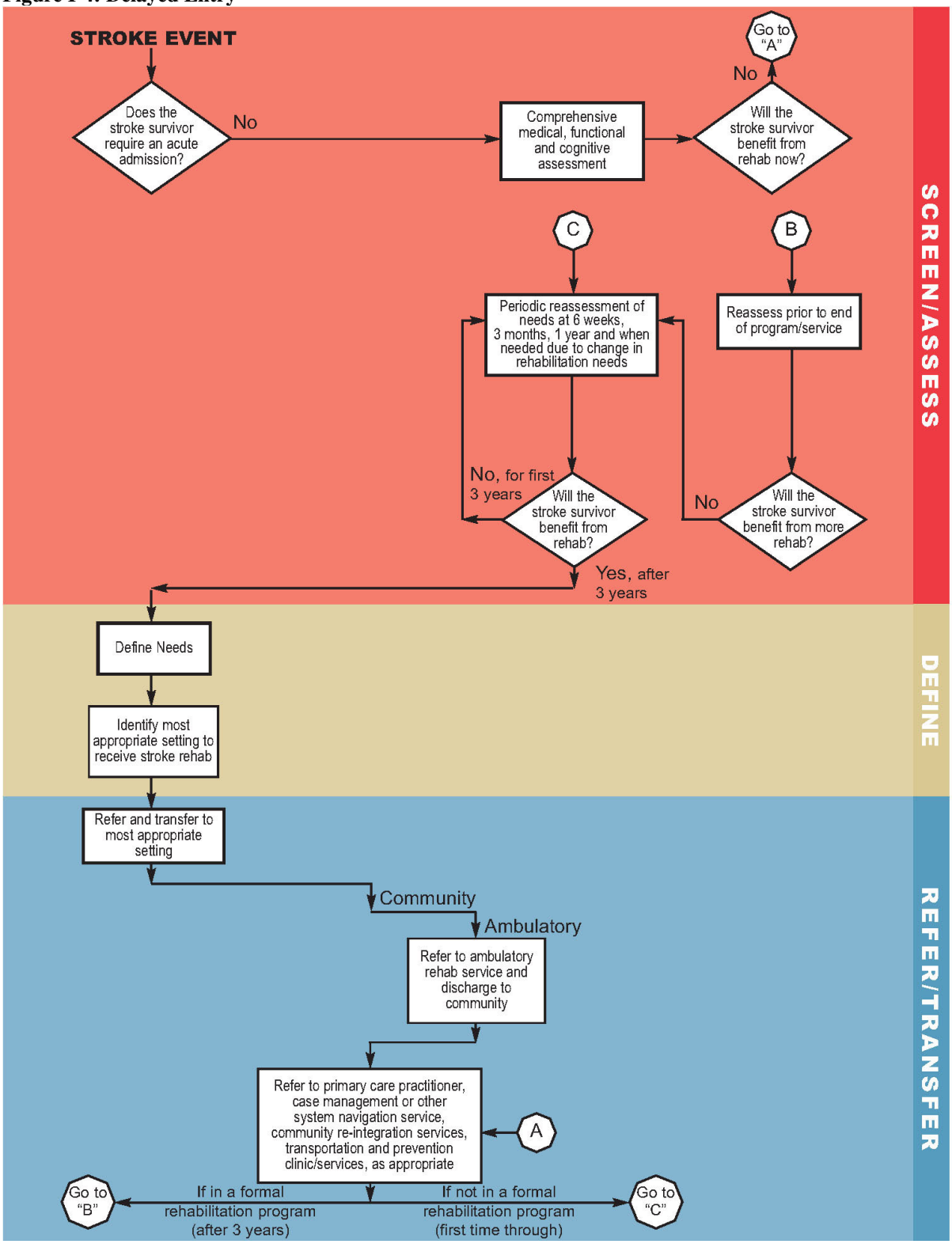


Scenario 4: Delayed Entry

Screen/Assess	The stroke survivor does not require an acute admission and is referred for a comprehensive medical, functional and cognitive assessment.
Screen/Assess	It is determined that the stroke survivor will not benefit from rehabilitation at this time.
Refer/Transfer	The rehabilitation professional then refers the stroke survivor to the appropriate services (e.g., primary care practitioner, stroke prevention clinic/service).
Screen/Assess	The stroke survivor is reassessed for three years and no further rehabilitation needs are identified.
Define	After three years, rehabilitation needs are identified, and the stroke survivor is referred for rehabilitation services in an ambulatory setting.
Refer/Transfer	The stroke survivor is referred for rehabilitation services in an ambulatory setting.
Screen/Assess	At the end of the ambulatory rehabilitation program, the stroke survivor is reassessed and no further rehabilitation needs are identified.
Screen/Assess	The stroke survivor is reassessed periodically, but no further rehabilitation needs are identified.

This journey is shown graphically in Figure I-4.

Figure I-4: Delayed Entry



APPENDIX J: Standards

Screening and Assessment

Standard #1: All patients admitted to hospital with acute stroke will have an early initial rehabilitation assessment by relevant rehabilitation professionals as soon as possible after admission (Evidence Level 1) within the first 24-48 hours (Evidence Level 3). Weekends will not limit "time to assessment." (adapted from CSS BPR 5.1a)

Standard #2: All stroke survivors (excluding TIAs) who are not admitted to hospital or who are discharged home from acute care will undergo an ambulatory or home-based screening assessment, which includes a medical, functional and cognitive assessment, by professionals with expertise in stroke, within two weeks. (Evidence Level 1); (adapted from CSS BPR 5.1b)

Standard #3a: Survivors of a severe or moderate stroke who are not initially considered eligible for inpatient stroke rehabilitation, once Rehab Ready, will be reassessed at regular intervals for their rehabilitation needs. (Evidence Level 3)

Standard #3b: As clinically indicated, a primary care practitioner, CCAC case manager, physiatrist or relevant rehabilitation professional will conduct a periodic reassessment of rehabilitation needs of the stroke survivor at six weeks, three months, one year and as needed. This assessment and client goals will provide the basis for a comprehensive plan of care to be developed, implemented and updated with the stroke survivor and family/caregivers. (Evidence Level 3); (adapted from HSFO BPG 16)

Standard #4: Stroke survivors should have a mechanism to access or reaccess the rehabilitation environment, if clinically indicated, regardless of the time that has elapsed since the stroke. (Evidence Level 3)

Standard #5: Stroke related impairments and functional status will be evaluated by rehabilitation professionals trained in stroke rehabilitation using standardized, valid assessments. (Evidence Level 2); (adapted from CSS BPR 5.1c)

Needs Definition

Standard #6: The interprofessional team will develop a comprehensive rehabilitation plan with each stroke survivor that reflects the severity of the stroke, the needs and goals of the stroke survivor, and the family/caregiver and home environment. (Evidence Level 3); (adapted from HSFO BPG 12 and CSS BPR 5.2)

Standard #7: Stroke survivors will receive the appropriate intensity and duration of clinically relevant therapies across the care continuum based on individual need and tolerance. (Evidence Level 1); (adapted from HSFO BPG 13 and CSS BPR 5.3)

d) Mild stroke: Stroke survivors discharged to the community will be provided with ambulatory services for one hour of each appropriate therapy, two to five times per week, as tolerated by the patient and as indicated by patient need. If only one discipline is required (e.g., speech-language pathology), then the stroke survivor will be provided with that one service. (Evidence Level 3)

e) Moderate stroke: Survivors of a moderate stroke will receive a minimum of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 3)

f) Severe stroke: Survivors of a severe stroke who are Rehab Ready will receive the frequency and duration of therapy that can be tolerated; the interprofessional team will increase the frequency and duration as tolerance improves to a minimum target of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 1)

Quality Care

Standard #8: All stroke survivors who would benefit from inpatient stroke rehabilitation will be treated in a stroke rehabilitation unit or geographically defined unit with a stimulating environment. (Evidence Level 1); (adapted from CSS BPR 5.2 and the Blueprint)

Standard #9: Once it is determined that a stroke survivor will benefit from:

- Inpatient rehabilitation and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 1)
- Community rehabilitation (i.e., home-based or ambulatory) and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 3); (adapted from CSS BPR 5.2)

Standard #10: Post-acute stroke care will be delivered using a collaborative practice model. The interprofessional team will consist of a core team with clinical expertise including the stroke survivor and family/caregivers, primary care practitioner, physiatrist, rehabilitation nurse, nurse, physiotherapist, occupational therapist, speech-language pathologist and social worker. The team will have access to a psychologist, a recreation therapist, a spiritual care provider, a dietitian, a pharmacist, a discharge planner, and consults for vocational, driving and video fluoroscopic swallowing assessments, orthoses, augmentative communication, and complex seating. (Evidence Level 3); (adapted from CSS BPR 5.2)

Standard #11: Therapy will include repetitive and intense use of novel tasks that challenge the stroke survivor to acquire necessary skills during functional tasks and activities. The interprofessional team, along with the family/caregiver and volunteers, will promote the practice of skills gained in therapy into the stroke survivor's daily routine and will reinforce increased stroke survivor participation and activity. (Evidence Level 1); (adapted from CSS BPR 5.3 and the EBRSR)

Standard #12a: The interprofessional team will have access to stroke rehabilitation education and professional development modules in order to support the standards and other evidence-based practice initiatives. These educational opportunities will be evidence-based, current and user-friendly and will incorporate knowledge translation strategies. (Evidence Level 3)

Standard #12b: Stroke survivors, family/caregivers and volunteers should be provided with information and education at all stages of care across the continuum (prevention, acute care, rehabilitation, community reintegration). It should address: the nature of stroke and its manifestations, signs and symptoms, impairments and their impact and management, risk factors, planning and decision making, resources and community support. (Evidence Level 1); (adapted from CSS BPR 2.1)

Information and education should be interactive, timely, up to date, provided in a variety of languages and formats (written, oral, counselling approach), and specific to stroke survivor and family/caregiver needs. (Evidence Level 1/2); (adapted from CSS BPR 2.1)

Accessible Care

Standard #13: All stroke survivors, regardless of where they live, will have equitable access to the same standard of care at the appropriate intensity and duration. (Evidence Level 3)

Standard #14: Stroke survivors of a moderate or severe stroke who are Rehab Ready and have rehabilitation goals will be given an opportunity to participate in inpatient stroke rehabilitation. (Evidence Level 1)

Standard #15: Once in a LTC Home, Complex Continuing Care unit or Alternate Level of Care bed, residents should have access to stroke rehabilitation services as clinically indicated and based on the stroke survivor's goals through either ambulatory, outreach or CCAC if it is not available in-house. (Evidence Level 3)

Standard #16: Stroke survivors who are discharged to the community with home-based stroke rehabilitation services will be provided with these services as per available evidence-based guidelines. (Evidence Level 3)

Standard #17: Interprofessional teams will facilitate linkages for stroke survivors and their family/caregivers after discharge to services in the community including:

- Physical help, caregiver training and education, and psychosocial counselling, where needed. (Evidence Level 1); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)
- Access to primary care practitioners, case management or other system navigation service, respite care, educational opportunities, emotional help, wellness, vocational counselling, access to stroke resources, driving safety evaluation, transportation services, peer support groups, community re-integration services, prevention clinic/services and financial support, where needed. (Evidence Level 3); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)

Timely Care. Time is Function.

Standard #18: The wait time from when the stroke survivor is Rehab Ready and referred to rehabilitation services until the start of all appropriate rehabilitation services should be no more than:

- Two business days for inpatient stroke rehabilitation, and
- Five days for both ambulatory and home-based stroke rehabilitation. (Evidence Level 3)

System Planning

Standard #19: Each stroke region will have an explicit stroke rehabilitation service provision model in place in order to facilitate optimal and timely access to rehabilitation services. (Evidence Level 3)

Standard #20: Clinical and service utilization data will be used to plan, coordinate, integrate and prioritize regional stroke rehabilitation services and ensure equitable access based on patient need. (Evidence Level 3)

APPENDIX K: HSFO Best Practice Guidelines for Stroke Rehabilitation

Transition Management

8. Develop and follow protocols at each transition point across the continuum of care to ensure appropriate and timely access to services.
9. Manage transitions with an interdisciplinary team all using standardized information and processes, to ensure that relevant documentation is transferred with the client to facilitate continuity of clinical and case management.
10. Identify and confirm the primary health care provider before the stroke survivor is discharged from acute care, and keep this individual informed throughout all phases of care.
11. Provide opportunities for ongoing access to rehabilitation and community services for stroke survivors and their families, during all phases of care.

Rehabilitation Management

12. Evaluate the rehabilitation potential of each client and include a complete assessment conducted by the stroke rehabilitation team. Develop a comprehensive rehabilitation plan for each client that reflects the severity of the stroke and the needs and goals of the stroke survivor.
13. Ensure that access to the appropriate intensity of rehabilitation services is available to stroke survivors along the continuum of care.
14. Assess the ability of the family and caregiver to support a stroke recovery process. Develop a strategy that includes an educational component to address the caregiver's burden.
15. Discharge stroke survivors from rehabilitation units in a timely manner, once realistic goals have been achieved and intensive inpatient rehabilitation is no longer required.

Community Reengagement

16. Assist the stroke survivor and family to develop and implement an evolving care plan by conducting 6-week, 3-month, and 1-year follow-up assessments of all aspects of health status, community participation and links to prevention services.
17. Create strategies to enable healthcare professionals and caregivers in community and long-term care settings to develop stroke care expertise to support stroke survivors in achieving their goals.
18. Support caregivers in balancing personal needs and caregiving responsibilities by providing community programs, respite care, and educational opportunities, and by linking caregivers to these programs.
19. Assist stroke survivors to maintain, enhance and develop appropriate social support.

The full guidelines are available on the Heart and Stroke Foundation of Ontario Web site: http://www.heartandstroke.ca/profed

APPENDIX L: Relevant Recommendations from the Stroke Rehabilitation Pilot Projects

Central South Stroke Rehabilitation Pilot Project

Key Recommendations – Assessment Tool

1. Establish an evidence-based, standardized assessment and triage protocol for rehabilitation as a standard of practice in acute care settings across the province.
2. Establish a regional stroke services database and encourage implementation across the province.
3. Use evidence-based clinical and service utilization data to plan, coordinate, integrate and prioritize regional stroke rehabilitation services and ensure equitable access based on patient need.

Toronto West Stroke Rehabilitation Pilot Project

Conclusions – SCRIPT

This referral system has value for understanding Rehabilitation Needs after Stroke:

- Provides objective measures for referral decision and enhances trust
- Training of staff in standardized measures fosters team best practice in referral management
- Can track referral issues for clients with different characteristics (e.g., ESL, multicultural)
- Can track objective measures of clients who were rejected due to admissions criteria and potentially develop new programs
- Can track capacity of system by looking at number wait listed
- Referral system can compare system performance for specific types of rehabilitation patients – e.g., HTSD for each centre, i.e., comparing "apples to apples" (an adjunct to CIHI, ICES info)
- There is variation between programs in terms of length of stay and wait times to next program (current samples sizes are small)
- SCRIPT system allows comparison of acute care centers and rehab centers performance in the referral process and identify areas for improvement
- AlphaFIM® is adequate for measuring functional status and triage; however, we have insufficient data to determine reliability for those clients with severe stroke where the rehab ready projected total FIM™ score is <50
- With survivors of severe strokes, staff may need to consider other factors such as co-morbidities or cognitive status in detail

Southeast Ontario Stroke Rehabilitation Pilot Project

Discharge Link Project Recommendations for Community-Based Rehabilitation Services

1. Provide enhanced and timely professional therapy for stroke clients
2. Consider priority setting for those recovering from new stroke
3. Increase system responsiveness and flexibility
4. Establish a formal process for coordination of care
5. Promote models of care that promote client recovery
6. Investigate strategies to recruit and retain professional services and promote stable provider workforce
7. Provide stroke rehab education to CCAC, professional staff and PSWs
8. Explore role of OT, PT communication assistants
9. Support caregivers
10. Regional planning

West GTA Stroke Rehabilitation Pilot Project

Navigating the Seams Project Recommendations

1. Follow-up on mood disorders in the rehab phase and in the community
2. Use weekend passes during hospital admissions to better assess potential for caregiver burden
3. Support the mandatory use of guidelines:
   - Incorporate guidelines into CQI initiatives
   - Integrate guidelines into documentation system
   - Include variance tracking system to support sustainability
4. Use the AlphaFIM® in the acute setting:
   - This supports a consistent functional measurement tool (and common language) used by multidisciplinary teams to assess the acute stroke survivor
5. Increase access to rehabilitation services in the community
6. Support continued partnerships between hospitals, CCACs and broader community sector:
   - To assist with collection, analysis and follow-up on stroke data gathered in the community
   - To share stroke information across organizations, the region and the province
   - To improve patient care and standardize practices in stroke care across the continuum
7. Ensure development and implementation of stroke guidelines for use in the community

Southwest Ontario Stroke Rehabilitation Pilot Project

Regional Stroke Rehabilitation System
Recommendations – Outpatient

- Survivors of severe stroke should routinely receive outpatient rehabilitation services
- Existing outpatient services should:
    - Have flexible LOS related to goal attainment
    - Provide access to only one service, if that is all that is needed
    - Facilitate reentry to rehabilitation for clients related to specific goal attainment irregardless of the time that has elapsed since the stroke
- Undertake economic evaluation of system/cost savings resulting from a change in living setting
- Add nursing, social work and therapeutic recreation
- Address capacity for specialized transportation to enable access to outpatient services

Recommendations – Outreach

- Implement stroke rehabilitation outreach provincially to increase stroke best practice knowledge, skill and ability, provide "closer to home" stroke rehabilitation and build capacity in region
- Each region needs to develop model best suited to geography
- Criteria to provide outreach:
    - Critical mass clients with stroke
    - Interdisciplinary team with stroke expertise
    - Front line champions with interest and senior leadership commitment
    - Stroke infrastructure to support service
- Use of VideoCare linkages wherever possible to reduce travel time

Northeast GTA Stroke Rehabilitation Pilot Project

Stroke Tele Rehab – Recommendations

- Conference only complex patients with a NIHSS of >10 and Chedoke McMaster of <3
- Ensure a structured format for patient videoconference
- Reduce duplication of work in completing assessment forms:
    - MOST Program should be continued in Thunder Bay and expanded to other regions
    - MOST Telehealth should be trialed in more remote areas, with some participants remote to both facilitators
    - Consideration should be given to modifying other self-management programs for telehealth delivery

APPENDIX M: Canadian Best Practices in Stroke Rehabilitation Outcomes: Report of the Expert Panel

Held in Toronto, Ontario; Monday February 6-7, 2006

Conference Chairs:

Dr. Mark Bayley
Physiatrist, Toronto Rehabilitation Institute
Principal Investigator, SCORE Project
Member, Canadian Stroke Strategy Best Practices & Standards Working Group

Dr. Patrice Lindsay
Performance and Standards Specialist, Canadian Stroke Network
Stroke Evaluation Lead, Ontario Stroke System

Organizing Committee:

Representatives from the Canadian Stroke Network theme 4B (Rehabilitation and recovery) and members of the Best Practices committee of the Canadian Stroke Strategy collaborated to form the organizing committee for the Expert Panel. These members included: Dr. Nicol Korner-Bitensky, Dr. Robert Teasell, Dr. Johanne Desrosiers, Dr. Jeff Jutai, Alison MacDonald, Katherine Salter, Dr. Sharon Wood-Dauphinee, and Nancy Deming.

Goal of the Conference:

Through discussion with Canadian Stroke Network and the Heart and Stroke Foundation of Ontario, it was agreed that an expert consensus panel with representatives from relevant health professionals as well as stakeholders would be an important method for establishing a course of rehabilitation outcome measures to be used across the continuum.

The Conference had two main objectives:

1. Using the International Classification of Functioning to prioritize a set of outcome measures in the domains of body structure and function, activity and participation that could be used to evaluate the outcomes of stroke rehabilitation in Canada.
2. Identify preliminary indicators of performance of the stroke rehabilitation system.

Findings of the Conference:

In order to promote ease of selection, the following criteria were suggested to the panel to facilitate selection of measures:

- The measure should have been used in previous stroke trials as identified by the Stroke Rehabilitation Evidence-Based Review.

- The measure can be used at admission and completion of rehabilitation.

- The measure can be administered in a multidisciplinary fashion – i.e., could be administered by a number of different health professionals. (This was felt to be important for smaller rehabilitation centers that may not have all the highly specialized rehabilitation professionals, for example, a neuropsychologist.)

- The measure should have optimal psychometric properties including reasonable reliability and demonstrated validity.

- The measure should be available in English and French.

- The time required to complete the measure should fit within the context of the usual assessment time of a health care professional (i.e., is not excessively burdensome).

All outcome measures selected by the panel also were considered using the following criteria:

- Ease and feasibility of administration,
- Content of the Measure,
- Reliability,
- Validity, and
- Responsiveness.

The final outcome tools for stroke rehabilitation selected by the panel include:

Domain	Selected Measure
Measures of Stroke Severity	Orpington or National Institute of Health (NIH) Stroke Scale
Medical Comorbidities	Charleson Co-morbidities Scale
Upper Extremity Structure and Function	Chedoke-McMaster Stroke Assessment (CMSA)
Lower extremity	Chedoke-McMaster Stroke Assessment
Spasticity	Modified Ashworth Scale + Spasticity Subscale of CMSA
Visual Perception	Comb and Razor Test (interdisciplinary admin) Behavioural Inattention Test (Sunnybrook Neglect Assessment Protocol or SNAP) Line Bisection (Unilateral Spatial Neglect) Alternates – Rivermead Perceptual Assessment Battery, OSOT (Ontario Society of Occupational Therapists) Perceptual Evaluation and Motor-Free Visual Perception Test (MVPT)
Language	a) Screening in Acute and follow-up: Frenchay Aphasia Screening Test (FAST) b) for Rehabilitation: Boston Diagnostic Aphasia Assessment
Speech Intelligibility Tool	No tool in published literature
Cognition	a) Screening as per SCORE = Mini Mental State Examination (MMSE) and Line Bisection + Semantic Fluency b) Initial selection Cambridge Cognitive Examination (CAM-COG) Note: no single tool; therefore, need to seek further consultation to consider which domains are important (i.e., attention, memory, executive skills, processing speed)

Activity Assessment Scales

Domain	Selected Measure
Arm Function	Chedoke Arm and Hand Activity Inventory Box and Block Nine Hole Peg Test
Walking/Lower Extremity	Chedoke Lower Extremity Disability Inventory Timed "Up and Go" Test 6-Minute Walk Test Alternate – Rivermead Mobility Index
Balance	Berg Balance Scale (BBS)
Functional Communication	Amsterdam-Nijmegan Everyday Language Test (ANELT) Alternate – American Speech-Language-Hearing Association Functional Assessment of Communication Skills for Adults (ASHA-FACS)
Self-Care Activities of Daily Living	FIM™ (Functional Independence Measure)
Instrumental Activities of Daily Living	Reintegration to Normal Living Index Leisure section of the Assessment of Life Habits (LIFE-H)

Participation Assessment Scales

Domain	Selected Measure
Participation	Stroke Impact Scale

APPENDIX N: Stroke Rehabilitation Performance Measurement Manual

See following pages.

HEART & STROKE FOUNDATION OF ONTARIO | Ontario Stroke System

Ontario Stroke System

Stroke Rehabilitation Performance Measurement Manual

Prepared by:

Stroke Evaluation Rehabilitation Working Group

Stroke Evaluation Advisory Committee

April, 2007

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Screening and Assessment			
Standard #1: All patients admitted to hospital with acute stroke will have an early initial rehabilitation assessment by relevant rehabilitation professionals as soon as possible after admission (Evidence Level 1) within the first 24-48 hours (Evidence Level 3). Weekends will not limit "time to assessment." (adapted from CSS BPR 5.1a)	i. Median time from hospital admission for acute stroke to initial rehabilitation assessment by relevant rehabilitation professionals during inpatient acute stay. (For example, physiotherapy [PT], occupational therapy [OT], speech-language pathologist [SLP].)	Local records – extracted by chart audit Ontario Stroke Audit (OSA) Stroke Registry for regional stroke centers (RSC)	• Province-wide data not available at this time for time to rehab assessment. • Education required to improve documentation of time of assessment. • Ontario Stroke Audit (OSA) provides information on access to acute rehab professional services but not time to assessment (OT, PT, registered dietitian [RD], Social Worker [SW], SLP). • Stroke registry provides same as above but only for RSC. • Could add time post stroke to acute rehab assessment to the OSA in future. • Need to develop mechanism to document and capture data – potentially a minimal dataset or rehab audit tracking form or through the OSA as noted above.
Standard #2: All stroke survivors (excluding TIAs) who are not admitted to hospital or who are discharged home from acute care will undergo an ambulatory or home-based screening assessment, which includes a medical, functional and cognitive assessment, by professionals with expertise in	i. Median time from hospital emergency department (ED) admission for acute stroke to ambulatory or home-based screening assessment by relevant non-nursing rehabilitation professionals for patients who are not admitted to hospital or who are discharged home from acute care. (Mild/moderate strokes)	Local records – extracted by chart audit Ontario Stroke Audit (OSA) Stroke Registry for regional stroke centers (RSC) SPIRIT (Stroke Performance Indicators for Reporting,	• Two-week target is based on time from arrival at hospital to assessment (not time from discharge). • Time to visit by a case manager or nurse is not sufficient to be considered a rehab assessment. • Community Care Access Centre (CCAC) may not see mild/ moderate stroke "if the patient can get out of the home" depending on the region or

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
stroke, within two weeks. (Evidence Level 1); (adapted from CSS BPR 5.1b)	ii. Number mild strokes assessed in Secondary Prevention Clinic and time to assessment.	Improvement and Translation) for Stroke Prevention Clinics	Local Health Integration Network (LHIN)– need this info for out-patient department (OPD) or day hospital setting. • CCAC will provide time to assessment, number of visits by rehab professional type for OT, PT and SLP. Will also provide the total hours of service, so time/visit can be estimated. • National Rehabilitation Reporting System (NRS) and Discharge Abstract Database (DAD) do not provide detailed and specific information of the nature, frequency or duration of rehab services.
Standard #3a: Survivors of a severe or moderate stroke who are not initially considered eligible for inpatient stroke rehabilitation, once Rehab Ready, will be reassessed at regular intervals for their rehabilitation needs. (Evidence Level 3) **Standard #3b:** As clinically indicated, a primary care practitioner, CCAC case manager, physiatrist or relevant rehabilitation professional will conduct a periodic reassessment of rehabilitation needs of the stroke survivor at six weeks, three months, one year and as needed. This assessment and client goals will	i. Percentage of stroke patients admitted who have had a severe stroke (e.g., early FIM™ <55). ii. Percentage of patients admitted to acute care for stroke who are determined to have a severe stroke and are determined not to be eligible for rehabilitation – based on original assessment in Standard #1 (denominator – all stroke patients assessed for rehab). iii. Percentage of severe stroke patients initially assessed by: PT, OT, SLP, and SW during a) acute stay and b) inpatient rehabilitation. iv. Percentage of severe stroke patients who are determined not to	Local records – extracted by chart audit Patient logs CCAC data sources Admin data for long-term care (LTC) and complex continuing care (CCC) Primary Care audits of stroke patients	• Data collection will be a challenge once patient leaves acute care setting due to poor ability to capture across settings consistently – will need to create a log or work with CCAC, LTC and/or CCC to create an audit trail for follow-up assessments. • Need to implement a common assessment tool for acute care such as the FIM™ or Orpington scale that confirms that a patient is indeed a severe stroke patient. • CCAC will provide number of visits by rehab professional type for OT, PT and SLP. Will also provide the total hours of service, so time/visit can be estimated. • NRS and DAD do not provide specific information of the nature, frequency or

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
provide the basis for a comprehensive plan of care to be developed, implemented and updated with the stroke survivor and family/caregivers. (Evidence Level 3); (adapted from HSFO BPG 16)	be rehabilitation eligible at initial assessment who are reassessed at regular intervals following a stroke event. (Need to specify in analysis who conducted reassessments and the time frame from initial assessment to reassessment.) v. Percentage of stroke survivors with documentation of a comprehensive plan of care developed and updated at 6 weeks, 3 months and one year post stroke event. vi. Change in client rehabilitation status and ability between follow-up community visits.		duration of rehab services. • Rehab professionals in some institutions use a workload measurement tool that may provide information re intensity and duration of therapy; this varies across institutions and makes access to the data a challenge. • When documenting change in rehab status, should decide on specific tools to use to standardize the reporting and interpretation of this indicator. • Time to rehab ready in acute is very poorly documented, and not routinely assessed.
Standard #4: Stroke survivors should have a mechanism to access or reaccess the rehabilitation environment, if clinically indicated, regardless of the time that has elapsed since the stroke. (Evidence Level 3)	i. Number of patients who are discharged from acute care following a stroke event who have one or more admissions to inpatient rehab, LTC, CCC or community-based rehab services within one year of index stroke event. ii. Number of patients who are discharged and get access to ambulatory rehabilitation (e.g. Day Hospital).	Administrative data Local logs and diaries for outpatient and community rehab services	• This will be a challenge for tracking when patients move between inpatient or designated settings into other community settings for rehab and back. • Able to link between administrative datasets to track admissions between them.
Standard #5: Stroke related impairments and functional status will be evaluated by rehabilitation professionals trained in stroke rehabilitation using standardized, valid assessments.	i. Frequency of assessments conducted by: Physiatry, PT, OT, SLP, other rehabilitation professionals during inpatient, outpatient and community settings.	Change in FIM™ scores and CIHI cognitive scores can be calculated in Canadian Institute for Health Information National Rehabilitation Reporting	• Outcome measurement tools should be based on Stroke Canada Optimization of Rehabilitation through Evidence (SCORE) rehab outcomes panel report 2007. • Scores on tools other than the FIM™,

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
(Evidence Level 2); (adapted from CSS BPR 5.1c)	ii. Percentage change in standardized outcome measurement scores from admission to inpatient rehabilitation or other rehabilitation setting/program to discharge from inpatient rehabilitation or other rehabilitation setting/program. iii. Prevalence of implementation and application of rehabilitation assessment tools recommended by the Canadian Stroke Strategy (CSS)/SCORE/Canadian Stroke Quality of Care Study (CSQCS) Outcome Tools consensus meeting.	System (CIHI/NRS). Follow-up NRS assessment also includes Re-integration to normal living index. For the long-term care, complex care and home care settings, some data on functional status and changes will be available from the Minimum Dataset-Resident Assessment Instrument (MDS-RAI) databases (CIHI). Data for other measures would have to be available on patient chart and through audits and local program tracking systems or mechanisms	CIHI pain and cognitive scores and Re-integration to normal living index are not captured in CIHI databases. • As well, the NRS data is only available for designated inpatient rehab beds. • CCAC home-based rehab services may capture some functional status info through the RAI in the Home Care database, but repeat assessments to measure change not routinely available and not as sensitive as the FIM™. • Other measures used in acute hospital or inpatient rehab not routinely documented consistently; a documentation system would need to be developed. • Access to standardized rehab assessment data in the community not available at this time. Mechanism would have to be developed to capture and share this data routinely.
Needs Definition			
Standard #6: The interprofessional team will develop a comprehensive rehabilitation plan with each stroke survivor that reflects the severity of the stroke, the needs and goals of the stroke survivor, and the family/caregiver and home environment. (Evidence Level 3); (adapted from HSFO BPG 12 and CSS BPR 5.2)	i. Percentage of stroke survivors with documentation of a comprehensive rehabilitation plan developed post stroke event. ii. Percentage of stroke patients treated on a combined or rehabilitation-focused stroke unit at any time during their inpatient rehabilitation phase following an acute stroke event. iii. Proportion of total time during inpatient rehabilitation following	CIHI National Ambulatory Care Reporting System (NACRS) and DAD Homecare database (CCAC) Local chart audit and data systems for outpatient and community settings	• OSA and stroke registry for acute care. • CIHI NRS may identify health professionals involved in care. For rehab professionals this is not reliable. • Rehab professionals in some institutions use a workload measurement tool that may provide information of intensity and duration of therapy, this varies across institutions and access to the data a challenge.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
	an acute stroke event that is spent on a rehabilitation stroke unit.		• We have no consistent data on rehab services for those receiving outpatient or day hospital rehab service. • A survey may be used to understand the current models of care and development of care plans. • Documentation of rehab plans will vary across settings – minimal guidelines and criteria may need to be established to ensure reliable data for these measures.
Standard #7: Stroke survivors will receive the appropriate intensity and duration of clinically relevant therapies across the care continuum based on individual need and tolerance. (Evidence Level 1); (adapted from HSFO BPG 13 and CSS BPR 5.3) a) <u>Mild stroke</u>: Stroke survivors discharged to the community will be provided with ambulatory services for one hour of each appropriate therapy, two to five times per week, as tolerated by the patient and as indicated by patient need. If only one discipline is required (e.g. speech-language pathology), then the stroke survivor will be provided with that one service. (Evidence Level 3) b) <u>Moderate stroke</u>: Survivors	i. Discharge disposition of stroke patients immediately following an acute care visit for stroke (ED only or inpatient) – stratified by stroke severity. ii. Percentage of stroke patients who spend any time on an acute, integrated or rehabilitation stroke unit during acute inpatient care and/or inpatient rehabilitation following an acute stroke event stratified by stroke severity. iii. Median number of days spent as alternate level of care (ALC) in acute care hospitals before transfer to inpatient rehabilitation facility. iv. Proportion of total time during acute inpatient care and/or inpatient rehabilitation following an acute stroke event that is spent on an acute care/integrated or rehabilitation-specific stroke unit stratified by stroke severity.	CIHI: NACRS and DAD Registry of the Canadian Stroke Network (RCSN) for regional stroke centres RCSN Ontario Stroke Audit CIHI: NRS CIHI: MDS-RAI, RAI-HC Homecare Database (CCAC, MOHLTC) Local chart audit and data systems for outpatient and community settings	• CIHI NRS, DAD and NACRS may identify health professionals involved in care. For rehab professionals this may not be reliable or complete. • NRS, NACRS and DAD do not provide specific information of the nature, frequency or duration of rehab services. • CCAC will provide number of visits by rehab professional type for OT, PT and SLP. Will also provide the total hours of service, so time/visit can be estimated. • Rehab professionals in some institutions use a workload measurement tool that may provide information of intensity and duration of therapy; this varies across institutions and access to the data a challenge. • It is important not just to measure the number of paid hours of therapy but also the number of direct individualized therapy time. • We have no consistent data on rehab

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
of a moderate stroke will receive a minimum of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 3) c) <u>Severe stroke</u>: Survivors of a severe stroke who are Rehab Ready will receive the frequency and duration of therapy that can be tolerated; the interprofessional team will increase the frequency and duration as tolerance improves to a minimum target of one hour of direct therapy time for each relevant core therapy, with an individualized treatment plan, for a minimum of five days per week, by the interprofessional stroke team based on individual need and tolerance. (Evidence Level 1)	v. Frequency (# visits), duration (length of each visit), and intensity (# visits per time interval, and total # weeks of therapy) of therapies received from rehabilitation professionals by provider type while in an inpatient rehabilitation setting following stroke. Report by stroke severity measure. vi. Frequency, duration and intensity of therapies received from rehabilitation professionals by provider type while in an outpatient or community rehabilitation setting following stroke. vii. Percentage change in functional status using a standardized measurement tool, from time of admission to an inpatient rehabilitation unit for stroke patients, to the time of discharge– need to track this outcome against intensity of therapy, and stratify against rehab discharge disposition. ** Analyze all indicators by stroke severity groups as defined in the standard (7a, 7b, 7c).		services for those receiving outpatient or day hospital rehab service. • A survey may be used to understand the current models of care and track if and when organizations and services develop and implement 7-day therapy models. • Analysis of functional score change should be stratified by discharge disposition from inpatient rehabilitation facilities.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Quality Care			
Standard #8: All stroke survivors who would benefit from inpatient stroke rehabilitation will be treated in a stroke rehabilitation unit or geographically defined unit with a stimulating environment. (Evidence Level 1); (adapted from CSS BPR 5.2 and the Blueprint)	i. Discharge disposition of stroke patients immediately following an acute care visit for stroke (ED only or inpatient) – stratified by stroke severity. ii. Percentage of stroke patients who spend any time on an acute, integrated or rehabilitation stroke unit during acute inpatient care and/or inpatient rehabilitation following an acute stroke event. iii. Proportion of total time during acute inpatient care and/or inpatient rehabilitation following an acute stroke event that is spent on an acute care/integrated or rehabilitation-specific stroke unit.	Local/regional data and stroke registries Some administrative data may identify name of ward or hospital unit, which would then need to be interpreted as stroke unit	• Stroke unit carries many definitions – we have a critical need to define the characteristics of any stroke unit included in this performance measure. • This may be easier to identify in rehab institutions than in acute care. • Need to group patients by stroke type and type of rehab service they are admitted to. • Need to specify whether TIA are included in denominator or not when presenting these numbers.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Standard #9: Once it is determined that a stroke survivor will benefit from: • Inpatient rehabilitation and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 1) • Community rehabilitation (i.e., home-based or ambulatory) and once Rehab Ready, the stroke survivor will have access to an interprofessional rehabilitation team with expertise in stroke care. (Evidence Level 3); (adapted from CSS BPR 5.2)	i. Discharge disposition of stroke patients immediately following an acute care visit for stroke (ED only or inpatient) – stratified by stroke severity. ii. Percentage of stroke patients who spend any time on an acute, integrated or rehabilitation stroke unit during acute inpatient care and/or inpatient rehabilitation following an acute stroke event. iii. Proportion of total time during acute inpatient care and/or inpatient rehabilitation following an acute stroke event that is spent on an acute care/integrated or rehabilitation-specific stroke unit. iv. Median number of days spent as alternate level of care (ALC) in acute care hospitals before transfer to inpatient rehabilitation facility. v. Total length of time (days) spent in inpatient rehabilitation, by stroke type. vi. Percentage of stroke patients discharged to the community who receive a referral for ongoing rehabilitation prior to discharge from hospital (acute and/or inpatient rehabilitation). vii. Total length of time (days) spent in community rehabilitation programs (outpatient, day hospital, home-based care) by stroke type. viii. Median length of time between	CIHI NRS Local/regional data and stroke registries Some administrative data may identify name of ward or hospital unit, which would then need to be interpreted as stroke unit Program referral logs, audits, specific community monitoring systems	• Stroke unit carries many definitions – need to define the characteristics of any stroke unit included in this performance measure. • This may be easier to identify in rehab institutions than in acute care. • Need to group patients by stroke type and type of rehab service they are admitted to. • Need to specify whether TIA are included in denominator or not when presenting these numbers. • Very difficult to obtain province-wide information on community programs. Will be possible for funded homecare programs, but not so easy for other community programs. • Time to rehab ready in acute is very poorly documented, and not routinely assessed.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
	referral for outpatient rehabilitation to admission to a community rehabilitation program. ix. Frequency and duration/intensity of therapies received from rehabilitation professionals while in an inpatient rehabilitation setting, outpatient or community rehabilitation setting following stroke. x. Time from rehab ready to admission to rehab program.		
Standard #10: Post-acute stroke care will be delivered using a collaborative practice model. The interprofessional team will consist of a core team with clinical expertise including the stroke survivor and family/caregivers, primary care practitioner, physiatrist, rehabilitation nurse, nurse, physiotherapist, occupational therapist, speech-language pathologist and social worker. The team will have access to a psychologist, a recreation therapist, a spiritual care provider, a dietitian, a pharmacist, a discharge planner, and consults for vocational, driving and video fluoroscopic swallowing assessments, orthoses, augmentative communication and complex seating. (Evidence Level 3);	i. Number of stroke patients assessed by: physiotherapy; occupational therapy; speech-language pathologist, social workers and other rehabilitation team members during inpatient rehabilitation. ii. Number of referrals made to other specialists during rehabilitation phase (include type of specialist referrals).	CIHI – NRS Homecare database (CCAC) Other Community-based program data collection	• CIHI NRS may identify health professionals involved in care. For rehab professionals this is not reliable. • CCAC will provide number of visits by rehab professional type for OT, PT and SLP. Will also provide the total hours of service, so time/visit can be estimated. • NRS and DAD do not provide specific information of the nature, frequency or duration of rehab services. • Rehab professionals in some institutions use a workload measurement tool that may provide information of intensity and duration of therapy; this varies across institutions and access to the data a challenge. • We lack outpatient and day hospital data on the nature of the visits.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
(adapted from CSS BPR 5.2)			
Standard #11: Therapy will include repetitive and intense use of novel tasks that challenge the stroke survivor to acquire necessary skills during functional tasks and activities. The interprofessional team, along with the family/caregiver and volunteers, will promote the practice of skills gained in therapy into the stroke survivor's daily routine and will reinforce increased stroke survivor participation and activity. (Evidence Level 1); (adapted from CSS BPR 5.3 and the EBRSR)	i. Percentage of time during day hours spent in functional activities – weekdays and weekends. ii. Change (improvement) in functional status scores using a standardized assessment tool from admission to an inpatient rehabilitation program to discharge. Stratify by discharge disposition. iii. FIM™ efficiency (Change in FIM™ score divided by number of days in rehab for inpatients). – Analyze by type of rehab being received and setting (inpatient, outpatient, day hospital, home-based).	Administrative databases will provide change in functional status Data on time spent on repetitive skills training not available in any consistent manner Patient logs would be main data source Education Coordinator records	• Important to have some measure of the percentage of stroke patient day that is active – activity level in rehab. Need to further develop this area. • Need to specify treatment model – whether task specific or other.
Standard #12a: The interprofessional team will have access to stroke rehabilitation education and professional development modules in order to support the standards and other evidence-based practice initiatives. These educational opportunities will be evidence-based, current and user-friendly and will incorporate knowledge translation strategies. (Evidence Level 3)	i. Number of staff in a rehabilitation facility with additional training/certification in stroke management. ii. # hours paid professional development time allotted to staff for stroke training and skills development. iii. # staff participating in Web-based stroke-related training modules (and frequency of participation).	Local staff and human resource records Professional CME credit databases Personal logs of staff	• Data may not be collected consistently across organizations and across disciplines. • Survey of staff in specific organizations involved in stroke rehabilitation may provide valuable data. Would be cross-sectional and require repetition on a regular basis to maintain current stats.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Standard #12b: Stroke survivors, family/caregivers and volunteers should be provided with information and education at all stages of care across the continuum (prevention, acute care, rehabilitation, community reintegration). It should address: the nature of stroke and its manifestations, signs and symptoms, impairments and their impact and management, risk factors, planning and decision making, resources and community support. (Evidence Level 1); (adapted from CSS BPR 2.1) Information and education should be interactive, timely, up to date, provided in a variety of languages and formats (written, oral, counselling approach), and specific to patient, family, and caregiver needs and impairments. (Evidence Level 1/2); (adapted from CSS BPR 2.1)	i. Proportion of stroke patients with documentation of education provided for patient, family, and/or caregivers at each stage throughout the continuum of stroke management and recovery. ii. Total time spent by patient/family engaged in patient/family educational activities with healthcare professionals along the continuum of stroke care and recovery.	Local charts or stroke registries National/Provincial survey (health institutions)	• Patient education for all hospital programs is a performance measure in Hospital Accreditation organizations (Monitor Quality of Health Care). • Information on education is difficult to obtain consistently. • In measuring patient education, the type of educational session or information transfer should be described to enable comparisons across groups. Stroke patient education checklists are being developed in some centers to pass info from team to team across the continuum of care. • Education can happen in a wide variety of settings and could include giving of information materials, organized sessions (1:1 or group), etc. • Where possible, standardized education information and format should be implemented; however, needs to be individualized to meet patient and family needs.
Accessible Care			
Standard #13: All stroke survivors, regardless of where they live, will have equitable access to the same standard of care at the appropriate intensity and duration. (Evidence Level 3)	i. Percentage of stroke patients admitted to acute care hospitals for stroke event. ii. Length of stay in acute care following stroke event. iii. Median number days waiting for transfer to inpatient	CIHI Administrative databases (NACRS, DAD, NRS) Provincial MOH databases on facility management	• All indicators for this section should be presented by OSS region and LHIN. Where possible, data should also be further stratified into sub-LHIN levels. • It is critical that we collect data for wait times in a similar way which

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
	rehabilitation once determined to be Rehab Ready in acute care. iv. Median number of days spent as ALC in acute care prior to transfer to inpatient rehab. v. Percentage of acute stroke patients discharged to inpatient rehabilitation. Admissions should be stratified by FIM™ scores or Modified Rankin Scores (where available). vi. Percentage of acute stroke patients who receive a referral to community-based rehabilitation prior to acute care or inpatient rehab hospital discharge. vii. Frequency, duration and intensity of homecare visits by rehabilitation professionals following an acute stroke event. viii. Proportion of all inpatient rehabilitation beds occupied by stroke patients per year. ix. Proportion of stroke patients that access outpatient and day hospital rehabilitation services following an acute stroke event.	CSN Stroke Registry and Ontario Stroke Audit for modified Rankin scores in acute care Homecare database (CCAC)	means we need common reliable definition for Rehab Ready that is universally applied. • The NRS data only provide the wait time from a perspective of the rehabilitation organization and do not incorporate the acute care perspective and are not reliable. • Admissions to stroke rehabilitation facilities should be stratified by admission FIM™ scores and where available, by Modified Rankin scores to look at access by functional ability and rehab potential. • Need a system to track access across geographic areas to outpatient and day hospital services for stroke.
Standard #14: Stroke survivors of a moderate or severe stroke who are Rehab Ready and have rehabilitation goals will be given an opportunity to participate in inpatient stroke rehabilitation.	i. Percentage of acute stroke patients discharged to inpatient rehabilitation. Admissions should be stratified by FIM™ scores or Modified Rankin Scores where available.	CIHI Administrative databases Provincial MOH databases on facility management	• All indicators for this section should be presented by OSS region and LHIN. Where possible, data should also be further stratified into sub-LHIN levels. • Admissions to stroke rehabilitation

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
(Evidence Level 1)	ii. Proportion of all inpatient rehabilitation beds occupied by stroke patients per year. iii. Percentage of LTLD patients who are given a trial of inpatient rehabilitation. iv. LOS in inpatient rehab for LTLD patients. v. Discharge disposition for LTLD patients from inpatient rehab. vi. Percentage of acute stroke patients discharged to LTC from acute inpatient care or inpatient rehabilitation.	CSN Stroke Registry and Ontario Stroke Audit for modified Rankin scores in acute care Homecare database (CCAC)	facilities should be stratified by admission FIM™ scores and Modified Rankin where available to look at access by functional ability and rehab potential. • Need a way of tracking the severe strokes that get turned down for inpatient rehab services and what happens to them. • Need mechanism to define LTLD consistently so patients can be identified in NRS and in other databases • Time to rehab ready in acute is very poorly documented, and not routinely assessed.
Standard #15: Once in a LTC Home, Complex Continuing Care unit or Alternate Level of Care bed, residents should have access to stroke rehabilitation services as clinically indicated and based on the stroke survivor's goals through either ambulatory, outreach or CCAC if it is not available in-house. (Evidence Level 3)	i. Median number of days spent as ALC during acute inpatient hospitalization following an acute stroke event. ii. Frequency (# visits), duration (length of each visit), and intensity (total # weeks of therapy) of therapies received from rehabilitation professionals while in a LTC Home, CCC unit or ALC bed. Report by stroke severity measure.	Homecare database for LTC homes Many LTC homes are collecting data locally to track rehab services For CCC, the MDS-RAI will be used	• There are large variations in rehabilitation access in LTC, CCC and ALC across settings and across geographic regions. • In addition, documentation of rehab services in these settings is inconsistent. • Need to establish mechanisms to collect reliable and consistent data across the province on rehab services provided in these settings.
Standard #16: Stroke survivors who are discharged to the community with home-based stroke rehabilitation services will be provided with these services as per available evidence-based guidelines. (Evidence Level 3)	i. Percentage of stroke patients discharged to the community who receive a referral for outpatient or home based-community rehabilitation prior to discharge from acute and/or inpatient rehabilitation hospital – referrals may include either facility-based	Local chart audits, stroke registries Program-specific databases Homecare database (CCAC)	• Documentation of rehab services in these settings is inconsistent. • Need to establish mechanisms to collect reliable and consistent data across the province on rehab services provided in these settings.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
	or community-based programs (include definitions of program type in presenting data). ii. Frequency and duration/intensity of therapies received from rehabilitation professionals while in an outpatient or community rehabilitation setting following stroke. iii. Percentage change in functional status using a standardized measurement tool, from time of admission to a community, ambulatory or home-based rehabilitation program for stroke patients, to the time of discharge – need to track this outcome against intensity of therapy. iv. Median length of time between referral for community-based rehabilitation to admission to a community rehabilitation program. (Need to identify whether outpatient, day hospital or community based CCAC rehab – and include wait times for each of these).		

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Standard #17: Interprofessional teams will facilitate linkages for stroke survivors and their family/caregivers after discharge to services in the community including: • Physical help, caregiver training and education, and psychosocial counselling, where needed. (Evidence Level 1); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a) • Access to primary care practitioners, case management or other system navigation service, respite care, educational opportunities, emotional help, wellness, vocational counselling, access to stroke resources, driving safety evaluation, transportation services, peer support groups, community re-integration services, prevention clinic/services and financial support, where needed. (Evidence Level 3); (adapted from HSFO 14, 18, 19 and CSS BPR 6.1a)	i. Percentage of stroke patients with documentation that information was given to patient/family on: formal/informal educational programs, care after stroke, available services, process to access available services, and what services are covered by health insurance. ii. Percentage of patients who return home following stroke rehab who require community support services (e.g., homecare or respite). iii. Proportion of patients who are discharged from acute care who receive a referral for outpatient programs, home-based care, or community supportive services. iv. Length of time from hospital discharge (following acute care or inpatient rehabilitation) to initiation of community support services. v. Frequency and duration of community support services received by stroke patients, stratified by the type of service provided. vi. Number of patients referred to a secondary prevention team by the rehabilitation team. vii. Percentage of readmissions to acute care for stroke related causes following discharge to	Local chart audits, stroke registries Program-specific databases Primary Care chart audits and databases Homecare database (CCAC)	• Documentation of rehab services in these settings is inconsistent. • Need to establish mechanisms to collect reliable and consistent data across the province on rehab services provided in these settings.

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
	the community (by stroke type). viii. Number of visits to primary care within specified time frames for stroke related issues. ix. Number of visits to an emergency department within specified time frames. x. Percentage of patients who return to the community from acute hospital stay or following inpatient rehabilitation who require admission to long term care/nursing home within 6 months/one year. xi. Median wait time from referral to admission to nursing home or long term care facility.		

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Timely Care. Time is Function.			
Standard #18: The wait time from when the stroke survivor is Rehab Ready and referred to rehabilitation services until the start of all appropriate rehabilitation services should be no more than: • Two business days for inpatient stroke rehabilitation, and • Five days for both ambulatory and home-based stroke rehabilitation. (Evidence Level 3)	i. Length of time from Rehab Ready to inpatient rehab admission. ii. Length of time from Rehab Ready to start of rehab interventions in acute care. iii. Proportion of patients who are discharged from acute care who receive a referral for home-based care/community supportive services. iv. Length of time from Rehab Ready to initiation of community support services. v. Length of time from hospital discharge (following acute care or inpatient rehabilitation) to initiation of community support services – stratified by service provider.	CIHI – NRS Local chart audits, stroke registries Program-specific databases Primary Care chart audits and databases Homecare database (CCAC)	• Documentation of rehab services in these settings is inconsistent. • Need a common reliable definition of Rehab Ready. • Homecare data is reliable; however, data from other community services may not be readily accessible or reliable. Need the CCAC wait time recorded by home care service provider/rehab professional. • Need to establish mechanisms to collect reliable and consistent data across the province on rehab services provided in these settings. • Documentation of Rehab Ready is not consistent across settings.
System Planning			
Standard #19: Each stroke region will have an explicit stroke rehabilitation service provision model in place in order to facilitate optimal and timely access to rehabilitation services. (Evidence Level 3)	i. A regional service provision model is in place and available. ii. Number of regions who can demonstrate development and implementation of rehabilitation plan. iii. Number of stroke regions who demonstrate regular review and updates of rehabilitation plans.	Local settings and regions – through targeted survey Review of Regional Stroke work plans	• A minimal set of objective criteria should be created for determination is a sufficient plan has been developed. • This could be subjective. • Should align with broader LHIN service plans.
Standard #20:	i. Annual incidence and prevalence	Local settings and regions –	• A minimal set of objective criteria

Stroke Rehabilitation System Consensus Panel Standard	Performance Measures	Data Sources	Comments (Data quality, gaps, resource issues, etc.)
Clinical and service utilization data will be used to plan, coordinate, integrate and prioritize regional stroke rehabilitation services and ensure equitable access based on patient need. (Evidence Level 3)	rates for stroke in Ontario. ii. Annual profiles of stroke populations within regions, LHINs and other relevant groupings. iii. Availability of consistent and reliable data on rehabilitation service delivery for stroke patients by region though a comprehensive stroke surveillance system. iv. Also, see measures for Standard 13 as well.	through survey Provincial/national surveillance systems	should be created for determination that a sufficient plan has been developed. • Development of a surveillance system that addresses incidence, prevalence, risk factors, mortality and other related measures across the continuum and across the province is required for adequate planning and prioritizing of services based on population need. • This also needs to look at patient flow, service availability and gaps in regions and LHINs. • Should align with broader LHIN IHSPs.

APPENDIX O: Excerpts from "A Blueprint for Stroke Rehabilitation"

Dr. Teasell, with support from the Canadian Stroke Network, led a review of the most current evidence for stroke rehabilitation, which is documented in *A Blueprint for Stroke Rehabilitation* (the Blueprint).[108] The Blueprint was provided to the Panel for consideration in drafting its final report. Much of the material presented below is adapted from that document.

Each of the four elements and the associated potential financial savings are described below. To illustrate the potential benefits and incremental costs, the Blueprint bases its examples on a hypothetical 20-bed stroke rehabilitation unit serving a population of 375,000 people and admitting 160 stroke survivors per year.

The reader should note that the incremental savings and costs presented in the following sections pertain only to the services noted within a 20-bed stroke rehabilitation unit, and are not intended to be a comprehensive assessment of the total benefits and costs of implementing the Panel's recommendations. These examples are merely illustrative of the potential for financial benefits of a more rigorous approach to stroke rehabilitation.

The reader is also cautioned that these benefits are not necessarily additive. For example, if the average length of stay in an inpatient rehabilitation unit is reduced due to one change (e.g., providing specialized stroke care), then the reduction in the length of stay from another change (e.g., early admissions) may or may not be realized. No research has been conducted on the potential benefit when these strategies are combined.

The financial scenarios are illustrated for four proposed changes to the stroke rehabilitation system:

- Timely admission to stroke rehabilitation,
- Intensive provision of therapies,
- Specialized interdisciplinary stroke rehabilitation units, and
- Outpatient treatment.

Timely Admission to Stroke Rehabilitation

If sufficient capacity is available to admit stroke survivors as soon as they are Rehab Ready instead of waiting until a bed becomes available, the average length of stay in an acute inpatient bed could be reduced significantly. Assuming the average waiting period for inpatient rehabilitation could be shortened by one week, the estimated value of the inpatient days that would become available for other patients is $840,000 per year per 20-bed unit, as illustrated in Table N-1.

[108] Teasell R, Evans M, Jutai J, Foley N, Salter K. (2006, October). A blueprint for stroke rehabilitation: Improving outcomes and maximizing efficiencies. Prepared for the Canadian Stroke Network.

The cost of creating the inpatient capacity to accept patients more quickly would depend on the unique circumstances of any given unit (e.g., whether there were any vacant or underutilized rehabilitation beds available or not).

Table N-1: Net Benefit of Timely Rehabilitation in a 20-bed Stroke Rehabilitation Unit

	Conventional Rehabilitation Unit	Specialized Stroke Rehabilitation Unit	Value of capacity ($000s)
Number of beds	20	20	
Stroke rehabilitation inpatients (#/year)	160	160	
Decreased length of acute inpatient hospital stay			
Mean time from to rehabilitation admission (days)	14	7	
Cost per patient day in acute care ($)	750	750	
Cost of waiting for inpatient stroke rehabilitation ($000s)	1,680	840	840
Expected cost of providing needed capacity			Not provided
Net benefit of timely rehabilitation			Not provided

Intensive Provision of Therapies

The Blueprint further describes how more intensive therapy can shorten the length of time that the stroke survivor stays in the inpatient unit. Based on a 20-bed illustration where the length of stay is shortened by from 40 days to 32 days (e.g., by providing services seven days per week), the estimated annual value of the capacity that becomes available for other patients is $640,000, as shown in Table N-2.

The Blueprint estimates that an increase of 50% in the provision of core therapies (i.e., physiotherapy, occupational therapy and speech-language therapy) could allow more intensive therapy for stroke survivors and the provision of therapy on weekends.

Assuming an average increase of about one hour of therapy per day throughout the patient's stay (i.e., $50 per day per patient), the Blueprint estimated the incremental cost of a higher intensity of therapy at $2,000 per patient for a 40-day length of stay in the stroke rehabilitation unit. Assuming a 20-bed unit with 160 stroke survivors per year, the incremental annual cost would be about $320,000.

Table N-2: Potential Value of Intensive Therapy

	Conventional Rehabilitation Unit	Specialized Stroke Rehabilitation Unit	Value of capacity ($000s)
Number of beds	20	20	
Stroke rehabilitation inpatients (#/year)	160	160	
Decreased length of rehabilitation inpatient hospital stay			
Mean length of stay (LOS) in stroke rehabilitation (days)	40	32	
Cost per patient day ($)	500	500	
Total cost of inpatient stroke rehabilitation ($000s)	3,200	2,560	640
Expected cost of providing intensive therapy			320
Net benefit of intensive therapy			320

Specialized Interdisciplinary Stroke Rehabilitation Units

The benefits of a specialized interdisciplinary stroke rehabilitation unit are well documented in the literature. The value of the beds freed up through shorter lengths of stay is estimated to be $800,000 each year per 20-bed unit through shorter rehabilitation hospital stays. The decreased cost to the health care system of institutionalization for some stroke survivors (six in this example) is about $1 million over the average four-year life expectancy of the stroke survivors.

The assumptions and calculations supporting this estimate are provided in Table N-3. The supporting literature is described in Chapter 2 of the Blueprint.

The specialized expertise and care in a dedicated stroke unit would require incremental hours of some rehabilitation professionals over and above what might be expected in a general rehabilitation unit. The specific costs would depend on the current situation of each rehabilitation unit (e.g., the current mix of rehabilitation professionals on the unit, the current level of expertise of the existing staff).

Table N-3: Potential Annual Savings Due to the Impact of a Dedicated Stroke Inpatient Rehabilitation Unit

	Conventional Rehabilitation Unit	Specialized Stroke Rehabilitation Unit	Value of Capacity ($000s)
Number of beds	20	20	
Stroke rehabilitation inpatients (#/year)	160	160	
Decreased length of rehabilitation inpatient hospital stay			
Mean length of stay (LOS) in stroke rehabilitation (days)	40	30	
Cost per patient day ($)	500	500	
Total cost for inpatient stroke rehabilitation ($000s)	3,200	2,400	800
Decreased cost of institutionalization			
Cost of institutional care ($/day)	118	118	
Cost of institutional care ($/yr)	43,000	43,000	
Average survival post-stroke (yrs)	4	4	
Stroke survivors who would be institutionalized from conventional unit but discharged to the community from a specialized unit (#/year)	6	0	
Total cost of institutional care	1,032	-	1,032
Total potential value			1,832
Expected cost of providing a specialized stroke unit			Not provided
Net benefit of intensive therapy			Not provided

Outpatient Treatment

The length of stay in the stroke rehabilitation unit can be shortened while the therapies continue in the community if effective and accessible stroke rehabilitation therapies are available in the community. These therapies have also been found to reduce the number of inpatient readmissions to acute care. The estimated value of the inpatient beds that could become available through timely discharge (e.g., through early supported discharge) to the community is estimated to be $100,000 per year, based on a savings of two days per stroke survivor. Appropriate outpatient treatment is also assumed to result in decreased readmissions to acute care, providing a value of $300,000 for the unused acute care beds, as shown in Table N-4.

Early supported discharge can be achieved with an investment in therapies that are made available to the stroke survivor post-discharge. Dr. Teasell has described an outpatient stroke rehabilitation program that would provide eight weeks of two hours of therapy, three days per week.

At an estimated cost of $45 per hour for each therapy, the total cost would be $2,160 per patient. Assuming a 20-bed unit with 160 stroke survivors per year, the incremental annual cost of effective outpatient stroke rehabilitation therapy for stroke survivors discharged from a 20-bed inpatient rehabilitation unit would be $345,600.

Table N-4: Potential Annual Savings in a 20-bed Unit with Early Supported Discharge

	Conventional Rehabilitation Unit	Specialized Stroke Rehabilitation Unit	Value of Capacity ($000s)
Number of beds	20	20	
Stroke rehabilitation inpatients (#/year)	160	160	
Stroke rehabilitation inpatients discharged to community	100	100	
Decreased length of rehabilitation inpatient hospital stay			
Mean length of stay (LOS) in stroke rehabilitation (days)	40	38	
Cost per patient day ($)	500	500	
Total cost of inpatient stroke rehabilitation ($000s)	2,000	1,900	100
Decreased number of hospital readmissions			
Mean length of stay (LOS) for readmissions to acute (days)	4	0	
Cost per patient day ($)	750	750	
Total cost of acute inpatient stay ($000s)	300	-	300
Total value of unused capacity ($/year)			400
Expected cost of providing early supported discharge			346
Net benefit of early supported discharge			64

APPENDIX P: Panel Recommendations

Adopt the Standards

Recommendation 1: That the MOHLTC consider and adopt the standards outlined by the Ontario Stroke Rehabilitation System Consensus Panel as the framework for planning, developing, funding and monitoring Stroke Rehabilitation across Ontario.

Recommendation 2: That the Ontario Association of Community Care Access Centres consider, adopt and continue to develop the Community Stroke Best Practice Guidelines for the use by all 14 CCACs in Ontario.

Recommendation 3: That the Canadian Council on Health Services Accreditation (the CCHSA) consider the incorporation of the Ontario Stroke Rehabilitation System Consensus Panel Standards into the accreditation framework and provide feedback to the Ontario Stroke System.

Create Needed Capacity to Deliver Stroke Rehabilitation

Recommendation 4: That, as an urgent first step, the Ministry of Health and Long-Term Care review all funding formulae to ensure they provide appropriate incentives to inpatient rehabilitation centres to accept patients with severe strokes.

Recommendation 5: That the Ontario Stroke System monitor progress in implementing the recommendations, support regional stroke programs to fulfill its role in implementation and advocate with the Ministry of Health and Long-Term Care and Local Health Integration Networks as necessary.

Develop Regional Systems

Recommendation 6: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing and implementing a plan based on the Panel's standards in order to meet the service needs of stroke survivors in their area.

Recommendation 7: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing a process for referral to the appropriate services and tracking where and when the appropriate service does not occur.

Recommendation 8: That each Stroke Region work in conjunction with its respective Local Health Integration Network(s) in developing stroke rehabilitation service capacity to meet the Panel's standards and in facilitating interorganizational agreements that support having the right person in the right place at the right time.

Take Action to Relieve the Human Resource Shortage

Recommendation 9: That the Health Human Resources Strategy Division of the Ministry of Health and Long-Term Care, in the development of the Health Human Resources Plan, ensure that the plan takes into account the need to:

- Improve the retention and incentives in order to keep new grads in Ontario and specifically in stroke rehabilitation.
- Increase the enrollment for the education of physiotherapists, occupational therapists, speech-language pathologists, nurses and physiatrists, physiotherapy assistants, occupational therapy assistants and communicative disorders assistants across Ontario.
- Explore alternative approaches to building rehabilitation teams.
- Support the development of knowledge translation strategies for stroke rehabilitation professionals to develop and maintain expertise in stroke rehabilitation.
- Encourage educational institutions to endorse and deliver interprofessional education.

Facilitate Evaluation and Research

Recommendation 10: That the Ministry of Health and Long-Term Care support the development of an indicator framework and establish a provincial stroke rehabilitation service database that supports the integration of stroke rehabilitation services along the continuum of care.

Recommendation 11: That the Ministry of Health and Long-Term Care support continued research in stroke rehabilitation, particularly regarding the benefits of providing inpatient rehabilitation seven days per week.

List of Abbreviations

2000 Consensus Panel	2000 Stroke Rehabilitation Consensus Panel
ALOS	Average length of stay
CCAC	Community Care Access Centre
CCC	Complex Continuing Care
CDA	Communication Disorders Assistant
CDPM	Chronic Disease Prevention and Management
CIHI	Canadian Institute for Health Information
CLTC Specialist	Community and Long-Term Care Specialist
CSN	Canadian Stroke Network
CSQCS	Canadian Stroke Quality of Care Study
CSS	Canadian Stroke Strategy
CSS BPR or Canadian Best Practice Guidelines	Canadian Stroke Strategy Best Practice Guidelines
DAD	Discharge Abstract Database
EBRSR	Evidence-based Review of Stroke Rehabilitation
FIM™	Functional Independence Measure
HAA	Hospital Accountability Agreement
HAPS	Hospital Annual Planning Submission
HSFC	Heart and Stroke Foundation of Canada
HSFO	Heart and Stroke Foundation of Ontario
HSFO BPG	Heart and Stroke Foundation of Ontario Best Practice Guidelines
LHIN	Local Health Integration Network
LOS	Length of stay
LTC	Long-Term Care
LTC Home	Long-Term Care Home
MD	Medical Doctor
MDS	Minimum Dataset
MOHLTC	Ministry of Health and Long-Term Care
NACRS	National Ambulatory Care Reporting System
NRS	National Rehabilitation Reporting System
OHA	Ontario Hospital Association
OHA Council	Ontario Hospital Association Complex Continuing Care and Rehabilitation Provincial Leadership Council
OHIP	Ontario Health Insurance Plan
OSS	Ontario Stroke System (formerly the Ontario Stroke Strategy)
OT	Occupational Therapy or Occupational Therapist
OTA	Occupational Therapy Assistant

PSW	Personal Support Worker
PT	Physiotherapy or Physiotherapist
PTA	Physiotherapy Assistant
RAI-HC	Resident Assessment Instrument Home Care
RCSN	Registry of the Canadian Stroke Network
RCT	Randomized control trial
RD	Registered Dietitian
REPS	Rehabilitation Education Program for Stroke
RN	Registered Nurse
RPN	Registered Practical Nurse
SCORE	Stroke Canada Optimization of Rehabilitation through Evidence
SCRIPT	Stroke Coordinated Referral Initiative Pilot
SEAC	Stroke Evaluation Advisory Committee
SLP	Speech-Language Pathology or Speech-Language Pathologist
SW	Social Work or Social Worker
The Panel	2007 Stroke Rehabilitation System Consensus Panel
TIA	Transient ischemic attack
t-PA	Tissue plasminogen activator