



Summary Report

South West LHIN Community Stroke Rehabilitation Teams

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Executive Summary

In the South West Local Health Integration Network (LHIN), as in most of Ontario, stroke survivors were being discharged home from acute care within a matter of days, or from inpatient rehabilitation within a few weeks, without access to adequate ongoing rehabilitation services. Research evidence indicates that recovery post-stroke occurs rapidly for the first three months and continues well beyond that time frame. Canadian Best Practice recommends that stroke survivors have access to specialized stroke rehabilitation services after leaving hospital. Specialized, interdisciplinary Community Stroke Rehabilitation Teams were created in the South West LHIN to address this gap.

This report was created for health service administrators and other stakeholders to describe the Community Stroke Rehabilitation Team (CSRT) model and summarize the results of evaluations to date.

Three teams were established, affiliated with Stroke Rehabilitation services, in the north, central and south regions of the LHIN. These teams began serving clients early in 2009.

The team model is an interdisciplinary model which creates a holistic and client centred approach to goal setting. Each team includes Nursing, Physiotherapy, Occupational Therapy, Speech Language Pathology, Social Work, Recreation Therapy and Rehabilitation Therapy (a support personnel role).

Benefits of a specialized stroke team for rehabilitation in the community include:

- Interdisciplinary team goal setting, communication and case management
- Stroke-specific expertise for care, patient navigation and community re-engagement
- Transition to community support services
- Focus on self-management and secondary prevention
- Affiliation with the District Stroke Centre/Rehabilitation Centre
 - o Integration of the CSRT model into the stroke care path providing seamless transitions
 - o Access to inpatient health record
 - o Reduced duplication of assessments
 - o Communication/Access/Liaison with the inpatient team
 - o Cross continuum expertise
 - o Possibility of sharing staff across services (inpatient, outpatient and community), maximizing health human resources and increasing expertise
- Consistency of stroke team members
- Care model based on best practice recommendations and evidence
- Ability to work with the client in the setting that is most suited to the client's functional rehabilitation needs and participation-related goals
- Standardized reporting provides enhanced accountability and capacity for evaluation

Continuous quality improvement is an integral part of the South West LHIN CSRT model. Our experience with ongoing improvement initiatives and lessons learned include strategies aimed at reducing wait times and length of service.

The Community Stroke Rehabilitation Teams (CSRT) have been independently evaluated for client and stakeholder experience, client and caregiver outcomes, health care system benefits and cost effectiveness.

A recent analysis of clinical measures collected by the teams (Functional Independence Measure, Stroke Impact Scale, Reintegration to Normal Living Index, Hospital Anxiety and Depression Scale, Caregiver Assistance and Confidence Scale and the Bakas Caregiver Outcomes Scale) found that the interdisciplinary, stroke-specific, home-based rehabilitation program model was effective in improving client and caregiver outcomes following stroke. All of these gains were maintained at follow-up six months after discharge from the service.

In 2010 an evaluation of the CSRT was conducted by an independent consultant using a mixed methods approach which included a client and caregiver satisfaction survey, client and caregiver interviews, stakeholder survey and stakeholder interviews. Clients and caregivers reported that the help they received from the team met their needs (97%); contributed to their quality of life (96%); and contributed to their independence (88%). Ninety-three percent of clients surveyed reported that the help they received from the team contributed to their ability to stay at home. Key stakeholders believed that the teams had a positive impact on reducing Emergency Room visits, hospital admissions, hospital length of stay and stroke risk factors.

An economic analysis assessing the impact of Southwestern Ontario's Community Stroke Rehabilitation Teams' outcomes and costs was completed by a University of Western Ontario research team in 2013. The CSRT program was found to have positive outcomes on quality of life and to be cost-effective.

Lastly, a summary of innovative practices being investigated is described including the use of congregate settings, tele-rehabilitation and consideration of adoption of an early supported discharge model.

This report is intended to share the experiences and lessons learned from the South West LHIN's Community Stroke Rehabilitation Teams in achieving improved client and caregiver outcomes as well as health care system benefits.

The Community Stroke Rehabilitation Teams are featured in Accreditation Canada's Leading Practices Database at <http://www.accreditation.ca/community-stroke-rehabilitation-team-csrt>.

For more information: www.communitystrokerehab.ca

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Background

In 2007, the Ontario Ministry of Health announced the Aging at Home Strategy, a three-year, \$700 million initiative aimed at helping seniors live healthy, independent lives in their own homes. In response to a call for proposals to access this funding within each Local Health Integration Network (LHIN), the Southwestern Ontario Stroke Network (SWOSN) submitted a business case for Specialized Community Stroke Rehabilitation Teams to provide therapy in the community for persons recovering from stroke.

In 2006, [stakeholder engagement](#) identified access to adequate ambulatory and community rehabilitation services post-stroke as the **number one strategic priority** to address gaps in stroke rehabilitation in the South West LHINⁱ. At that time, the Community Care Access Centre (CCAC) services provided minimal rehabilitation visits for stroke survivors in the community, their mandate being limited to provision of a safe transition from hospital to home. Likewise, a survey of ambulatory services in the South West LHIN indicated that outpatient services were not available in some communities. In the communities where they were available, access was limited with wait times of up to 10 months. Additionally, services were usually limited to one profession (generally physiotherapy) and the focus in those services was primarily orthopedic, therefore lacking stroke expertise.

Research evidence indicated that recovery post-stroke occurs rapidly for the first three months and continues beyond that time frame, yet at the time stroke survivors were being discharged home from acute care within a matter of days or from rehabilitation within four to six weeks without access to adequate ongoing rehabilitation services. Evidence also identified a specialized interdisciplinary rehabilitation team with stroke expertise as the most effective model of care for improving client outcomes.

Previously, a [Stroke Rehabilitation Pilot Project](#) had been completed in Southwestern Ontarioⁱⁱⁱ in 2004, demonstrating not only feasibility of the team model but also significant improvements in client outcomes as well as cost savings to the health care system.

Furthermore in 2008, SWOSN held six [community engagement sessions](#). People with stroke, their family members and community providers identified access to rehabilitation services in the community as fundamental to the stroke recovery process, helping people progress to their maximum potential^{iv}.

Benefits of a Specialized Community Stroke Rehabilitation Team (CSRT):

- earlier discharge from inpatient settings
- reduced dependence on hospital services
- more efficient, cost effective rehabilitation system
- improved functional outcomes; more discharges home with reduced long term reliance on the health care system
- chronic disease management model; retaining people in community
- smoother transitions from hospital to home with better coordination of care

In March of 2008, the South West LHIN confirmed \$700,000 in year one funding for this project and three teams were established, affiliated with the stroke rehabilitation services in the north, central and south regions of the LHIN. These funds were received in October 2008 with the three teams hired and serving clients early in 2009.

Model

Administrative

- Three teams serving the north (Grey and Bruce Counties), central (Huron and Perth Counties) and south (Thames Valley: Middlesex, Oxford and Elgin Counties) portions of the South West LHIN.
- Affiliated with the three district stroke programs and reporting to the South West LHIN.
- One coordinator and administrative assistant for the three teams, reporting to the Director of Rehabilitation at the regional rehabilitation centre (St. Joseph's Health Care London – Parkwood Hospital).
- Thames Valley team reports to the Team Coordinator and works out of Parkwood Hospital, St Joseph's Healthcare; the Huron Perth team reports to the District Stroke Coordinator for Huron Perth and works out of the Seaforth site, Huron Perth Healthcare Alliance; and the Grey Bruce team reports to the Manager of Rehabilitation/District Stroke Coordinator at Grey Bruce Health Services, working out of the Owen Sound site.
- Supported by the SWOSN with resources focused on implementation of best practice, education, and quality improvement.

Clinical

- The team model is an interdisciplinary model, which takes a transdisciplinary approach to the intake (crosses disciplinary boundaries to create a holistic, client-centred plan). This allows for overlapping of roles among the disciplines, all staff are able to complete the intake assessment, screening for the various roles and make cross referrals.
- Each team has Registered Nursing (RN), Physiotherapy (PT), Occupational Therapy (OT), Speech Language Pathology (SLP), Social Work (SW), Therapeutic Recreation Specialist (TRS) and Rehabilitation Therapy (RT)*.
- Active services are provided for clients within the community, and Long Term Care (LTC) clients who have the potential to return to the community. Consults are also provided for persons living in Long-Term Care Homes, or have minimal rehabilitative needs.
- Target average length of services is 8-12 weeks.

*The Rehabilitation Therapist is a support personnel role. They are unregulated service providers that can implement and integrate individualized strategies assigned by the regulated service providers (or allied health team) with an emphasis on practice of functional activities in an integrated fashion. For example, preparing a meal can involve skills in reading, writing, organization, memory, sequencing, fine motor coordination, mobility and balance in a comprehensive manner that helps the client to achieve independent living skills.

Admission criteria:

- Adult stroke survivors with rehabilitation needs
- Client's needs are best met by specialized stroke rehabilitation services in the community
- Client consents, is motivated and able to participate
- Client has specific and achievable goals for rehabilitation

Priority is given to clients referred within three months of stroke onset and those without caregiver support.

Benefits of a specialized stroke team for rehabilitation in the community:

- Interdisciplinary team goal setting, communication and case management
- Stroke-specific expertise, patient navigation and community re-engagement
- Transition to community support services (adult day programs, exercise groups)
- Focus on self-management and secondary prevention
- Affiliation with the District Stroke Centre/Rehabilitation Centre
 - Integration of the CSRT model into the stroke care path providing seamless transitions
 - Access to inpatient health record
 - Reduced duplication of assessments
 - Communication/Access/Liaison with the inpatient team
 - Cross continuum expertise
 - Possibility of sharing staff across services (inpatient, outpatient and community), maximizing health human resources and increasing expertise
- Ability to work with the client in the setting that is most suited to the client's functional rehabilitation needs and participation-related goals
- Care model based on best practice recommendations and evidence
- Consistency of stroke team members
- Standardized reporting provides enhanced accountability and capacity for evaluation

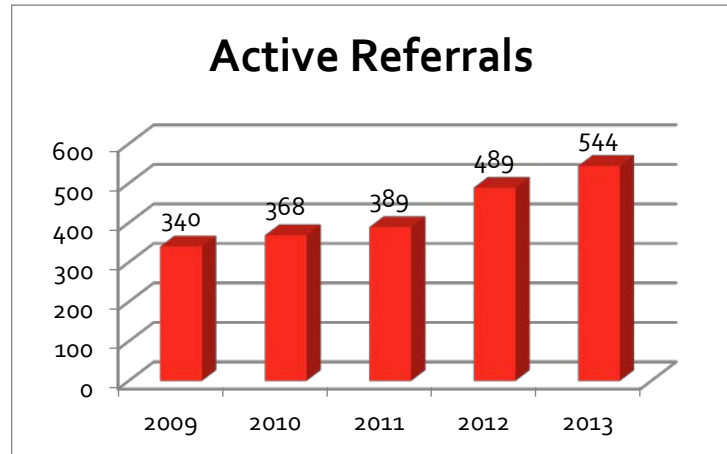
Team Processes:

- Referrals can be made by anyone, either completing the [referral form](#) or calling the toll free number **1-866-310-7577**
- As referrals are received, they are reviewed to ensure the client meets admission criteria.
- Referrals are faxed to the appropriate team based on geography.
- The referral is presented to the team at weekly rounds, and an intake team (two staff members) is arranged.
- The intake team meets with the client and caregivers in the home, collecting information to help set client-centered goals.
- The intake information is presented to the team at the next team rounds. The client/caregiver needs and goals determine which team members will work together for that case.
- Client visits are scheduled with each team member. Scheduled visits vary from twice a week to once every other week, as determined by the client/caregiver needs and goals. Frequencies change based on progress and needs.
- Client progress is reported weekly at team rounds.
- As discharge target date approaches, the treatment plan is reviewed to ensure all areas of need have been addressed.
- The discharge summary is reviewed with the client at the last visit and sent to the family physician.

Service Provision Information

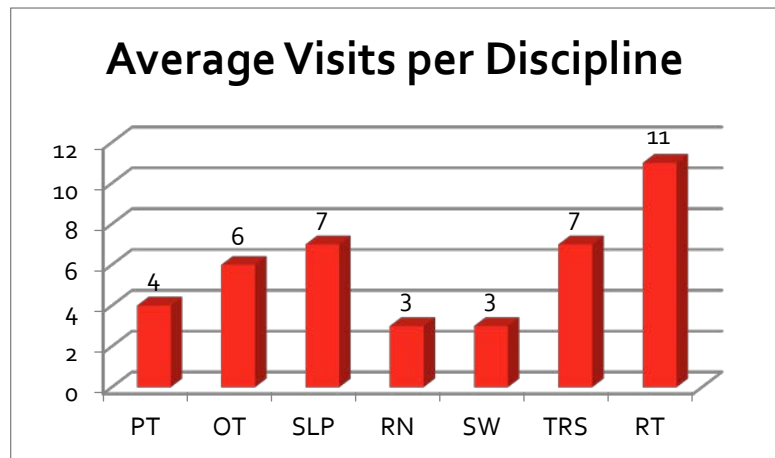
Active Referrals

For the 2013 calendar year, the three CSRTs combined received 590 referrals, of which 544 received services (Activated Referrals). The remaining referrals would be for clients who a) did not meet the referral criteria (i.e., having a diagnosis of a stroke, did not reside within the team service area) or b) declined services when contacted.



Average Number of Visits

Active clients received, on average, 35-40 visits from the team. This includes between 3-7 visits per clinician, plus approximately 11 visits from the Rehabilitation Therapist. (Sampling of January to March 2013)



Home First

Since the implementation of [Home First](#) in the South West LHIN in September 2013, the CSRT has supported 14 stroke clients in the home who were expected to make application for placement in Long Term Care. Of these, thirteen were enabled to remain in their home. Generally 50% of Home First clients go to LTC.

In 2013, the average length of service was 62 calendar days including both active clients and consults. Length of service for active clients alone averaged 76 days. Consults are typically for clients who are in long term care facilities, or have minimal rehabilitative needs.

The CSRT is required to maintain a wait time (time from referral to first contact) at a maximum of 7 days. This goal was achieved January 2013 and has been maintained.

Service Area: South West LHIN

The South West LHIN is home to 962,500 people (7.2% of the population of Ontario) and covers a land mass of approximately 21,000 square kilometres. London is the largest urban centre in the South West LHIN with a population of 366,150, home to approximately 40% of residents. Almost 30% of the South West LHIN population live in a rural area and just over 30% live in small or medium population centres.

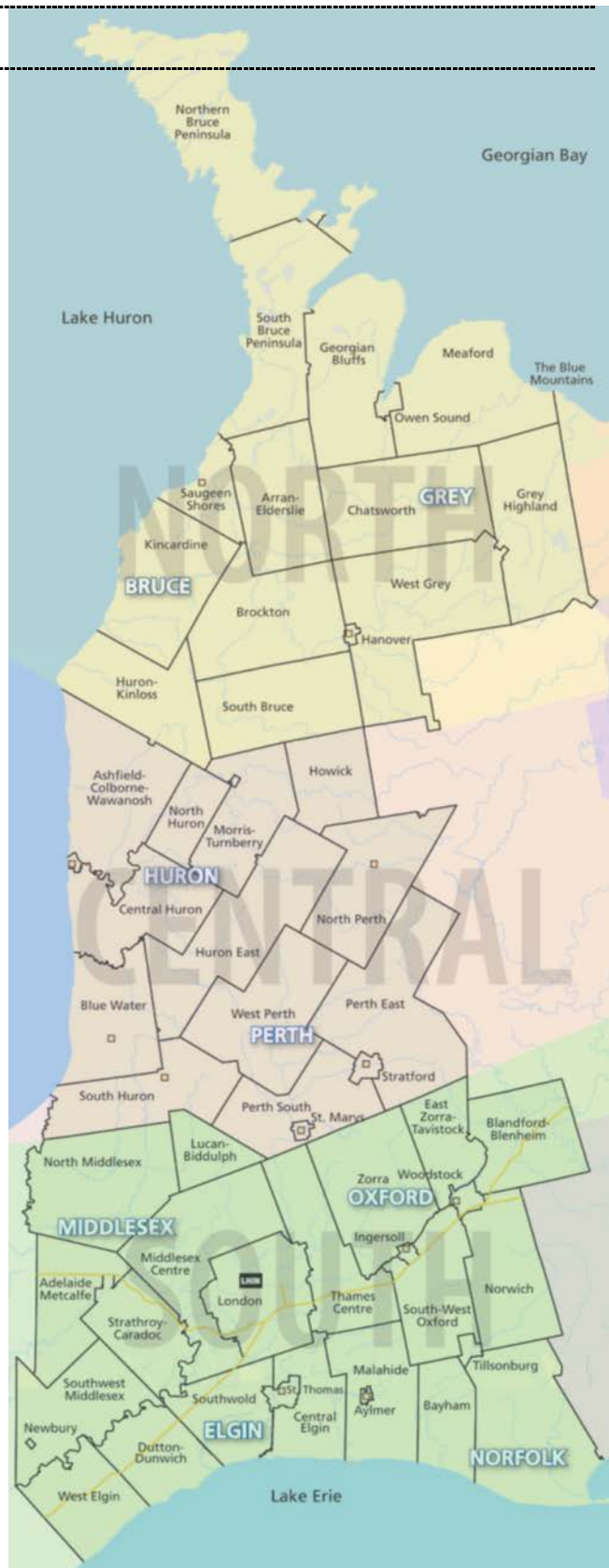
Examples of team travel requirements:

- Grey Bruce: Owen Sound to Tobermory - 3 hour return trip and over 200km
- Huron Perth: Seaforth to Palmerston - 2 hour return trip and over 140km
- Thames Valley: London to Long Point - 3 hour return trip and over 200km

Percentage of all 2013 acute stroke admissions seen by the CSRT:

- Grey Bruce ~ 35%
- Huron Perth ~ 45%
- Thames Valley ~ 19% (35% if CORP clients included*)

**Note:* Approximately 200 clients per year in Thames Valley are able to access the Comprehensive Outpatient Rehabilitation Program (CORP) at Parkwood Hospital in London, for specialized stroke rehabilitation. Access to this program reduces the percentage of stroke clients requiring the services of the Thames Valley CSRT.



Costs

In 2012-13 the three CSRTs provided 10,076 visits at a total cost of \$2,880,651. While the purpose and length of visits vary considerably, the average cost per visit was \$286.00

For approximately 150 new clients per year, the following team make-up is recommended for one CSRT:

- 1 Physiotherapist
- 1 Occupational Therapist
- 1 Speech Language Pathologist
- 1 Social Worker
- 1 Registered Nurse
- 1 Recreation Therapist
- 2-3 Rehabilitation Therapists

Rationale for Staffing Recommendation:

- Staffing originally consisted of half time positions for both Speech Language Pathology (SLP) and Recreation Therapy (TRS), assuming lesser client needs for both disciplines. Within the first few years of service, it became clear that while fewer clients may need SLP and TRS, the time required for the services was closer to that of the full time staff. For example, the TRS will focus on community re-integration for many clients, including community outings which can take several hours.
- Communication and scheduling with part time CSRT staffing proved challenging. Weekly rounds require approximately two hours of dedicated time to ensure all team members are clear on client needs. This time is difficult to schedule for part-time employees and reduces time for client appointments. The option of part-time employees not attending rounds proved to be ineffective as timely communication among team members was negatively impacted.
- Recruitment and retention of qualified and skilled staff for part-time roles is difficult in the largely rural and remote areas.

Service Enhancement

From a baseline referral (activated) volume of 299 clients in 2010-11, the volume increased to 375 in 2011-12 and 437 in 2012-13, which is an overall increase of 46% over two years.

In November 2011, the CSRT received enhanced funding to expand services. The plan for the CSRT was to increase staffing resources so that more clients could be seen in addition to a reduction in wait time for services. The goal of the expansion was specifically to help reduce Alternate Level of Care (ALC) days in acute and rehabilitation settings. Reduction of ALC would be achieved by providing greater access to community-based stroke rehabilitation, thus reducing the length of stay (LOS) for stroke patients in both acute care and rehabilitation settings.

Impact of Enhancement beginning in November 2011

Since November 2011, over \$900,000 per year has been added to base funding to support expansion of the CSRT teams. The expansions were intended to reduce ALC days among patients waiting for stroke rehabilitation services and were part of the South West LHIN's response to the Walker report^v recommendation to focus on best practices in community rehabilitation for stroke. While staffing levels were increased so that more clients could be seen in addition to reducing wait time for services, an initiative focusing on reducing the LOS on service to 8 to 12 weeks was implemented concurrently.

- Impact on program activity: New clients increased from an average of 28 per month in the 3 months prior to the expansion to 46 per month in the year after, to a current average of 54 per month as of April 2014
- Impact on wait times: There was a decrease in wait times from greater than 20 days before the expansion to 6 days after the expansion (as of April 2014)
- Impact of Reduced LOS: A database analysis revealed a reduction in LOS from 2010 to 2013 of 50% (151 to 75 days) without a corresponding negative impact on client outcomes, in effect improving efficiency without a negative impact on effectiveness
- Impact on client outcomes: On average, CSRT clients experience a 7% increase in Functional Independence Measure (FIM) scores. **These gains in function have been sustained even while time spent on the program has decreased; increasing program efficiency**
- Impact on ALC rates: ALC days waiting for inpatient rehabilitation decreased from an average of 210 per month in the 3 months prior to launch to an average of 60 per month following (see figure below)

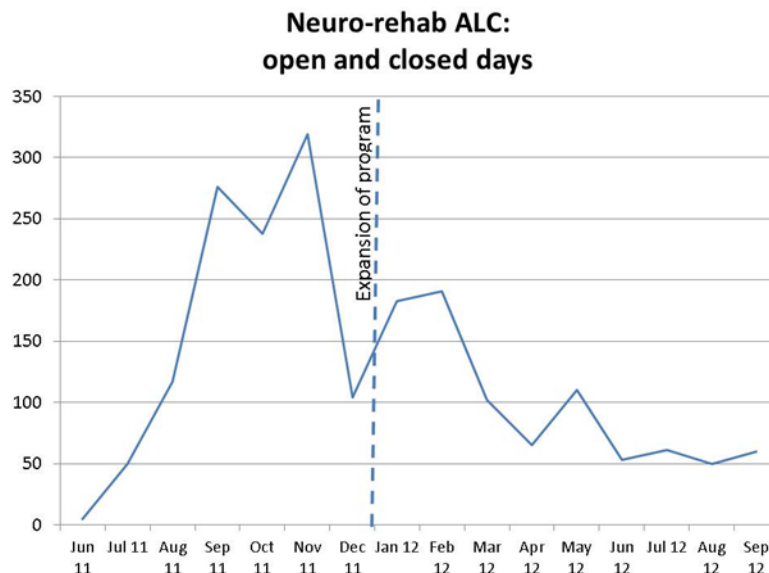


Figure 2: Neuro-Rehab ALC Open and Closed Days

Evaluation

1. Community Stroke Rehabilitation Teams: Providing Home-Based Stroke Rehabilitation in Ontario, Canada^{vi}

All data derived from a retrospective cohort of clients who received care from the CSRT between January 2009 and June 2013 were analyzed. The data came from an administrative database that was maintained directly by the CSRT staff. Data was collected at three time points: intake into the program, discharge and follow-up. The follow-up time point varied from three to six months post-discharge, depending on the availability of the client. Demographic information was collected on intake; psychosocial, functional, and caregiver outcomes were completed at intake, discharge, and follow-up to assess client progress and to determine relevant rehabilitation goals. Outcome Measures included Functional Independence Measure (FIM), Stroke Impact Scale (SIS), Reintegration to Normal Living Index (RNLI), Hospital Anxiety and Depression Scale (HADS), Caregiver Assistance and Confidence Scale (CACS) and the Bakas Caregiver Outcomes Scale (BCOS).

Table: Results of repeated measures ANCOVA

Measure	Sample Size	Mean (SD)			P-value (95% CI)	
		Intake	Discharge	Follow-Up	Intake to Discharge	Discharge to Follow-Up
FIM	333	105.25 (17.2)	110.34 (16.1)	110.54 (16.1)	<0.001 (-6.3 to -3.9)	1.000 (-1.0 to 0.7)
RNLI	55	15.69 (4.7)	17.6 (3.7)	18.20 (4.1)	0.010 (-3.4 to -0.4)	0.653 (-2.0 to 0.7)
SIS						
Strength	140	56.12 (26.0)	67.10 (24.8)	64.33 (26.4)	<0.001 (-15.5 to -6.5)	0.264 (-1.1 to 6.7)
Memory	140	75.03 (19.7)	77.63 (20.1)	79.97 (17.7)	0.289 (-6.4 to 1.2)	0.303 (-5.8 to 1.1)
Communication	140	76.17 (22.4)	80.59 (21.2)	82.04 (18.2)	0.014 (-8.1 to -0.7)	0.660 (-4.3 to 1.4)
ADLs	140	66.75 (21.8)	74.0 (22.0)	75.59 (22.7)	<0.001 (-10.7 to -3.8)	0.775 (-4.9 to 1.8)
Mobility	140	63.02 (24.4)	73.29 (22.3)	73.77 (22.8)	<0.001 (-13.6 to -6.9)	1.000 (-3.7 to 2.7)
Hand Strength	140	49.46 (36.4)	61.21 (36.0)	60.79 (37.0)	<0.001 (-16.7 to -6.8)	1.000 (-4.5 to 5.4)
Social Participation	140	49.87 (23.2)	65.63 (23.5)	69.46 (21.4)	<0.001 (-20.7 to -10.8)	0.198 (-8.9 to 1.2)
Physical	140	60.94 (21.5)	70.50 (21.4)	70.75 (21.7)	<0.001 (-12.0 to -7.1)	1.000 (-2.6 to 2.1)
HADS						
Anxiety	86	7.03 (4.3)	5.55 (3.9)	5.30 (3.7)	<0.001 (0.6 to 2.4)	1.000 (-0.5 to 1.0)
Depression	86	6.45 (3.9)	5.45 (3.5)	5.02 (3.3)	0.017 (0.1 to 1.9)	0.555 (-0.4 to 1.2)
Total	86	13.5 (7.0)	11.0 (6.4)	10.36 (5.9)	<0.001 (1.0 to 4.0)	0.725 (-0.7 to 2.0)
CACS						
Assistance	49	39.96 (25.9)	32.10 (24.6)	28.82 (22.0)	0.005 (2.0 to 13.7)	0.146 (-0.7 to 7.3)
Confidence	49	68.80 (35.9)	61.88 (39.8)	65.06 (40.4)	0.442 (-4.7 to 18.5)	0.965 (-11.1 to 4.7)
BCOS	63	48.87 (8.7)	54.68 (11.8)	53.73 (11.5)	<0.000 (-9.2 to -2.4)	1.000 (-2.0 to 3.9)

Pairwise comparisons for each client outcome and subdomain scores improved significantly between admission to the program and discharge from services (all $p < 0.05$). All of these improvements were maintained at the 6-month follow-up (all $p > 0.05$). The one exception was the memory and thinking subscale of SIS, where no significant improvement was observed between admission and discharge; however, a statistically significant improvement in score was found between admission and follow-up (-8.43 to -1.47, $p = 0.002$). The CACS level of assistance subscale scores significantly improved between

admission and follow-up time points ($p < 0.05$), with gains maintained between discharge and follow-up. These results were also observed with the BCOS. No significant gains were observed between any time points on the CACS level of confidence subscale.

Conclusion: Our study provides evidence for the effectiveness of a interdisciplinary, stroke-specific, home-based rehabilitation program in improving client and caregiver outcomes following stroke.

2. Evaluation of the Community Stroke Rehabilitation Teams: Final Report November 2010^{vii}

In 2010 an evaluation of the CSRT was conducted by an independent consultant. A mixed methods (quantitative and qualitative methods) approach was employed, using the following sources of information:

- **Client and Caregiver Satisfaction Survey:** All clients and caregivers served by the teams since the inception of the team (January 2009- April 2010, N = 279) were invited to complete a satisfaction survey. Seventy-two surveys were returned: 43 clients and 28 caregivers; a 26% response rate.
- **Client and Caregiver Interviews:** In-depth interviews were conducted with 12 individuals: 8 clients and 4 caregivers.
- **Key Stakeholder Survey:** An on-line survey was completed by 20 key stakeholders representing community, acute care, and long-term care sectors.
- **Key Stakeholder Interviews:** In-depth interviews were conducted with 10 key stakeholders representing community, acute care, and long-term care sectors across the region.

Results: Overall:

- 97% of clients/caregivers were satisfied with the help they received from the team
- the majority of key stakeholders (75%) were satisfied with the care provided by the team
- the majority of clients and caregivers interviewed (67%) reported that the service they received from the team was better than any other health care they received in the past
- clients/caregivers reported that the help they received from the team met their needs (97%); contributed to their quality of life (96%); and contributed to their independence (88%)

Changes consistent with self-management principles experienced as a result of involvement with the team:

- improved health and functional ability (75%)
- improved ability to manage changes in life (71%)
- improved mood (60%),
- improved ability to manage stroke risk factors (56%)
- improved knowledge of where and how to get help in the community (61%)
- return to family roles (69%) and social activities (59%)

Caregiver Support

All (100%) of the caregivers interviewed reported that the team helped to reduce the stress or burden of caregiving through the provision of emotional support and advice regarding how to manage and cope with stressful situations arising as a result of the stroke.

Long-Term Care (LTC) Home Avoidance

Ninety-three percent (93%) of clients surveyed reported that the help they received from the team contributed to their ability to stay at home. Several reported that their involvement with the team prevented LTC Home placement.

Decreased Hospital Usage

- Key stakeholders reported hospital lengths of stay for both acute care and the inpatient rehabilitation programs were shortened by making a specialized service available in the community.
- A low percentage of stroke survivors (fewer than the provincial average) had a stroke related hospital readmission during or following their involvement with the team.
- Key stakeholders believed that the teams had a positive impact on reducing Emergency Room (ER) visits, hospital admissions and stroke risk factors. These impacts were felt to result from attention to functional recovery (e.g. reduced fall risk) and secondary stroke prevention.

Strengthened Partnerships in the Community

Improved care coordination and integration were significant themes arising in the evaluation. The majority of stakeholders felt that team services improved stroke survivor and caregiver's awareness and use of available community resources and supports. Furthermore, 60% of stakeholders indicated that the teams contributed to increasing the other provider's knowledge and skills in managing stroke care.

3. Assessing the Impact of Southwestern Ontario's Community Stroke Rehabilitation Teams: An Economic Analysis^{viii}

The primary objective of this study was to report the costs and outcomes experienced by patients in the CSRT program over one year following enrollment. A secondary objective was to perform a prospective economic evaluation of the CSRT program. Telephone interviews were conducted at baseline, 6-month, and 12-month follow up using the Stroke Impact Scale and the EuroQOL-5D-5L (a standardized measure of Health Status), with the Health and Social Services Utilization Survey conducted at both follow up assessments.

CSRT clients experienced gains in, or maintenance of, their perceived quality of life and functioning during the first six months after stroke. These improvements were maintained at 12-month follow up (after the discontinuation of CSRT services) and suggest that CSRT services may alter the trajectory of client recovery, which typically declines around 9-months post stroke. The statistically significant increase in the perceived level of participation experienced by CSRT clients from baseline to 12-months is also particularly promising. CSRT services, as a proportion of mean costs per client, contributed the greatest percentage (33%) of direct costs.

The CSRT program was found to be cost-effective when compared to no further therapy. The CSRT program cost on average \$232,533/11 Quality of Life Years (QALYs) and No Further Therapy a cost \$104,121/6 QALYs, producing an Incremental Cost Effectiveness Ratio (ICER) of \$25,692/1QALY. In a probabilistic sensitivity analysis, at a Willingness to Pay (WTP) Threshold of \$50,000, CSRT was found to be cost effective in >75% of simulations.

Clients accessing the CSRT program appear to use fewer health care resources during the first 12 months of service provision and report a better quality of life in all health states. Furthermore, we were able to demonstrate this cost-effectiveness while maintaining a conservative estimate of costs, utilities, and transition probabilities for the majority of the model. Results suggest that the CSRT model of care is a feasible and effective method of rehabilitation service delivery post-stroke.

Conclusion: Our data suggest that the interdisciplinary, home-based stroke rehabilitation program modeled in this analysis is a cost-effective model of care over the long term.

4. CSRT Client/Caregiver Satisfaction Survey Results 2013

A client/caregiver satisfaction survey was completed in the spring of 2013.

Overall, how satisfied were you with the help you and your loved one received from the team?			
	GB	HP	TV
Total Surveys	33	36	45
Very Satisfied	85%	83%	73%
Very Satisfied and Satisfied (combined)	91%	94%	96%
Would Recommend CSRT	94%	94%	96%
Positive Comments	18 (55%)	11 (30%)	22 (48%)
Negative Comments	4 (12%)	2 (5%)	8 (17%)
Suggestions	Longer services	video instructions, longer therapy, less intro-more therapy	Portuguese/Spanish/ French speaking staff, therapy after 3 months, quarterly follow up visits

Please note: numbers don't add up exactly as not all recipients answered all questions.

Suggestions for improvements indicated that the team members need to be clearer about the purpose of the services (such as self-management), the limitations of services (2-3 months), and the focus of the team services (rehabilitation vs. ongoing support).

GB	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The Team members and I decided together what would help me	17	9	2	3	1	32
	53%	28%	6%	9%	3%	
	81%					
My Therapy Program was explained to me in a way that I could understand	19	11	0	1	1	32
	59%	34%	0%	3%	3%	
	94%					
The team helped me adjust to my life after stroke	19	11	1	1	1	33
	58%	33%	3%	3%	3%	
	91%					

HP	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The Team members and I decided together what would help me	20	12	2	1	0	35
	57%	34%	6%	3%	0%	
	91%					
My Therapy Program was explained to me in a way that I could understand	26	8	0	2	0	36
	72%	22%	0%	6%	0%	
	94%					
The team helped me adjust to my life after stroke	24	6	3	1	0	34
	71%	18%	9%	3%	0%	
	88%					

TV	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Total
The Team members and I decided together what would help me	29	16	2	0	1	48
	60%	33%	4%	0%	2%	
	94%					
My Therapy Program was explained to me in a way that I could understand	33	13	1	0	1	48
	69%	27%	2%	0%	2%	
	96%					
The team helped me adjust to my life after stroke	31	12	2	1	1	47
	66%	26%	4%	2%	2%	
	91%					

Additional Publications related to the South West Community Stroke Rehabilitation Teams

1. Allen L, Richardson M, Meyer M, Ure D, Jankowski S, Teasell R. Evaluating the Effectiveness of Southwestern Ontario's Community Stroke Rehabilitation Teams. *Stroke*. 2013;44:e213.
2. Richardson M, Allen L, Meyer M, Ure D, Jankowski S, Teasell R. Caregiver Outcomes in a Community-based Stroke Rehabilitation Setting: Results and Tool Selection. *Stroke*. 2013;44:e221.
3. Allen L, Richardson M, McClure A, Meyer M, Ure D, Jankowski S, Teasell R. A Comparison of Rural versus Urban Stroke Survivors Treated with a Home-based, Specialized Stroke Rehabilitation Program. *Stroke*. 2013;44:e192.
4. Allen L, Richardson M, Meyer M, Willems D, Teasell R. Assessing the Impact of Southwestern Ontario's Community Stroke Rehabilitation Teams: An Economic Analysis. *NeuroRehabilitation and Neural Repair* (accepted 2014).
5. Richardson M, Allen L, Meyer M, Teasell R. Comparing the Psychometric Properties of the Stroke Impact Scale and the EuroQol-5D in a Community-Based Stroke Rehabilitation Setting. *NeuroRehabilitation and Neural Repair* (accepted 2014).

Innovation

The Community Stroke Rehabilitation Teams engage in continuous quality improvement. Listed below are some of the opportunities being investigated by the CSRTs to improve services.

1. Early Supported Discharge

Early Supported Discharge (ESD) is a form of rehabilitation designed to accelerate the transition from hospital to home through the provision of rehabilitation therapies, delivered by an interdisciplinary team with stroke expertise, in the community. ESD is intended as an alternative to a complete course of in-hospital rehabilitation and is most suitable for patients recovering from mild to moderate stroke.^{ix}

ESD has been further defined to include services that are provided by a well-resourced, specialized, interdisciplinary team whose work is coordinated through regular team meetings. Services should be provided five days per week at the same level of intensity as would have been delivered in the inpatient setting in order to address individual client needs.

Cochrane Systematic Review: Services for helping acute stroke patients avoid hospital admission ^x

“Appropriately resourced ESD services provided for a selected group of stroke patients can reduce long term dependency, admission to institutional care, and hospital length of stay.”

Core Elements of ESD

- interdisciplinary, specialist teams should plan and coordinate discharge from hospital and provide rehabilitation in the community
- specific eligibility criteria need to be followed to ensure that service is provided to those who can benefit
- dedicated case manager
- service provided within 48 hours of discharge from an acute hospital or within 72 hours of discharge from inpatient rehabilitation
- client- and family- centered rehabilitation goals
- focus on self-directed activities and development of skills in their natural setting

The CSRTs meet the majority of criteria required to be considered an ESD. They are continuing to work on quicker access and partnering with hospitals to ‘pull’ from acute care.

2. Tele-rehabilitation

Funding was recently received from the Heart & Stroke Foundation's Canadian Partnership for Stroke Recovery for a research project entitled: STRIVE-HOME: Stroke Rehabilitation Involving a Videoconferencing Element at Home, the impact and cost-effectiveness of home-based videoconferencing technology for speech language pathology rehabilitation after stroke. The CSRTs provide home-based interdisciplinary rehabilitation services, including speech language pathology (SLP), to stroke survivors in the community. The aims of the study are to evaluate the cost-

effectiveness and clinical-effectiveness of delivering SLP services via videoconferencing within the existing CSRTs by measuring program, cost and clinical outcomes before and after implementation of the technology. The evaluation will assess the impact of this technology on the number and duration of SLP visits, client and caregiver outcomes, and costs using a pre-post non-equivalent group design.

The CSRT is exploring options for providing some appointments at a distance using video technology. The objective would be to increase intensity of visits and or the volume of clients seen while reducing travel costs/time. The overall goal would be to improve access to care both for clients on caseload and for those waiting for services. The CSRT is exploring options for cost-effective technology which would meet the privacy and security needs of each hospital organization involved.

This project will provide a foundation for exploring the future use of videoconferencing technology to support rehabilitation provided by other members of the interdisciplinary team (e.g. occupational therapy, physiotherapy, social work etc.). The project also will help guide the development of similar community based stroke rehabilitation teams and will inform the evidence for future Canadian Best Practice Recommendations for Stroke Care.

3. Congregate Settings

The CSRTs have investigated potential areas with critical mass that might support an outpatient/clinic or congregate type setting for individual treatments.

- Pros:
 - Reduced travel time and expense
 - Increased efficiency; greater number of clients seen in shorter amount of time
- Cons:
 - Transportation burden placed on clients, possibly reducing attendance
 - Logistics (administrative time to schedule)

In considering groups for the provision of therapy, there would need to be a number of clients with similar needs at similar levels in their recovery. Reaching sufficient critical mass in one geographical location to meet these requirements may be a barrier. Nevertheless, groups may be useful for the provision of education around common topics, for example secondary prevention and community re-engagement. For example, a group of clients and caregivers could meet at a local grocery store. Topics could include label reading and healthy cooking. Clients and caregivers could be provided with instructions on how to choose healthy options, then go through the store to apply their knowledge. Group sessions can be efficient methods of providing instruction, while integrating clients back into their communities, all while engaging in social networking.

4. Transferability

The CSRT has provided consultative support to several LHINS considering providing community-based stroke rehabilitation services. Information regarding costs, team make-up, services, capacity and lessons learned were shared to assist other LHINs in determining the best model of care for their region. The CSRT is currently involved in establishing a networking group for similar programs. This group, called the Community Stroke Rehab Alliance, will meet on a quarterly basis to discuss issues and learn from each other regarding community stroke rehabilitation.

This report is intended to share the experiences and lessons learned from the South West LHIN's Community Stroke Rehabilitation Teams in achieving improved client and caregiver outcomes as well as health care system benefits. For more information: www.communitystrokerehab.ca

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Appendix A:

One Day at a Time: With Support from the Grey Bruce Community Stroke Rehabilitation Team:

Shirley McCracken, then 76, didn't lose consciousness or experience a sudden inability to speak, blurry vision, or paralysis. But something wasn't right one morning in November 2011 and both she and her son Chris knew it.

"I had uncontrollable movement in my left arm and my left leg," Shirley recalls. "Chris quickly took me to the hospital (in Markdale). They said my symptoms were very unusual for a stroke."

When the twitching continued, Shirley was referred to a neurologist at the Grey Bruce Health Services Owen Sound location. After further testing he diagnosed her with a stroke – in her case a type of "brain attack" so unusual he sees only one or two each year. Recovery could take several months to a year or more.

And this is where Shirley's story diverges from those of many other stroke survivors. There was no admission to hospital, no talk of long-term care, no respite care, no tiring visits to various rehabilitation services. Shirley instead received comprehensive rehabilitation in her own home by the Community Stroke Rehabilitation Team (CSRT) from her area.

"I had visits from a nurse, social worker, recreation specialist, rehabilitation therapist, occupational therapist and physiotherapist."

Regular visits from the OT and PT allowed Shirley support as she worked on a series of exercises intended to build strength in her affected hand or walk around her house and neighbourhood to work on her balance and stamina. Once per week they guided her activity at a therapeutic pool where she, "really noticed a difference in my muscle and in my balance." She was also later given walking poles which helped her regain her balance and coordination.

Chris McCracken is equally enthusiastic about the CSRT. "With the Team coming to the house we could coordinate the many appointments so they were well spaced and fairly short," he recalls. "And they started immediately with telling mom what she could do to start getting better, which was really positive." While he feels fortunate that he's been around full-time to care for his mom, he has appreciated the team's support of his learning what he could about stroke and how to care for a new stroke survivor. They helped him decide on equipment for the bathroom and purchasing a "rollator" (or walker with wheels) and how to ensure the household environment was optimal for helping Shirley get around.
