Determining the Need for Rehabilitation Services Post Stroke

Phase One:
Report on the Inter-Rater Reliability Project

South West LHIN Priorities Fund 2007- 08 Report

Moving to Best Practice

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BACKGROUND:

Stroke is the leading cause of adult disability in Canada. Deficits in functional status (disability) predict both mortality and resource use (hospital costs and nursing home use)[1] in the elderly, while rehabilitation is known to reduce disability resulting from stroke. For 2006/07, the Institute for Clinical Evaluative Sciences (ICES) identified a total of 16,443 treated cases of cerebrovascular disease (primarily acute stroke) in the South West LHIN; a prevalence exceeding that for Ontario[2]. Further, there were 1565 new cases of persons presenting with stroke to an acute care hospital[3] in the South West LHIN.

Enhancing rehabilitation services across the continuum of care is a primary objective for advancing the South West LHINs Integrated Health Service Plan priority, "Building linkages across the continuum for all seniors and adults with complex needs." The Southwestern Ontario Stroke Strategy is working to support the LHIN in implementing best practices for stroke rehabilitation.

Access to specialized stroke rehabilitation is a best practice recommended by the Canadian Stroke Strategy in Canadian Best Practice Recommendations for Stroke Care 2006[4].

In the South West LHIN there is considerable variation in access to specialized stroke rehabilitation. For example, access to inpatient rehabilitation across counties ranged from 0 - 37% (acute stroke hospital admissions being admitted to designated rehabilitation hospital beds; CIHI data for 2004/5)[5]. CCAC data indicates low levels of service in therapies for stroke survivors (less than 10% receiving speech and less than 25% physical therapy).[2] A survey of publicly funded ambulatory services across the LHIN identified less than half of facilities serving stroke survivors offered access to speech and occupational therapies[2].

These gaps in best practice across the South West LHIN lead to the following question:

Are stroke survivors in the South West LHIN getting the rehabilitation they need?

To begin to answer this question, there is a need for a reliable estimate of the proportions of stroke survivors that qualify[6] for rehabilitation. To determine this, a standardized assessment and triage tool is needed. Such a tool could advance understanding of the variation in how stroke rehabilitation practices are applied in the South West LHIN. This information has the potential to reveal ways to improve efficiency, enhance patient flow and system integration by designing systems and processes around patient needs and coordinating services across the continuum of care.

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[1] Wu AW, Cagney KA, StJohn PD. Health Status Assessment. J Gen Intern Med: 12: 254, 1997
[2] ICES: "Treated" Prevalence Rates of Chronic Conditions in Ontario Using the John Hopkins Adjusted Clinical Groups Case-Mix System, 2006/07
[3] Ontario Stroke Evaluation Office. Integrated Stroke Care in Ontario: Stroke Evaluation Report 2006
[4] Canadian Stroke Strategy. Canadian Best Practice Recommendations for Stroke Care: 2006
[5] D. Willems. Southwestern Ontario Stroke Rehabilitation Action Planning Day Summary Report, 2007
[6] The Ontario Stroke System Consensus Panel on Stroke Rehabilitation: Time is Function 2007

On September 28th, 2007 rehabilitation stakeholders across the region met and confirmed the development of standardized admission criteria for stroke rehabilitation as critical to achieving equitable access and the next priority for moving towards best practice in the region.

Recently, the Ontario Stroke System Consensus Panel Report[6] identified provincial standards for stroke rehabilitation, recommending that "each stroke region have an explicit stroke rehabilitation service provision model in place in order to facilitate optimal and timely access to rehabilitation services".

A regional task team of clinical experts formed to create a tool that standardizes admission criteria for inpatient stroke rehabilitation, and which, when implemented across the region, could identify actual need. The team incorporated both regional input and best practices[3] in creating the Stroke Rehabilitation Candidacy Screening Tool (SRCST).

> *"The screening tool puts down on paper everything that is in my head. It will be a great help to me."*
>
> *Kim Hay, Intake Nurse Clinician*
> *Parkwood Hospital*

The SRCST combines the AlphaFIM®[7] with additional criteria to determine Candidacy and Readiness; see Appendix A.

To ensure that the SRCST can be used across the region to accurately evaluate rehabilitation needs, it was necessary to test its reliability (consistency between various users). The South West LHIN funded the proposal to pilot and test the inter-rater reliability of the SRCST through its 2007-08 priorities fund. This report summarizes the results of the reliability and pilot testing of the tool and includes recommendations for the next phase of implementation of the tool. (See Appendix B for a Glossary of Terms)

STUDY OBJECTIVE: To pilot the Stroke Rehabilitation Candidacy Screening Tool and examine its inter-rater reliability.

KEY DELIVERABLES:

1. Create an instruction manual and training package for the tool and train five assessors.
2. Establish reliability of the Stroke Rehabilitation Candidacy Screening Tool.
3. Identify revisions necessary to the tool prior to regional implementation.
4. Identify next steps for implementing the tool regionally.

INSTRUCTION PACKAGE

An instruction manual and training package for the SRCST was developed and used to educate the study participants (four raters and one back-up team member), study coordinator, and district stroke coordinator. In their evaluations, all trainees indicated excellent satisfaction with the organization, relevance and thoroughness of the education session and written materials. Revisions have been made for clinical application as a

[7] The AlphaFIM® is a standardized measure of functional severity designed for use in acute care and recommended provincially to assess rehabilitation candidacy[6]. It is a proprietary measure that has been previously tested for reliability.

result of the study findings. This package is now available for use throughout the region. A copy of the package can be obtained by contacting the Southwestern Ontario Stroke Strategy at swostrokestrategy@lhsc.on.ca

STUDY DESIGN: Inter-rater reliability (IRR) study comparing ratings on the screening tool by four different team members: occupational therapist, physical therapist, nurse and speech language pathologist. One-to-one key informant interviews with each of the raters provided qualitative information. They offered feedback regarding their experience with the tool, its benefits, opportunities for improvement and feasibility.

SETTING: Acute care clinical neurosciences unit of London Health Sciences Centre

PATIENTS: A prospective sample of ten consecutive admissions for acute stroke.

RESULTS:

Sample: The sample consisted of four men and six women, with a mean age of 67 years. All had experienced an ischemic stroke; two affecting the right hemisphere and eight, the left hemisphere. Functional severity (disability) based on AlphaFIM® ratings were: three severe, two moderate and five mild.

Disposition upon discharge:

Discharge location	Number (Percent)
Home without services	4 (40%)
Home with services	3(30%)
Rehabilitation setting	3(30%)
Long Term Care Home	0

This sample provided a good representation of varied severity levels within acute stroke admissions for which rehabilitation candidacy determinations are required.

Reliability:
IRR for the overall candidacy rating was excellent (Kappa 0.8), as was the IRR for each of the four Candidacy criteria:

AlphaFIM®: ICC 0.91 (95%CI 0.79 to 0.97)
Ability to follow commands: 100% agreement
Rehabilitation Goals: ICC 0.80 (95%CI 0.54 to 1.05)
Demonstrates Change: Kappa 0.80 (95%CI 0.54 to 1.05)

The exception was the overall Readiness rating (Kappa 0.47) for which neither of the criteria demonstrated agreement across the raters:

Medical Stability: Kappa = 0.04 (95%CI -0.21 to 0.29)
Tolerance: Kappa = -0.14 (95%CI -0.40 to 0.11)

This latter finding may reflect data quality challenges; see discussion.

Feasibility:
Raters reported an average time of 30 minutes to complete the tool. Given that the tool was used with only 10 patients, it is expected that its administration would become more efficient with more frequent and greater volume usage. Administration of the tool was found to be feasible for use in assessing stroke rehabilitation needs on an inpatient acute neurology unit.

Key Informant Interviews: (see detailed comments in Appendix C)

Benefits:

- Is patient-centred
- Assists staff with educating and communicating with the individual/family
- Provides an objective, standardized, consistent approach to decision-making
- Ensures early assessment and intervention; best practices
- Facilitates interprofessional collaborative practice; greater discussion and interprofessional understanding
- Enables team members to "speak the same language"
- Affords greater confidence to staff in the decision-making process
- Creates a rehabilitative focus in an acute care setting

"It was helpful for family meetings, explaining why their family member is or is not appropriate for rehab, and to emphasize and educate regarding the need for getting out of bed"

Jennifer Curry
Physiotherapist, LHSC

Opportunities for Improvement:

- Improve supporting documentation to facilitate completion of the tool
- Place greater focus on mobilizing patients so that Readiness can be more accurately assessed

REVISIONS TO THE TOOL: (see details in Appendix C)
Recommendations included:

- Alter the timeline for administering the AlphaFIM® to determine functional status and classification of severity of acute stroke
- Provide clarification regarding identification of goals not requiring inpatient rehabilitation
- Identify a logical flow for completion of subsequent sections of the tool based on the findings of the initial components

DISCUSSION:
The IRR of the overall Candidacy rating, and ratings of all four of its components, was excellent with a Kappa of 0.8. This important finding demonstrates the tool's ability to provide consistent results when applied by a variety of health care professionals.

Key informants reported positively regarding the expected benefit of the tool, i.e. to enable the appropriate identification of inpatient rehabilitation candidates post-stroke by providing an objective, standardized, consistent approach to decision-making. In addition, the propensity of the tool for facilitating interprofessional collaboration and communication, as well as implementation of best practices was noted as a secondary benefit.

The IRR for overall Readiness ratings was low (Kappa 0.47), as was the agreement for each of its components: tolerance and medical stability. This finding may reflect data quality challenges. When clients were determined by the AphaFIM® and Candidacy sections not to be rehabilitation candidates (because the stroke was mild/non disabling): some raters did not continue and complete the Readiness criteria, noting that "Readiness was not applicable". Three of the ten files were incomplete for the data elements rating Readiness. The sample size was therefore too small to reach a clear conclusion in regard to IRR for Readiness.

However, raters validated the relevance of the Readiness criteria for clinical decision making and felt that this component should continue to be included in the SRCST. In addition, the lack of reliability for the Readiness criteria was discussed with the task team that created the SRCST. It was decided that, rather than revise the Readiness criteria based on the study findings, to continue to include it in the SRCST and recommend further study be conducted.

OUTCOMES:

1. The Candidacy component of the Screening Tool has excellent reliability.
2. Reliability of the Readiness criteria is not confirmed; there is an opportunity for further study.
3. AlphaFIM® is confirmed as a reliable tool.
4. The SRCST has face validity; confirmation by clinicians that it captures the key clinical elements for decision making.
5. Readiness criteria continue to have strong clinical relevance from both the end user and regional task team perspective.
6. The tool was feasible for use in an acute care setting.
7. A logical flow for completion of the tool was used to put the form into an electronic record format at Huron Perth Healthcare Alliance using Meditech. This form is now available to other sites.

CONCLUSION:

The excellent IRR for Candidacy ratings found in this study, and positive response regarding its benefits, supports the feasibility and use of the Stroke Rehabilitation Candidacy Screening Tool to determine rehabilitation Candidacy in acute care settings. Benefits were identified for the patient, providers and the health care system; specifically, enhanced interprofessional collaboration and practice. Due to its strong face validity the Readiness component will remain in the SRCST but its reliability requires further study.

RECOMMENDATIONS:

Implement the tool across the South West LHIN to identify rehabilitation Candidacy for stroke survivors. Work with facilities during implementation to identify consistent approaches to rating rehabilitation Readiness.

Further study is required to determine the tool's utility in supporting stroke best practice standards for access to stroke rehabilitation. If it is demonstrated to be an effective tool, the model may hold promise for application to other rehabilitation populations. The Rehabilitation Priority Action Team could be used as a forum for overseeing this potential application.

NEXT STEPS:

As identified in the initial proposal, completion of this project supports work on the following next steps:

1. A “phase 2” pilot of the tool in one of the LHIN planning communities to identify the actual need for stroke rehabilitation services for stroke patients admitted to acute care.
    a. Work with regional partners to determine timing of implementation
    b. Roll out is already occurring at six sites in the South and one site in the Central planning area.
2. Transfer the learnings to the rest of the South West LHIN and share with the province.
3. Work with the Ontario Stroke System for a sustainable, provincial data collection strategy and discuss strategies to resolve reliability for the Readiness component.

Appendix A: STROKE REHABILITATION CANDIDACY SCREENING TOOL

Stroke Rehabilitation Candidacy Screening Tool

Study ID # _____
Date of Stroke: _____ **Rater ID #** _____

Part I

Rehabilitation Candidacy:

Functional Status: AlphaFIM *Please circle score for each item*

Eating	1	2	3	4	5	6	7
Grooming	1	2	3	4	5	6	7
Bowel Management	1	2	3	4	5	6	7
Toilet transfer	1	2	3	4	5	6	7
Expression	1	2	3	4	5	6	7
Memory	1	2	3	4	5	6	7

Motor conversion score: ___ Cognitive conversion score: ___ Total FIM score: ___/126

Date Part 1 completed: _____

Part 2

Ability to Follow Commands: ☐ Yes ☐ No

Verbal: "Close your eyes"
Nonverbal: Follows written command "Close your eyes" **and/or**
Follows addition of gestural cue for "Close your eyes"

Rehabilitation Goals: ☐ Yes ☐ No If yes, select from goals below

From your assessment the patient requires inpatient rehabilitation to improve:

☐ communication
☐ arm and hand function
☐ cognitive, perceptual ability
☐ return to oral diet (swallowing)
☐ self care (bathing, dressing, toileting)
☐ continence (bowel/bladder control)
☐ mobility (transfers, ambulation, sitting with comfort)
☐ ability to perform role (home & money management, organizational, socialization, vocational skills)
☐ caregiver/family's ability to manage the patient's care after discharge
☐ other: _____

Demonstrates Change: ☐ Yes ☐ No

Demonstrates improvement in function over time that is related to rehabilitation goals.
Time over which change will be demonstrated will vary depending on the severity of the stroke.

Patient meets all criteria above and should be considered a candidate for rehabilitation: ☐ Yes ☐ No

Verbal Consent to Participate In Rehabilitation: ☐ Yes ☐ No

Patient/Substitute Decision Maker has agreed to Rehabilitation Goals as identified above and indicates willingness to participate in rehabilitation intervention post acute care.
"Would you be willing to participate in rehabilitation services (cite relevant services e.g. PT, OT, SLP, SW or rehabilitation program) to (cite patient/family goals as listed above) after the doctors feel you are ready to leave this acute care service?"

Rehabilitation Readiness:

All qualifying candidates will be followed to determine when rehabilitation readiness is achieved as follows:

Tolerance: Tolerates a minimum of one hour sitting up in a wheelchair (or upright out of bed) twice per day. Tolerance achieved: ☐ Yes ☐ No

Medical Stability:

To guide you in your decision about medical stability, please consider the following:

- MRP identifies that patient no longer requires acute care
- Cause of stroke explored; medical investigations completed or in process
- Secondary prevention/medication plan initiated
- Co morbid medical conditions managed/stable
- Patient is not palliative (life expectancy > 6 months)

Medical Stability achieved: ☐ Yes ☐ No

Date Part 2 completed: _____

Instructions for Completion

AlphaFIM: Please score according to the AlphaFIM Instrument Guide and FIM System Decision Trees. You will need to enter these raw scores into the web-based system to get the conversion scores (see page 8 of Instruction Manual).

Ability to Follow Commands: Give the verbal command "close your eyes". If the patient does not respond appropriately, show them the written command "close your eyes". If the patient is still unable to respond appropriately, repeat the command verbally "close your eyes" and, while keeping your eyes open, point to your eyes and make a gesture to close them (four fingers horizontally lower as if lowering a blind). Do not close your eyes as this would be testing the patient's ability to copy your action versus follow a command.

Rehabilitation Goals: Please check off any goals that, based on your assessment and clinical judgment, apply to the patient and require treatment in an **inpatient** rehabilitation setting.

Demonstrates Change: Improvement in function over time that is **related to** rehabilitation goals. The time over which change in function should be observed is based on stroke severity as follows: Mild (FIM>80) over 3 days
Moderate (FIM 40-80) over 7 days
Severe (FIM <40) over 14 days

Candidacy: Patient meets all criteria above. Select Yes, if the patient is able to follow commands, has rehab goals and demonstrates change over time according to the criteria above. The AlphaFIM score will be used to select the appropriate service.

Verbal Consent to Participate in Rehabilitation: Obtain the patient/substitute decision maker's consent using the question provided in the tool.

Additional information….

Who will complete the form:

The intent is for **acute care staff** to complete the form. Persons completing the form will need to be trained in how to use the tool and credentialed in the use of AlphaFIM. It is recommended that this person be an **allied health professional or dedicated stroke nurse.**

When to complete the form:

You will notice that there are two parts to the tool (Part 1 and Part 2). Part 1, Rehabilitation Candidacy/ Functional Status, is measured using the AlphaFIM. The AlphaFIM must be completed within 72 hours of admission.
For the purposes of the study, each part of the tool must be completed on the same day by all raters.
After a study subject provides consent to participate in the study, all four raters completing the tool for that subject will need to agree on a 24 hour time period, that falls within 72 hours of admission, during which Part 1 is to be completed.

Based on the resulting FIM score classifying the stroke survivors' severity, all raters will select an appropriate date on which to complete Part 2 (see section "Demonstrates Change").

How to complete the form:

Not all criteria must be directly observed. It is acceptable to consult the patient's care team to obtain the necessary information.

Tolerance: Identify the length of time that a patient is able to tolerate sitting up out of bed in a wheelchair by observation, or from discussion with the patient's care team, to determine if they meet the minimum requirement. 'Tolerate' refers to remaining awake and alert, and reasonably comfortable.

Medical Stability: The points under medical stability are meant to guide you in your decision. It is not meant to be a checklist. MRP refers to the most responsible physician. Select yes or no based on the information you are able to gather from the chart and patient care team on the day that Part 2 of the assessment is completed.

Appendix B: GLOSSARY OF TERMS

Kappa: used to measure how observers classify individual subjects into the same category on a measurement scale. It is a statistical index which compares the agreement against that which might be expected by chance.

ICC: the *Intraclass Correlation Coefficient* is a measure of correlation, consistency or conformity for a data set when it has multiple groups.

CI: *Confidence Interval* is an estimate of the range within which one can be 95% confident that the true value lies within the parameters stated. Thus, confidence intervals are used to indicate the reliability of an estimate.

Face validity: a tool is valid if it is a true measure of the concept or construct it is designed to measure. A tool has face validity if the evidence supporting it is based on expert opinion and best practice; such that the contents of a test or procedure appear to be measuring what they are supposed to measure.

Appendix C: Key Informant Interview Results

Quotes highlighting raters' experiences using the tool in the study.

Nurse, Clinical Neurosciences

I think that the tool facilitated intercollaborative practice for all disciplines, which is one of the key components of stroke assessment.

I think that using the tool contributed to ensuring early intervention and assessment of needs in a patient's recovery, which is vital to their out come.

I believe that by using one consistent tool we can all communicate and understand patient centered goals more clearly.

It made you realize how much you do for people and don't let them try it. There was a huge benefit; it changed how we look at patients.

It would be wonderful if everyone was focused on it. It streamlined the focus – everyone was looking for the same things. It provided more objectivity – you could rate it.

Nurse Coordinator, Best Practices, Regional Stroke Centre

It drove home the inadequacies of the charting. We have a medical problem focus rather than a rehab focus; we are probably not documenting rehab problems. It contributed to improved awareness; rarely do nurses read allied health documentation.

There is an opportunity to look at including it into our documentation now so it is in place when we go to electronic charting.

The tool was easy to complete.

Medical Stability: cannot create checklist criteria, must be a doc to doc decision.

Physical Therapist

The tool addressed the need for guidelines for rehabilitation admission by providing standardized, objective criteria. It helped with the selection process for rehabilitation; improving team discussion and understanding.

It was helpful for family meetings, explaining why their family member is or is not appropriate for rehab, and to emphasize and educate regarding the need for participation in certain activities (e.g. getting out of bed).

Provided confidence in the decision-making process; knowing that the measure (AlphaFIM®) has good evidence behind it and has been proven to be predictive.

There were times when patients did not get up twice a day related to staffing resources rather than the patients' abilities. So the rating for tolerance was based on what I felt was the patient's potential rather than actual performance.

Occupational Therapist

The tool provided a more standardized, objective approach to determine who should be getting into rehabilitation.

There was benefit in that it could be used by multiple people/disciplines. It provided a common understanding of why some people get in and others don't.

It was difficult to get the information from the chart.

It was easy to complete if it was your own patient.

We need a mechanism for referral of patients who may not meet criteria.

It was a good opportunity to trial a tool that is recommended as best practice and expect will be coming into use (AlphaFIM®).

Speech Language Pathologist

It gets everyone speaking the same language about a patient, creates a common unified description about the patient, which facilitates team work.

Having to rate across all areas of function raises professional respect – we all look at the patient as a whole.

It would be a nice cultural shift; more efficient.

I like that it is predictive of outcomes; it helps with planning.

The opportunity to pilot the tool was worthwhile and successful.

Barriers: documentation support.

Appendix D: Revisions to the Rehabilitation Candidacy Screening Tool

Timeline for completion of Part One:
Part One of the tool consists of a measure of functional status: the AlphaFIM®. For the first three patients, as per the instrument guidelines, the AlphaFIM® was completed within 72 hours of admission and included the most severe findings upon admission to ER. With stroke, the team identified that the patient's functional status changes rapidly within the first 72 hours and scores of the lowest function within that time frame were not a good reflection of the patient's clinical condition nor did the score serve to discriminate between varying levels of severity.

For this reason, it was decided that the best time frame for completion of the functional measure for acute stroke was at three to five days with item ratings based on function as observed over the previous 24 hours. Subsequently, ratings of severity more closely matched the discharge destination (see table below).

Table: Overview of Outcomes Inter-rater Reliability Study March 2008

Patient ID	Severity	Candidate	Discharge Location
1	Severe	Yes	Home with services
2	Moderate	Yes	Home without services
3	Mild	Yes	Home with services
4	Mild	No	Home without services
5	Mild	No	Home without services
6	Severe	Yes	Rehab
7	Mild	No	Home with services
8	Severe	Yes	Rehab
9	Moderate	Yes	Rehab
10	Mild	No	Home without services

Goals:
There was some confusion surrounding whether a patient had rehabilitation goals that required inpatient rehabilitation versus no goals. It was recommended that this be clarified by allowing three options (no goals, goals requiring community rehabilitation, goals requiring inpatient rehabilitation) and emphasizing in bold the inpatient requirement.

Format:
The criteria for successful Candidacy require that the patient meet all the criteria. In completing the tool then, it is not necessary to assess all the components if the patient fails to meet the initial criteria. As a result of the pilot, we have identified a logical flow for proceeding through the form based on the results of each section. This has been particularly beneficial for construction of the tool into an electronic record format. Huron Perth Healthcare Alliance has since created this form electronically using Meditech and has made it available to other sites.