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network

Advancing the Ontario Stroke System

Community Stroke Rehabilitation Models in Ontario

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Executive Summary

Post-acute stroke care in Ontario has changed dramatically over the past several years. The rising prevalence of stroke related disabilities requiring rehabilitation, and the introduction of the Canadian Best Practice Recommendations for Stroke Care, has identified a number of gaps in rehabilitation services across the province. In response to these service inequalities, a number of community and home-based stroke rehabilitation programs have been implemented. Recent changes in health care funding structures have resulted in the development of a number of additional community-based rehabilitation models and pathways. Future models may be able to draw on the experiences and lessons learned of existing and currently emerging programs, to ensure success and enhance care for stroke patients across the province.

This project was undertaken to amalgamate the knowledge and lessons learned from the development, implementation, and successes of existing and emerging programs in an attempt to inform and guide the development of future models. This document aims to inform health system planners, hospital and Community Care Access Centre directors, Ministry of Health and Long Term Care bodies, Local Health Integrated Networks, and other individuals working within the stroke system, of the ongoing work of these established programs and the experiences learned from the planning and implementation of new models across the province. Through the assistance of an advisory committee of individuals working in stroke care across Ontario, resources, knowledge, and information on existing programs were brought together to develop this resource. Program structures, elements, challenges, and successes, were examined and summarized in an effort to help inform the development, and ensure the success of, future community based stroke care models.

Four established models were identified: the South East LHINs Enhanced CCAC program, the South West LHINs Community Stroke Rehabilitation Teams, the Waterloo Wellington LHINs CCAC Stroke Program, and the Haldimand-Norfolk and Brant Community Stroke Rehabilitation Model. Existing home-based stroke care models in Ontario have a number of similarities in programs structures, with three of the four being Community Care Access Centre (CCAC) based. All programs offer Physiotherapy, Occupational Therapy, and Speech Language Therapy as their core disciplines, with Social Work, nursing, and recreational therapy also being offered in some programs. All programs aim to meet Canadian Best Practice Recommendations for Stroke by providing similar intensities and duration of rehabilitation services (2-3 visit/week per discipline for 8-12 weeks). Perhaps most important is the agreement in lessons learned by these programs. The importance of program monitoring and evaluation, stroke expertise in care providers, consistent and timely communication, community partnerships, and a patient centred focus were frequently cited as being important elements to success.

With a number of emerging models across the province, both in the early implementation and development stages, and the inevitable development of additional future models, it is the hope that the information contained in this document will be of value in guiding and informing the success of future community and home-based stroke rehabilitation programs.

Glossary of Terms

CCAC	Community Care Access Centres
OT	Occupational Therapy
PT	Physiotherapy
SLP	Speech Language Pathology
RN	Registered Nurse
SW	Social Worker
CBPR	Canadian Best Practice Recommendations for Stroke
QBP	Quality Based Procedures
RT	Rehabilitation Therapist
LTC	Long Term Care
LHIN	Local Health Integration Networks

Introduction

Epidemiology of Stroke

Over 25,500 Ontarians are affected by stroke each year.¹ With an aging population, and better acute stroke care, more individuals are expected to survive their stroke event. The majority of these individuals will have resulting impairments, many of which will require ongoing rehabilitation.² As such, stroke is the leading cause of long-term disability in Ontario.¹

The effects of stroke may include persisting physical disabilities, depression and anxiety, problems with language and communication, perceptual deficits, and decline in cognitive abilities, memory, and executive functioning.³ With ongoing rehabilitation, the majority of these deficits can be improved. In the majority of instances, recovery begins in the acute phase, followed by post-acute care in inpatient rehabilitation. For many individuals, this recovery is an ongoing process that requires rehabilitation long past the acute and post-acute phases of stroke. Specialized stroke rehabilitation has been demonstrated in hundreds of studies to improve functional and psychosocial outcomes.⁴ Furthermore, ongoing stroke rehabilitation throughout the recovery process has demonstrated the ability to reduce overall morbidity, mortality, and rates of institutionalization.⁴ The Evidence Based Review of Stroke Rehabilitation (EBRSR)⁴ cites over 1300 Randomized Controlled Trials (RCT) that evaluate therapies for deficits caused by stroke. Many more observational studies also exist, further supporting the case for organized and specialized stroke rehabilitation at all points in the stroke recovery process.

Home-Based Stroke Rehabilitation

Ongoing stroke rehabilitation can take place in a variety of settings including hospital outpatients, other outpatient clinic settings, and community centres. Interdisciplinary, home-based stroke rehabilitation has become an area of increasing interest and, as such, has been well studied. Numerous randomized controlled trials have demonstrated the ability of home-based stroke therapy to significantly improve physical, social, and psychosocial outcomes in patients similar to what has been observed in traditional, hospital-based outpatient programs.⁵ Although program structures, processes, and outcomes assessed in these studies often vary widely, the majority have demonstrated the efficacy of providing therapy in one's home.⁵ Several of these studies were able to demonstrate an added benefit of home based rehabilitation at improving patient satisfaction with services, caregiver outcomes, and enhancing the ability to translate rehabilitation goals into everyday living.⁶⁻⁸ Home-based stroke rehabilitation has also been shown to significantly improve patient outcomes in three Ontario based studies, including one Randomized Controlled Trial, indicating its applicability and effectiveness in a Canadian health care system context.⁹⁻¹²

The Canadian Best Practice Recommendations for Stroke

Ongoing rehabilitation following stroke is essential for continued improvement. It is estimated that less than 10% of stroke survivors will make a full recovery, with the remaining majority requiring some degree of ongoing rehabilitation.¹³ [The Canadian Best Practice Recommendations for Stroke \(CBPR\)](#) were introduced in an effort to help inform regional stroke systems about evidence-based stroke

practices in an effort to standardized stroke care.¹⁴ Recommendations are updated periodically, relying on the newest empirical evidence including studies of high methodological quality, and recommendations are supported by working groups of experts. The rehabilitation section of the CBPR are specific to inpatient, outpatient, and community-based rehabilitation, and embrace a multidimensional approach to recovery.

The CBPRs state that individuals with ongoing needs “should continue to have access to specialized stroke services after leaving hospital” and that “[o]utpatient and/or community-based rehabilitation services should be available and provided by a specialized interprofessional team [...]”.¹⁵ However, many individuals in Ontario do not have access to rehabilitation following discharge from hospital. In 2014, 35% of stroke survivors in Ontario were discharged home without any further rehabilitation services.¹⁶ This number may be even higher in more rural and remote areas. Furthermore, many individuals who did receive rehabilitation were not able to access the recommended intensity or were subjected to long wait lists for services.¹⁶ In many other cases, further rehabilitation is not accessible due to issues of mobility, transportation, or geographical limitations. New, innovative home-based rehabilitation programs aim to help fill this service gap.

Following introduction of the CBPRs, meetings of Rehabilitation Consensus Panels, stakeholder focus groups, and the development of Stroke Report Cards, provincial stroke regions across Ontario began to develop and pilot community programs to address gaps in stroke rehabilitation services. This ultimately led to the development of several programs with a home-based rehabilitation focus. These program strive to meet best practice recommendations for providing rehabilitation in the home setting, including provision of an interdisciplinary team and a sufficient intensity of rehabilitation visits. Although these programs strive to fill a service gap in the geographical areas they cover, there are many areas in the province without services that would be well suited to support a home-based stroke rehabilitation program, as well additional community based stroke resources.

Quality Based Procedures

The introduction of [Quality Based Procedures \(QBP\)](#) has provided further impetus for the development and implementation of new stroke pathways across the province. These QBPs were implemented as part of health care funding reform and reimburse health care providers based on the type and quality of care delivered.¹⁷ They aim to encourage process improvement, clinical redesign, improved patient outcomes, enhanced patient experience, and have the potential for health care system cost savings based on best practice recommendations. The QBPs for stroke care were released in 2013, with a Phase II focusing on community treatment introduced in 2015. The emphasis of the Phase II QBPs is early, interprofessional intervention, with continuity of care across the continuum.

The introduction of the phase II QBPs for stroke has influenced in the development of a number of stroke programs in provincial stroke regions that aim to provide more equitable community based rehabilitation including improved access to outpatient rehabilitation and home-based services.

Objectives and Rationale

Many areas across the province have begun planning the redesign of existing, and introduction of additional, community and home-based stroke resources. The initiation and development of such a program can be complex and daunting. Fortunately, the presence of currently existing home-based programs within the province offers an opportunity to draw on the successes, challenges, and evidence base surrounding these programs, as well as to access the expertise of the people who have made their existence and continued success possible.

This project aims to amalgamate the knowledge learned from the development and success of current specialized, home-based stroke rehabilitation programs in the province of Ontario. By chronicling the development of these programs, and providing complete descriptions of structures, elements, and details of program progression and evolution, we will be better able to paint a comprehensive picture of community-based stroke care within the province. This information will be used to develop a resource for health system planners, hospital and Community Care Access Centre directors, Ministry of Health and Long Term Care bodies, Local Health Integrated Networks, and other individuals working within the stroke system, aiming to develop similar programs specifically tailored to better support stroke rehabilitation in their communities. This document aims to inform of the ongoing work of these established programs and the experiences learned from the planning and implementation of new models across the province.

Methods

The development and redesign of stroke services across the province with a greater emphasis on community based stroke care has drawn attention to a need for a resource that brings together all of the existing resources and knowledge from established programs.

A number of individuals from across the province with knowledge and expertise in stroke care were invited to join an advisory group to inform this project. Many of these individuals are involved with existing and emerging models, and have firsthand experience in development and ongoing management of these community based stroke programs. The role of the advisory group was to facilitate connections with key individuals, assist with identification of existing and emerging models, provide information on these models, and to inform the end deliverable. The group has met several times over the project period (August 2015-March 2016) to discuss the project and guide progress.

With the assistance of the advisory group, a number of documents including funding proposals, power point presentations, flow charts of program redesigns, program summary sheets, published manuscripts, and reports (i.e. pilot, progress, program evaluations) were collected by the project lead. These documents were used to inform an overview of each model, incorporating all available information, as well as to identify all existing and emerging models.

Following compilation of program materials, a number of gaps in information common to each program were identified. As such, a questionnaire was developed and administered to key program contacts and stakeholders in an attempt to fill in these gaps. Much of this information related to lessons learned in

the development, implementation, and progression of each program, as well as identification of any past and present challenges experienced, and application of the model to the local context. Phone calls were then scheduled between the project lead and key program contacts to further discuss some of the details of these programs and the main lessons learned.

Description & Analysis of Programs

For organizational purposes of this toolkit, models were classified into three categories:

1. **Established program:** Programs that have been in place for >1 calendar year (including pilot phase) and have sufficient information available to inform discussion and comparison between the models. The identified established programs are:
 - The South East (SE) LHINs Enhanced CCAC Stroke Program
 - The South West (SW) LHINs Community Stroke Rehabilitation Teams
 - The Waterloo Wellington (WW) LHINs CCAC Stroke Program
 - The Haldimand, Norfolk, & Brant (HN&B) Community Stroke Rehabilitation Model

2. **Emerging models:** Newly developed models that have not yet been implemented, or are in the pilot stages of implementation. The identified emerging models are:
 - The Northeastern Ontario Stroke Network Outpatient Model of Care
 - North Simcoe Muskoka's Integrated Stroke Program Model
 - The Champlain CCAC Community Stroke Rehabilitation Program
 - The Toronto Stroke Network – Community Model of Care

3. **Other programs of interest:** Programs that have either been implemented, or are in the pilot phase, but do not fully meet CBPR for community rehabilitation, or had insufficient information available to inform comparison with other established programs. Review of these programs is still valuable as they are a step towards meeting CBPRs. The identified other programs of interest are:
 - The North Western Ontario: Speech Language Pathology Tele-rehabilitation Pilot
 - Mississauga Halton's CCAC Stroke Program
 - North Simcoe Muskoka's CCAC Stroke Pathway

A checklist of program elements was developed in order to facilitate a quick side by side comparison of models. Checklist items were based on existing QBP informed by the [Quality Based Procedures: Clinical Handbook for Stroke \(Acute and Post Acute\)](#). Included items and item descriptions (Appendix B) were developed through discussion with the advisory group. Checklists were completed by each individual program, and comments included allowing for elaboration and explanation of elements in the context of each model, when applicable. Checklist items were applied to all models. Emerging model checklists were completed in terms of proposed elements.

For established programs, model elements were summarized and key components compared and contrasted. Common challenges and lessons learned were also amalgamated. Detailed information of program elements was presented in tables for side by side comparison.

Established Models

Checklist of Program Elements

Checklist Items*	Clinical Handbook Reference
1. Integration of the Community Stroke Rehab model into stroke care pathway	6.1-6.5
2. Dedicated care coordinator	9.4.4, 9.4.5, 9.4.7
3. Time to first visit within 48-72 hours following hospital discharge	9.2.2
4. Care pathway based on best practice standards: 2-3 outpatient or community-based allied health professional visits/week (per required discipline) for 8-12 weeks	9.5.1 (OT), 9.6.2 (PT), 9.7.2 (SLP)
5. Dedicated care team with core disciplines	9.4.1
6. Regular interdisciplinary team meetings	9.4.2
7. Qualifications of Stroke Team Members (stroke expertise)	9.4.3, 10.4.1
8. Standardized reporting and outcome assessment	10.1.1, 10.1.4
9. Early supported discharge	7.2-7.3

*For details of each checklist item, see Appendix B

Checklist of Program Components - Established Models

Item	1	2	3	4	5	6	7	8	9
South East LHINs Enhanced CCAC Program	✓	✓*	x*	✓	x*	x*	✓	x*	N/A
South West LHINs Community Stroke Rehabilitation Team	x*	✓	p*	✓	x*	✓	✓	✓	N/A
Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model	✓	✓	✓	✓	x*	x*	✓	✓	N/A
Waterloo Wellington CCAC Stroke Program	✓	✓	✓	✓	x*	✓	✓	x*	N/A

✓, meets criteria; x*, does not meet criteria; P, progressing towards; *, see comment section; CCAC, Community Care Access Centres

Comments:

Program	Item #	Comment(s)
South East LHINs Enhanced CCAC Program	2	Regular CCAC care coordinator functions, not stroke specific and not a dedicated resource or part of funding envelope for service
	3	Target to first visit within 5 days, Current Mean is 4 days
	5	At this time, the core team does not include services of a nurse, therapeutic recreation specialist, therapy assistants, primary physician, pharmacists, psychologist or registered dietician, however, team members will facilitate connection and liaise with these care providers
	6	Not a standardized, mandatory part of service delivery
	8	Service metrics only, client outcomes not part of reporting
South West LHINs Community Stroke Rehabilitation Team	1	There is no existing process in place for connection with the inpatient care team, however, this may change in the future with consolidation of stroke services to fewer centres. Due to wait list, contact with the client is not always made within 48 hours of discharge home
	3	Currently, the time to first visit is 2-30 days, depending on the location of the referral/which team. This is due to an overwhelming demand for services and existing wait lists. Recent funding enhancements will help relieve much of this wait list issue.
	5	At this time, the core team does not include services of a primary physician, pharmacists, psychologist or registered dietician, however, team members will facilitate connection and liaise with these care providers
Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model	5	At this time, the core team does not include services of a nurse, social worker, therapeutic recreation specialist, therapy assistants, primary physician, pharmacists, psychologist or registered dietician, however, team members will facilitate connection and liaise with these care providers when required
	6	Team members make themselves available during pre-arranged times for discussions of patients. Regularly scheduled meetings were held throughout most of the pilot
Waterloo Wellington CCAC Stroke Program	5	At this time, the core team does not include services of a nurse, therapeutic recreation specialist, primary physician, pharmacists, or psychologist, however, team members will facilitate connection and liaise with these care providers
	8	The Depression Rating Scale is an outcome of the RAI-HC, and would be used by the CC to prompt for further investigation.

Summary of Program Elements

Program	South East LHINs Enhanced CCAC Program	South West LHINs Community Stroke Rehabilitation Team	Waterloo Wellington CCAC Stroke Program	Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model
Implementation Date	2009	January 2009	2013 (Phase I)	Pilot began December, 2013
Area Served	South East LHIN	South West LHIN	Waterloo Wellington LHIN	Brant and Haldimand-Norfolk Counties of the HNHB LHIN
Client Eligibility	<ol style="list-style-type: none"> 1. 16 years old 2. Have experienced a recent stroke or stroke diagnosis 3. Eligible for CCAC in the community <u>or</u> LTC 4. A resident of the South East LHIN 5. Have identified rehab needs 	<ol style="list-style-type: none"> 1. Adult stroke survivor (>18 years) 2. Ongoing rehabilitation needs 3. Attainable goals 4. Rehabilitation needs best met in the home and community 5. Unable to access sufficient outpatient services 6. Willing and motivated to participate in rehabilitation 	<ol style="list-style-type: none"> 1. Adult stroke survivor (>18 years) 2. Recent stroke 3. Ongoing rehabilitation needs 4. Rehabilitation needs are best met in the home 5. Travel to outpatient program >30 minutes 6. Discharged from hospital in Waterloo-Wellington 	<ol style="list-style-type: none"> 1. Live >30 min drive to specialized clinical based OP stroke rehab 2. Does not have the tolerance to travel 30 mins and participate in therapy 3. Triage based on assessment in acute care
Referral Volumes	270 clients (FY 2014/2015)	630 clients (2015)	163 (FY 2014/2015)	33 clients in the pilot model
Management Structure	CCAC Managed Program	Three individual teams, each with an on-site manager; Central management from a program coordinator	CCAC Care Coordinators oversee client cases	2 CCAC Care Coordinators oversee client case
Services Provided (Definitions of disciplines can be found in Appendix C)	Physiotherapy, Occupational Therapy, Speech Language Pathology, Social Work *supported through usual care coordination model within CCAC	Physiotherapy, Occupational Therapy, Speech Language Therapy, Registered Nurse, Social Work, Therapeutic Recreation Specialist, Rehabilitation Therapist	Occupational Therapy, Physiotherapy, Speech Language Therapy, Social Work, Rehabilitation Assistants, Dietician	Physiotherapy, Occupational Therapy, Speech Language Pathology
Intensity of Services Provided	1-3 visits/ week for first 4 weeks 1-2 visits/ week second 4 weeks (according to discipline)	2-3 visits/ week from each required discipline	45 min – 3 hour long therapy visits, 3-5x/ week	2-3 visits/ week from each discipline
	Average visit rate: Acute Referrals (2014-2015): PT 6.0; OT 6.4; SLP 4.7; SW 4.6 Rehabilitation Referrals (2014-2015): PT 8.9; OT 7.5; SLP 6.9; SW 3.2	Average # of visits (2012-2015): PT 4.8; OT 4.7; SLP 4.6; RN 3.2; SW 4.0; TRS 4.6; RT 9.7 Total = 25.6	Median 3.0 (range 3.0-5.0) visits/ week Average # of visits from PT, OT and SLP = 28.5	Average # of visits: PT 14.9; OT 12.4; SLP 14.0 Total = 33.7

Program	South East LHINs Enhanced CCAC Program	South West LHINs Community Stroke Rehabilitation Team	Waterloo Wellington CCAC Stroke Program	Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model
Duration of Services	Up to 8 weeks (up to 12 weeks for Social Work). Clients may continue to receive ongoing CCAC rehab (and other) services outside of the Enhanced Rehab Program.	56-84 days (8-12 weeks)	Up to 12 weeks	8-12 weeks
Wait time for Services	Discharge to first therapy visit (2014-2014) Target =5 days Median = 4 days	Referral to intake/assessment visit: Target = 7 days Mean = 17.2 days *note: current target is <7 days as a result of wait lists Future target will be 2 days (acute), 3 days (rehab)	Discharge to first visit : Target = 2 days Median = 1 day	Discharge to First CCAC coordinator visit: Target = 3 days Mean = 4.1 days First therapy visit: Target = 3 days Mean = 3.3 days
Routine Outcomes Measured	No routine outcomes collected (discipline specific only)	Functional Independence Measure® Reintegration to Normal Living Index Bakas Caregiver Outcomes Scale Patient Health Questionnaire-9	No routine measures currently collected for evaluation (discipline specific only)	Functional Independence Measure® Reintegration to Normal Living Index
Functional				
Program	Discharge to first therapy visit Average number of visits/ discipline Percentage of clients referred to each discipline Referral source Discharge Link meetings Qualitative caregiver/ client satisfaction	Referral volumes Wait times (discharge to first contact, discharge to first visit) Length of stay Number of visits per discipline Number of clients receiving services from each discipline Annual client/ caregiver satisfaction survey	Hospital re-admission rates Inpatient rehabilitation length of stay Number of clients served Percentage of patients receiving each service Number and length of visits Client satisfaction survey	Referral volumes Wait times (discharge to first visit) Length of stay Number of visits per discipline Number of clients receiving services from each discipline 30 day readmission rate Percent of clients meeting goals Client satisfaction survey
Communication Strategies	Discharge link* meetings take place between hospital and community providers to discuss client progress and goals. Care Planning meeting in LTC supported by community OT.	Minimal communication with hospital inpatient team	Discharge Link* meetings between inpatient and community care teams prior to discharge	Discharge Link* meeting between inpatient and community teams, Available 'just in time' call time from the inpatient team to the community team prior to first home visit
With Inpatient Team				

Program	South East LHINs Enhanced CCAC Program	South West LHINs Community Stroke Rehabilitation Team	Waterloo Wellington CCAC Stroke Program	Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model
(Communication Strategies cont...) Between Community Team Members	Community therapy providers communicate as needed	Weekly rounds, communication between clinicians as needed, joint client visits	Meetings take place as needed between providers Interprofessional care conference at 3 weeks post discharge	Community therapy team members communicate and meet as necessary
Discharge Criteria	Achievement of rehabilitation goals, 8 weeks in the program (12 weeks for SW). Clients may continue to receive ongoing CCAC rehab (and other) services outside of the Enhanced Rehab Program.	Achievement of goals, length of services <84 days	Attainment of goals, 12 weeks in program	Achievement of rehabilitation goals
Funding Source	Annual funding from the SE LHIN to SE CCAC	Annual funding from the SW LHIN	Waterloo Wellington LHIN	Within existing funding structure for CCAC Services
Main Challenges/ Solutions[†]	1.Change to a rehab focus for CCAC services: Education was provided to shift to a rehabilitation focus and encourage timely intervention 2.Building trust relationship with inpatient teams: Discharge Link meetings to support education and collaboration 3.Referrals (to program, to SW services, from LTC): Education of service providers, annual communiques, education sessions, annual meetings 4. Supporting stroke expertise: Supported education , shared work days, regional stroke education sessions	1. High referral volumes leading to long wait lists: Funding increases/ resource increases have helped alleviate some of this. 2. Interprofessional collaboration (between regulated/ unregulated professions): Joint visits, communication at weekly rounds 3. Community resources: Increase in adult day programs with a 'stroke day' 4. Funding/ reducing program costs: Joint visits, use of tele-rehabilitation for SLP	Not available	1.Discharge Link meetings not beneficial/ too late in process: Modification of process to include 'just in time' call time between inpatient and community teams 2.Data collection beyond pilot phase: Streamline data collection, collection most relevant and appropriate functional outcomes 3.Timing of client first visit may be overwhelming: Conduct first visit over the telephone, conduct joint visits with therapists to reduce overall number of visits

Program	South East LHINs Enhanced CCAC Program	South West LHINs Community Stroke Rehabilitation Team	Waterloo Wellington CCAC Stroke Program	Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model
Defining/ Unique Characteristic of Program	- See clients in LTC - Discharge Link meetings with inpatient team	- Dedicated team - Registered Nurse, Therapeutic Recreation Specialist and use of Rehabilitation Therapists - Weekly team rounds	- 24-hour on call access to therapists - Use of therapy assistants	- >80% consistency in providers - Implemented within existing funding structure
Full Program Details				

*Discharge Link meetings take place between the hospital inpatient therapy team and community therapy team (usually the Occupational Therapist). The purpose of these meetings is to discuss client progress, needs, and rehabilitation goals to help ensure continuity across the care continuum.

†For further details, please see 'Full Program Details' document(s)

Emerging Models

Checklist Items	Clinical Handbook Reference
1. Integration of the Community Stroke Rehab model into stroke care pathway	6.1-6.5
2. Dedicated care coordinator	9.4.4, 9.4.5, 9.4.7
3. Time to first visit within 48-72 hours following hospital discharge	9.2.2
4. Care pathway based on best practice standards: 2-3 outpatient or community-based allied health professional visits/week (per required discipline) for 8-12 weeks	9.5.1 (OT), 9.6.2 (PT), 9.7.2 (SLP)
5. Dedicated care team with core disciplines	9.4.1
6. Regular interdisciplinary team meetings	9.4.2
7. Qualifications of Stroke Team Members (stroke expertise)	9.4.3, 10.4.1
8. Standardized reporting and outcome assessment	10.1.1, 10.1.4
9. Early supported discharge	7.2-7.3

Checklist of Proposed Program Components

Items	1	2	3	4	5	6	7	8	9	Full details
Northeastern Ontario Stroke Network Outpatient Model of Care	U	U	U	✓	✓	U	✓	✓	✓	
North Simcoe Muskoka Integrated Stroke Program Model	✓	✓	✓	✓	*	✓	✓	✓	✓	
Champlain CCAC Community Stroke Rehabilitation Program	✓	✓*	✓	✓	✗*	✓	✗*	✓*	✗	
Toronto Stroke Network – Community Model of Care	N/A*									

✓, proposed element; ✗, not a proposed element; *, see comment section; U, unknown at this time

Comments:

Program	Item #	Comment(s)
Northeastern Ontario Stroke Network Outpatient Model of Care	1	This criterion will be considered when completing a more detailed discussion of the model.
	2, 3, 6	This criterion will be considered when completing a more detailed discussion of the model. We may look to our centralized outpatient intake service to fall in line with this criterion.
	5,7,8	Further discussion around details to occur
North Simcoe Muskoka Integrated Stroke Program Model	5	Core team will include at a minimum OT, PT, SLP.
Champlain CCAC Community Stroke Rehabilitation Program	2	Each client has a designated Client Care Lead who coordinates rehab care and liaises with the Community Care Coordinator. The Client Care Lead is assigned based on professional services required
	5	Core team consists of OT, PT, SLP and SW. Rapid Response Nurse provides service. Other services such as TRS, diabetic counseling health promotion specialists are available at the Community Health Centre where the clinic is located.
	7	Processes were put in place to develop stroke expertise. Due to small number of stroke clients in the area, it is not feasible for 80% of therapists' clients to be persons with stroke.
	8	Caregiver depression not formally monitored and assessed
Toronto Stroke Network – Community Model of Care	N/A	The Community Model of Care has embedded the criteria of the QBP elements. Therefore, when an emerging program is being developed based on this model, the intent is that the criteria listed should become a component of the program.

Other Programs of Interest

Checklist Items	Clinical Handbook Reference
1. Integration of the Community Stroke Rehab model into stroke care pathway	6.1-6.5
2. Dedicated care coordinator	9.4.4, 9.4.5, 9.4.7
3. Time to first visit within 48-72 hours following hospital discharge	9.2.2
4. Care pathway based on best practice standards: 2-3 outpatient or community-based allied health professional visits/week (per required discipline) for 8-12 weeks	9.5.1 (OT), 9.6.2 (PT), 9.7.2 (SLP)
5. Dedicated care team with core disciplines	9.4.1
6. Regular interdisciplinary team meetings	9.4.2
7. Qualifications of Stroke Team Members (stroke expertise)	9.4.3, 10.4.1
8. Standardized reporting and outcome assessment	10.1.1, 10.1.4
9. Early supported discharge	7.2-7.3

Checklist of Program Components

Items	1	2	3	4	5	6	7	8	9	Full details
North Western Ontario: Speech Language Pathology Tele-rehabilitation Pilot	U	U	U	U	x	x	✓	✓	N/A	
Mississauga Halton CCAC Stroke Program	✓	✓	P	x	x	x	P	P	N/A	
North Simcoe Muskoka CCAC Stroke Pathway	x*	✓	x*	x	x	x*	x	✓	N/A	

✓, proposed element; x, does not meet criteria; *, see comment section; P, Progressing towards; U, unknown

Comments:

Program	Item #	Comment(s)
North Western Ontario: Speech Language Pathology Tele-rehabilitation Pilot	N/A	Program is in the pilot phase of development and delivers SLP services only
Mississauga Halton CCAC Stroke Program	6	Teleconferencing and care conferencing are being phased in for more complex patients
	7	Building capacity and expertise is ongoing. Opportunities for professional development are explored with the WGTASN.
	8	Standardized reporting of outcome measures by service providers (Functional Independence Measure and ASHA NOMS for speech, where appropriate)
North Simcoe Muskoka CCAC Stroke Pathway	1	NSM does meet the goal oriented discharge plan and standardized process but not the follow up within 48 hours of discharge home
	3	NSM does not meet this criteria-Therapist has up to 7 days to make first visit as per contract
	6	This used to be part of the pathway (conference pre-discharge, conference at 3 weeks) but this removed related to therapy utilization

Lessons Learned

There were a number of a common 'lessons learned' reported by the programs. Although many of these lessons were in the context of each specific program, 5 common themes emerged:

1. The importance of a **patient centred focus**: The patient experience should be at the centre of all decisions made in relation to the program. Clients, families, and caregivers can be involved in providing feedback about the program through experience surveys and involvement in stakeholder meetings. Furthermore, clients should be supported and involved in setting meaningful and realistic rehabilitation goals.
2. The importance of **ongoing program monitoring and evaluation**: Standardized, program specific, data collection is important for establishing accountability. Data collection processes should be integrated into ongoing program evaluation methodology to allow for sustainability. Furthermore, this data should be maintained in a central database to allow for ongoing analysis, program monitoring, and quality assurance. Ongoing program monitoring, particularly that demonstrate improved patient outcomes, can be essential for the establishment of ongoing program funding.
3. The importance of **stroke expertise in care providers**: Stroke expertise in care providers is essential for optimal functional recovery. Establishment of mechanisms and program guidelines to support early and ongoing stroke expertise is an important program component. Providing initial and ongoing training and education opportunities is important for ongoing sustenance of stroke expertise. Additionally, experience sharing (i.e. shared work days) and regular inter-team communication and encouragement can be important to supporting this ongoing education. Finally, a strong linkage with Regional Stroke Centres is central to supporting enhancement of stroke specific rehabilitation knowledge.
4. The importance of **consistent and timely communication**: Strong communication throughout the stroke care continuum is important, beginning with established communication mechanisms between community and inpatient care providers. This allows for the sharing of information on client needs and therapy plans to enhance continuity in care. Frequent and regular meetings of therapists/health care providers, such as weekly team rounds, can aid in better team collaboration in supporting and progressing towards client goals. Furthermore, frequent meetings of program implementation team members can help to address issues with the model as they arise, particularly when in the development stages of a model.
5. **Community partnerships are essential**: Program success is contingent on cooperation, linkages with, and support from, other community programs. Interprofessional collaboration can serve to enhance client experiences and result in better outcomes. Furthermore, these linkages are essential to facilitating a smooth transition between rehabilitation services and community reintegration. Strong support of leadership in building communication and relationships can help solidify these community connections. Formal linkages between community care providers and primary care are of particular importance.

Several lessons learned have also been noted from emerging programs:

1. The importance of collaboration with, and engagement of, community partners (community hospitals, CCAC, LHINs, community agencies etc.)
2. Including the right individuals in the dialogue
 - LHIN involvement is essential to success, and each LHIN is unique
 - Enable action by removing barriers. Work with front line staff, executive teams and boards to prepare the way for system changes
 - Communicate the vision to ensure buy-in
 - Create a strong guiding coalition (patients, caregivers, volunteers)
3. Invest time in up front planning and creating a change vision
4. Generate, celebrate, and communicate short term wins

Discussion

Upon examination of the main elements of the existing models, one can see that there are many similarities. Firstly, the impetus for the development of all of these programs was all based on a need to address service gaps, as well to promote adherence to Canadian Best Practice Recommendations for Stroke. The need for these programs was identified as priority actions for the areas they serve, resulting in their development.

All programs have similar admission criteria, treating adult stroke survivors with ongoing rehabilitation needs and achievable goals. Furthermore, there is a focus on clients who are unable to access outpatient rehabilitation due to reasons of geographical distance, inability to tolerate travel, lack of transportation, or having needs best met in the home. All four of the established models have similar length of program stays and offer comparable intensities of services based on Best Practice Recommendations. However, upon examination of the actual number of visits received, one may note that, on average, clients are accessing fewer rehabilitation visits than recommended. This may be due, in part, to the individualized nature of services and the fact that some clients do not require the full number of recommended visits. The use of rehabilitation assistants in 2 programs may also skew these average numbers of visits. Furthermore, funding restraints may limit the amount of services available. All programs have discharge criteria relating to achievement of goals. Finally, all programs also offer stroke specific training to therapists, albeit to varying degrees.

Three of these models are very similar in structure, being CCAC based programs (SE Enhanced CCAC, HN&B CSRM, and WW CCAC Stroke Program). All three use contracted CCAC therapists to deliver stroke rehabilitation services and have CCAC based care coordination. Additionally, these three programs have formal strategies to link with inpatient care teams in an attempt to coordinate care across the stroke continuum. Although formal, in person meetings between therapists are not always held, attempts are still made to communicate between community care providers. However, it should be noted that these 'as needed' communication strategies are not in line with Canadian Best Practice Recommendations for Stroke Care.

Though these program models have many similar elements, they are also distinct in a number of ways. Most prominent may be that only one program has a dedicated stroke team (SW CSRT). This program is also distinct in that it holds weekly rounds to discuss client progress and shared client goals, although ongoing communication between care providers is encouraged in all programs. The SW CSRT also has a larger complement of core disciplines, including the services of a Registered Nurse and Therapeutic Recreation Specialist. However, all four models support a number of disciplines as their core team, and all programs have most services available on an as needed basis. Additionally, the use of a therapy aid or Rehabilitation Therapist is only available in two programs, although all models feel that this service would enhance efficiencies in services. Finally, only two programs routinely collect standardized outcome measure of client functional outcomes as part of regular program practice. This is an important consideration as ongoing monitoring of patient outcomes is essential in promoting patient centred practices, as well as for demonstrating program efficacy in the pursuit of ongoing program funding.

These four programs, although offering similar services and having a shared goal of enhancing rehabilitation delivery to underserved areas, operate in very different local environments. Variations in rural/urban geographies, geographical distances covered, and population densities, have all resulted in differing approaches to delivery and demand for service. As such, each program has been design to suit the local context. Referral volumes, in particular, have had an effect on the way programs are modeled, as areas with low referral volumes may not be able to support a dedicated team and, therefore, must provide services within an existing infrastructure such as the CCAC. However structured, there is a large amount of evidence to support the viability and success of all the existing community models within the province of Ontario.

The impact of home based care has been well studied in the literature, and has also demonstrated empirical success in Ontario within these existing home-based models. Three programs (SE Enhanced CCAC, SW CSRT, and HN&B CRSM) have collected data, either in the evaluation phase of the program or as ongoing practice, on patient outcomes. These programs have demonstrated positive patient outcomes in improved functional ability, fewer depressive symptoms, greater re-integration into the community, and even decreased caregiver burden. All four programs collect information on program outcomes as part of an ongoing data collection process, and impacts to the health care system have been observed. Reductions in inpatient length of stays (both acute and rehabilitation), fewer Alternative Level of Care days (ALC), and fewer hospital readmissions have been noted in most instances. As a result, economic benefits of these stroke rehabilitation delivery models have also been observed in overall cost reductions to the health care system. It is also important to note that surveys of client and caregiver satisfaction with services are overwhelmingly positive. (Please see program summaries for evaluation details)

The establishment of these community based rehabilitation models and the development of emerging models has also led to a number of lessons learned. In examining lessons learned by each of the 4 established programs, 5 strong themes of important elements emerged: program monitoring and evaluation; stroke expertise; consistent and timely communication; community partnerships; and a patient centred focus. Although these themes have been presented in the context of each individual program, their commonality emphasized their importance to all models in all areas. This is an important consideration for new models moving forward.

Stroke rehabilitation provided in the home can have a number of benefits over the outpatient setting. Most obvious is the issue of access to services. Although access may be primarily considered an issue in rural and remote areas, many urban dwelling individuals are also unable to access outpatient rehabilitation services due to issues of transportation, inability to travel, or may simply have needs that are best met in the home-based setting. Home-based stroke care has also demonstrated benefits over centre-based outpatient services including greater improvements in functional outcomes¹⁸, decreased caregiver burden⁸, and greater client satisfaction¹⁹. This may be due to a better ability to set achievable and relevant rehabilitation goals, as well as the opportunity to transfer skills learned in one's own living environment^{18,19}. Conversely, outpatient rehabilitation settings may have benefits over home-based care in providing opportunity for social interactions. Despite the benefits of both rehabilitation environments, a hybrid approach to rehabilitation, where one may access both home and centres based

therapies as appropriate, has not yet been studied. This approach may be considered in the development of a number of emerging models across the province.

With the upcoming Quality Based Procedures for community based stroke care being implemented in 2016, a number of areas across the province have begun redesigning existing, and developing new, stroke pathways to better meet these guidelines. These emerging models focus on early, and intensive rehabilitation with an emphasis on coordinated and integrated care throughout the stroke continuum. The advent of these programs also offer the opportunity for the implementation of Early Supported Discharge (ESD), an early and intensive home-based rehabilitation approach not currently available in Ontario, but with a vast research base to support improved patient outcomes.⁴ Although still in the development and early implementation phases, a look at these models can offer a glimpse into the future of community based stroke rehabilitation in Ontario.

Examination of these four established models, as well as emerging models, of community stroke care can offer a comprehensive picture of home-based rehabilitation in the province of Ontario. Although Ontario is a large province with diverse needs, one can look at the lessons learned from their development, implementation, and ongoing success, and use this information to enhance the development of emerging and future models to further enhance stroke care across the province and country.

Additional Information/ Documents

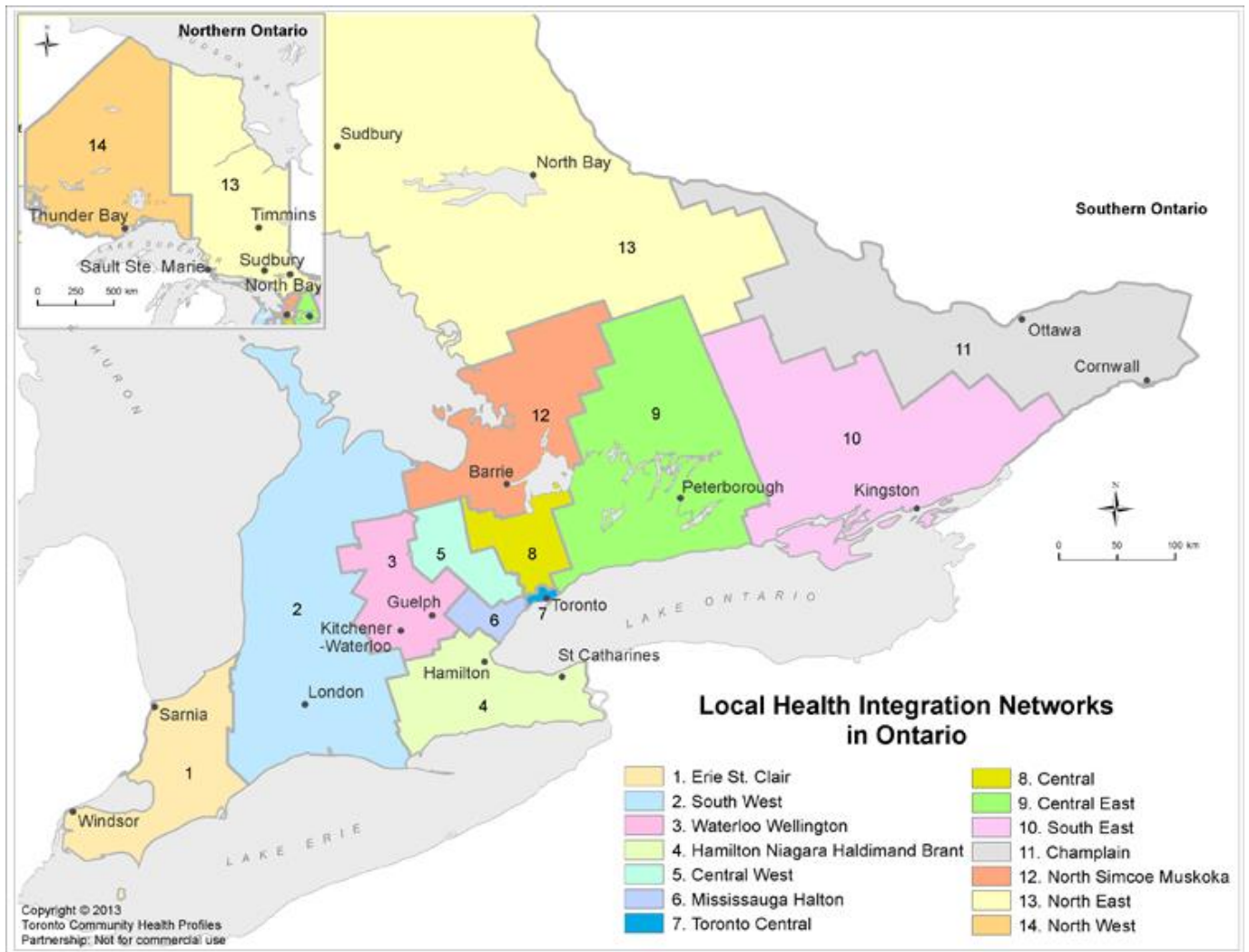
Program/ Model	Document Name/ Description	Document
SE Enhanced CCAC Program	<ul style="list-style-type: none"> • 2015 Communiqué • SE Enhanced CCAC Program Summary • “Training tools” – Program guidelines and protocols • Evaluation Report • Brochure • Publication: Enhancing community-based rehabilitation for stroke survivors: creating a discharge link (Langstaff et al., 2014) 	
SW Community Stroke Rehabilitation Team (SW CSRT)	<ul style="list-style-type: none"> • SW CSRT Program Summary • CSRT Program Brochure • Summary 2014 Report • Publications: <ul style="list-style-type: none"> Community stroke rehabilitation teams: providing home-based stroke rehabilitation in Ontario, Canada. (Allen et al., 2014) A cost-effectiveness study of home-base stroke rehabilitation (Allen (thesis), 2015) Community Stroke Rehabilitation: How Do Rural Residents Fare Compared With Their Urban Counterparts? (Allen et al., 2016) 	
Haldimand-Norfolk & Brant Community Stroke Rehabilitation Model	<ul style="list-style-type: none"> • Pilot Report (2013) • HNHB CSRSM Summary 	
Waterloo Wellington CCAC Stroke Program	<ul style="list-style-type: none"> • WW CCAC Stroke Program Brochure • WW CCAC Stroke Program Summary • WW CCAC Stroke Program Model Description 	
Northeastern Ontario Stroke Network Outpatient Model of Care	<ul style="list-style-type: none"> • NESN Outpatient Model of Care - Briefing Note • NESN Outpatient Model of Care - Pathway 	
North Simcoe Muskoka Integrated Stroke Program	<ul style="list-style-type: none"> • NSM Integrated Stroke Program Model • A Business Case for Coordinated Outpatient and Community-Based Stroke Rehabilitation and Stroke Prevention in the North Simcoe Muskoka LHIN 	

Program/ Model	Document Name/ Description	Document
Champlain CCAC Community Stroke Rehabilitation Program	<ul style="list-style-type: none"> • Champlain Community Stroke Rehabilitation Program 	
Toronto Stroke Network – Community Model of Care	<ul style="list-style-type: none"> • TSN Community Model of Care - Flow Cart 	
North Simcoe Muskoka CCAC Stroke Pathway	<ul style="list-style-type: none"> • CCAC Stroke Pathway • Stroke Pathway Process 	

Contact Information

Program/ Model	Contact name/ title	Contact Info
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HN&B Community Stroke Rehabilitation Model	Central South Regional Rehabilitation and Community Coordinator	905 521-2100 ext. 44425
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Northeastern Ontario Stroke Network Outpatient Model of Care	Sue Verrilli Regional Stroke Community and LTC Coordinator, North East Ontario	sverilli@hsnsudbury.ca
North Simcoe Muskoka Integrated Stroke Program Model	Donelda Sooley: Regional Rehabilitation Coordinator, Central East Stroke Network Alda Tee: Regional Community & LTC Coordinator, Central East Stroke Network	Sooleyd@rvh.on.ca teea@rvh.on.ca
Champlain CCAC Community Stroke Rehabilitation Program	Jeanne Bonnell, Manager Client Care, Champlain CCAC	Jeanne.Bonnell@champlain.ccac-ont.ca
Toronto Stroke Network – Community Model of Care	Donna Cheung – Rehab and Community Reengagement Coordinator	CheungD@smh.ca
Mississauga Halton CCAC Stroke Program	Mississauga Halton CCAC	Telephone: 905-855-9090 Toll free: 1-877-336-9090
North Simcoe Muskoka CCAC Stroke Pathway	Kathy Wolfer Director, Client Services North Simcoe Muskoka CCAC	Kathy.Wolfer@nsm.ccac-ont.ca

Appendix A: Map of LHINS/ Ontario



Appendix B: Checklist Criteria

Criteria	QBP Reference
1. Integration of the Community Stroke Rehab model into stroke care pathway	6.1-6.5
2. Dedicated care coordinator	9.4.4, 9.4.5, 9.4.7
3. Time to first visit within 48-72 hours following hospital discharge	9.2.2
4. Care pathway based on best practice standards: 2-3 outpatient or community-based allied health professional visits/week (per required discipline) for 8-12 weeks	9.5.1 (OT) 9.6.2 (PT) 9.7.2 (SLP)
5. Dedicated care team with core disciplines	9.4.1
6. Regular interdisciplinary team meetings	9.4.2
7. Qualifications of Stroke Team Members (stroke expertise)	9.4.3, 10.4.1
8. Standardized reporting and outcome assessment	10.1.1, 10.1.4
9. Early supported discharge	7.2-7.3

QBP=Quality Based Procedures; Y=yes; N=no; C=See Comments Section

Explanation of Criteria:

1. Integration of the Community Stroke Rehab model into stroke care pathway
 - Discharge planning (6.4)
 - o Goal oriented discharge plan
 - o Standardized process
 - o Follow up from community designate within 48 hours of discharge home
2. Dedicated care coordinator
 - Coordinated care plan that ensures continuum between community care providers, primary care providers, and (where applicable) hospital providers (9.4.4)
 - Care coordinator to determine eligibility for services (9.4.5)
 - Responsible for ongoing assessment (and reassessment) of needs (9.4.5)
 - Promote ongoing communication between team members (9.4.7)
3. Time to first visit within 48-72 hours following hospital discharge
 - Provided within 48 hours of acute discharge or 72 hours of rehab discharge (9.2.2)
4. Therapy intensity based is best practice standards: 2-3 outpatient or community-based allied health professional visits/week (per required discipline) for 8-12 weeks (9.5.1 (OT), 9.6.2 (PT), 9.7.2 (SLP))
 - This may include visits from a therapy/ rehabilitation assistant

5. Dedicated care team with core disciplines (9.4.1)
 - Available based on needs of client
 - Consist of an occupational therapist, physiotherapist, speech language pathologist, nurse, psychologist, primary care provider, social worker, registered dietician, pharmacists, therapeutic recreation specialist , therapy/ rehabilitation assistants, and the family/ caregivers (9.4.1)
 - Consistency of stroke team members (80% of care to be provided by consistent stroke team members)

6. Regular interdisciplinary team meetings (9.4.2)
 - Planned, regular therapy team meetings
 - Discussion and updating of client goals, progress, and discharge planning

7. Qualifications of Stroke Team Members – stroke expertise (9.4.3)(10.4.1)
 - As a program, there are procedures and supports in place to develop stroke expertise
 - 80% of clients seen by clinician receiving rehabilitation for stroke

8. Standardized reporting
 - Consistent program specific outcome measures collected
 - Physical activities, ADLs, or mobility limitations should be assessed for targeted rehabilitation (10.1.1)
 - Standardized outcome measures used
 - All patients and caregivers should be monitored and assessed for depression (10.1.4)

9. Availability of Early Supported Discharge
 - Interprofessional Team: physiotherapist, occupational therapist, nurse, speech language pathologist, physician, social worker, and administrative assistant (7.2)
 - Continuity of team members from inpatient (7.3)
 - Provided within 48 hours of acute discharge or 72 hours of rehab discharge (7.3.1)
 - Intensity: 5 days/ week at inpatient rehabilitation intensity (7.3.2)

Appendix C: Definitions of Disciplines

Physiotherapist: Physiotherapists aim to facilitate the improvement of mobility and physical activity. These individuals use their knowledge of the physical functions of the body to assess, diagnose, and treat symptoms of illness, injury, and disability. Physiotherapy is a regulated profession.²⁰

Occupational Therapist: Occupational therapy aims to enable engagement in everyday living by allowing people to perform their usual activities and improve their functions in the occupations of life. This therapy is often required following an illness or injury that results in a disability. Occupational therapists are professionally accredited.²¹

Speech-Language Pathologist: Speech Language Pathologists assess and treat communication disorders, cognitive-communication disorders, and swallowing disorders in individuals with deficits in these areas. Communication disorders may be in the form of either perceptive (understanding) or expressive (fluency, sound production) deficits. Speech Language Pathologists are highly trained individuals who are members of an accredited profession.²²

Therapeutic Recreational Therapist: The Therapeutic Recreational Therapist uses education and recreation participation to allow persons with physical and cognitive deficits to enjoy their leisure time optimally. They aim to use recreation to maximize an individual's social wellbeing and augment the benefits of a healthy leisure lifestyle.²³

Registered Nurse: Registered nurses are part of a regulated profession that provide health care, personal care, and education to individuals with health care needs.²⁴

Social Worker: Social workers help families, groups, and communities to enhance their collective wellbeing. This profession aims to help individuals and groups develop skills to resolve problems. Social workers also provide a link between individuals, families, care providers, and community resources.²⁵

Rehabilitation Therapist/ Therapy Assistants: Rehabilitation Therapists and Therapy Assistants may have a range of educational and professional backgrounds. These individuals may have university degrees as kinesiologists, or college diplomas as physiotherapy assistants (PTAs) or occupational therapy assistants (OTAs), among others. Individuals in these roles often carry out the therapies prescribed by regulated professionals in order to maximize rehabilitation efficiencies in many health care settings.

Registered Dietitian: Registered Dietitians are accredited individuals who promote good health through food and nutrition.²⁶

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