Canadian Stroke Network

Réseau Canadien contre
les accidents cérébrovasculaires

SCORE

(Stroke Canada Optimization of Rehabilitation through Evidence)

SCORE Evidence Based Recommendations for the Upper and Lower Extremities and Risk Assessment Post-Stroke 2007

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Comments regarding these recommendations should be sent to:

Mark Bayley, MD, FRCPC, SCORE Project Co-leader,
Toronto Rehabilitation Institute, 550 University Avenue, Office 1103, Toronto, ON M5G 2A2
Tel: 416-597-3422 ext 3943
Fax: 416-597-0678
Email: Bayley.Mark@TorontoRehab.on.ca

OR

Jennifer Mokry, MSW, RSW, SCORE Project Manager
Toronto Rehabilitation Institute, 550 University Avenue, Office 11038, Toronto, ON M5G 2A2
Tel: 416-597-3422 ext. 7859
Fax: 416-597-0678
Email: mokry.jennifer@TorontoRehab.on.ca

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How to Use This Document

The ***SCORE Evidence-Based Recommendations*** focus on upper and lower extremity treatments and risk assessment for patients post-stroke. The SCORE EBR have been developed for the rehabilitation of persons who have experienced stroke with residual disability, who are medically stable within the first six months after acute stroke. The primary users of the SCORE recommendations will be *nurses, physiotherapists, occupational therapists, and other assistants* who have daily or almost daily contact with patients. However, the recommendations may also be used by *general practitioners, physiatrists, neurologists, speech language therapists, social workers, and psychologists* who provide rehabilitation care for stroke patients. Ultimately this should assist clinicians to provide the most effective treatment based on the current best evidence. These recommendations are meant to serve as a guide for providers, and clinical discretion should be used by all who are following the SCORE EBR.

The SCORE evidence based recommendations are a result of a thorough search, review, and critical evaluation of currently published Clinical Practice Guidelines (CPG) by a panel of stroke rehabilitation researchers and clinicians. The goal was not to create new recommendations, but to select recommendations from currently published, high quality CPG that are most clinically relevant for health care in Canada. The phrasing of many of the recommendations have been modified slightly to standardize terminology or to make the recommendation more specific. Care was taken to not change the context in which the original recommendation was written. Any additions made by the SCORE panel that were beyond the original context of a recommendation have been referenced with the appropriate level of evidence. There are various systems used by each CPG for the level of evidence, so the SCORE team standardized this across guidelines by using the system outlined below.

SCORE Levels of Evidence	
A	At least one randomized controlled trial, meta-analysis, or systematic review.
B	At least one cohort comparison, case studies or other type of experimental study.
C	Expert opinion, experience of a consensus panel
NE	No evidence provided.

SECTION A: BACKGROUND

The objectives of the SCORE (**S**troke **C**anada **O**ptimization of **R**ehabilitation through **E**vidence) knowledge translation project are to (i) develop a nationwide network of centres providing rehabilitation services to implement evidence-based recommendations (EBR) in stroke rehabilitation; and (ii) to identify the facilitators and barriers in implementing evidence-based practice with stroke teams.

In Fall 2003, the SCORE project team held a consensus conference to identify the top five research gaps in stroke rehabilitation, prioritize key areas for knowledge translation, and develop priorities for EBR for implementation. The top five research gaps for stroke rehabilitation were derived using an open voting process and small group discussions and include the evaluation of:

1. Multimodal program of community based support to enhance community reintegration
2. The benefit of rehabilitation for persons with severe strokes
3. The ideal timing and intensity of aphasia therapy
4. The benefit of cognitive/perceptual rehabilitation after stroke
5. The ideal timing and intensity of interdisciplinary rehabilitation for the mild and moderate stroke population.

The priority areas for an implementation of best practice were identified using an open voting process and summary discussion method. The panel determined that the following stroke rehabilitation areas had the strongest evidence and were suitable for development of EBR:

1. Lower extremity and gait rehabilitation
2. Upper extremity rehabilitation
3. Assessments of the stroke rehabilitation client to identify risk and potential sources of harm including pressure ulcers, falls, dysphagia, depression and cognitive impairment.

Clinical Practice Guideline Search & Evaluation: To minimize repetition of previously completed work, the SCORE project leaders decided to review existing stroke guideline and adapt these to Canadian needs. A systematic search was completed to identify all guidelines for stroke rehabilitation and risk assessment of pressure sores, falls, dysphagia, depression and cognition from 1997 – 2003. A systematic search was also conducted to

identify assessment and screening tools used in stroke patients for each of the risk assessment areas.

The guideline development process and how well this was reported was evaluated by 4 panel members using the Appraisal of Guidelines for Research and Evaluation (AGREE) instrument (www.agreecollaboration.org). The AGREE instrument assesses the quality of CPG for 6 domains including; (1) Scope and purpose, (2) Stakeholder involvement, (3) Rigour of development, (4) Clarity of presentation, (5) Applicability, and (6) Editorial independence. Recommendations, assessment tools, and AGREE scores were summarized and presented to the expert panels at two subsequent conferences in January and March 2004. In preparation for the expert conferences, all participants were given copies of relevant literature and evaluations developed by the stroke rehabilitation evidence based review group.

The panel members were selected to give a wide representation from all disciplines, to represent various geographic locations across Canada, and to gain perspective of individuals with stroke and some international perspectives. The expert panel consisted of stakeholders, a stroke survivor, stroke and rehabilitation researchers and clinicians from across Canada with expertise in multiple disciplines including Medicine (Physiatry, Neurology and Psychiatry) Physiotherapy, Occupational Therapy, Speech Language Therapy, Dysphagia, Psychology, Epidemiology, Motor Control and Knowledge Translation. The members of the project team and expert panel are listed in Appendix A. The panels participated in sessions that reviewed the evidence for each priority area followed by small group discussions and open voting process to arrive at the final SCORE EBR.

The SCORE EBRs have been piloted at seven hospitals across Canada for 6 months. The SCORE EBR have been updated in 2006-7 using the provider feedback from the pilot, updated versions of the CPG originally used to create the recommendations and a review of the literature using the EBRSR (www.ebrsr.com). They will be revised again in 2009.

SECTION B: TERMINOLOGY

SCORE TERMINOLOGY

The following glossary of terms was developed by consensus of the expert panel to facilitate articulation of the evidence-based recommendations.

SCORE TERMINOLOGY

TERM	DEFINITION
Assistive Technology	Technology designed to help a patient with limitations to perform daily activities and social roles.
Balance	Acquisition and maintenance of postural stability at rest or during activities.
Balance Training	Sensory motor and cognitive intervention to promote postural stability.
Biofeedback	A technique monitoring physiological functions and providing extrinsic feedback, which may include somatosensory, visual and auditory input.
Cardio Respiratory Fitness	Related to the ability to perform large muscle, dynamic, moderate-to-high intensity exercise for prolonged periods. Improvements in cardiorespiratory fitness result in improvements of the heart to deliver oxygen to the working muscles and in the muscle's ability to generate energy with oxygen and result in better endurance performance. (ACSM, 2000)
Community Based Rehabilitation Therapy	Rehabilitation provided in the home or community based institutions.
Compensatory Therapy	Adaptive therapeutic interventions designed to enhance activity and participation (the focus is on function and not impairment).
Constraint Induced Therapy	Intervention designed to enhance recovery of function or a body part by restraining a less affected function or body part.
Conventional Therapy	The usual care offered in a particular setting and must be defined in terms of their intensity, frequency, and duration.
Day Hospital	A defined geographic outpatient unit dedicated to interdisciplinary care and rehabilitation of an individual.

SCORE TERMINOLOGY

TERM	DEFINITION
Executive Function	A psychosocial construct comprising interactive component processes such as: (1) Selective and sustained attention, working memory, concept formation and set switching, all of which contribute to planning, organization decision making and problem solving. (2) Inhibition, self-awareness and theory, all of which contribute to social cognition and behaviours such as impulse control, mood, empathy and motivation.
Exercise Therapy	Intervention directed towards optimizing physical capacity.
Gait	The pattern of walking, which is often characterized by elements of progression, efficiency, stability and safety.
Hemiparesis	Weakness involving one side of the body (of mild, moderate or severe degree) that may be caused by stroke, and can be accompanied by sensory or other neurological deficits.
Hemiplegia	Refers to a complete paralysis. Complete loss of motor function on one side of the body that may be caused by stroke localized to the cerebral hemisphere opposite to the side of weakness.
Hypertonia	Abnormal increase in resistance while externally imposing movement about a joint.
Intensity	The level of effort demanded or required of the individual in relation to their current capacity (physical and mental).
Muscular Endurance	Ability of a muscle or muscle group to perform repeated muscle contractions over a period sufficient to cause muscular fatigue, or to maintain a specific percentage of the maximum voluntary contraction for a prolonged period of time. (American College of Sports Medicine Guidelines, 2000)
Muscle Strength	Maximal force that can be generated by a specific muscle or muscle group. (ACSM, 2000)
Recovery	The process whereby the person regains body structure, function, activity and participation. (Not time limited)
Restorative (Remedial) Therapy	Therapeutic interventions designed to restore body structure and function by targeting the underlying impairment to enhance recovery.
Spasticity	Velocity-dependent increase in muscle tone that often occurs in stroke.

SCORE TERMINOLOGY

TERM	DEFINITION
Stroke Unit	A defined geographic dedicated to interdisciplinary care and rehabilitation of individuals with stroke.
Task Oriented or Task Specific Therapy	The practice of meaningful tasks to promote recovery.
Timing of Stroke Rehabilitation	The time following a stroke at which stroke rehabilitation interventions are initiated.
Hyper Acute	Arbitrarily defined as the first 72 hours.
Acute	Arbitrarily defined as the first week following a stroke in which medical stabilization usually occurs.
Sub-Acute	The time period during which the most rapid recovery occurs, usually from the 1st to 6th week.
Post-Acute	The time period during which continuing recovery occurs, usually from 6 weeks to 6 months.
Chronic	The time period following 6 months post stroke.
Tone	Resistance to passive stretch while the patient is attempting to maintain a relaxed state of muscle activity.
Types of Stroke	Ischemic or hemorrhage to the brain.

* May vary according to severity of stroke and co-morbid conditions

SECTION C: SCORE EVIDENCE BASED RECOMMENDATIONS

General Recommendations for the Context of Stroke Rehabilitation

1. Patients admitted to hospital because of acute stroke should be treated in a stroke unit by an interdisciplinary team. *(Adapted from SIGN 64 2.1 Level A)*

2. The core interdisciplinary team should consist of appropriate levels of medical, nursing, physiotherapy, occupational therapy, speech language therapy, social work staff (*Adapted from* SIGN 64 3.1 Level A) psychology, nutrition and ancillary services as required. (SCORE Level C)

3. A full interdisciplinary assessment should be undertaken for each acute stroke patient to define the nature of the event, the need for investigation, management, the need for rehabilitation (*Adapted from* SIGN 13 3.2.2 Level C) and the plan for discharge*. (SCORE Level C)*

4. The rehabilitation program should be guided by specific and realistic goals developed in conjunction with the patient, family and rehabilitation team. (*Adapted from* VaDoD R-2 Level C)

5. Formal interdisciplinary meetings should be conducted regularly, at which individual patient problems are identified, rehabilitation goals reviewed, progress monitored and discharge planned. (*Adapted from* SIGN 64 3.1.2 Level A)

6. Patients and carers should have an early active involvement in the rehabilitation process. *(SIGN 64 3.1.1, Level B)*

7. Comprehensive caregiver training and education is recommended for proper rehabilitative support. *(Adapted from SPREAD R9.11b Level C)* This comprehensive approach should include information about causes and consequences of stroke as well as the goals, process and prognosis of rehabilitation*.* Family members and carers should receive thorough training in techniques and problem-solving approaches required to provide effective support. (*Adapted from* AHCPR *pg.63* Level C) This should consist of active counseling, providing written material alone is not sufficient. (SCORE Level A)

Common Recommendations For the Rehabilitation of Both The Upper and Lower Extremity

Timing/Intensity/Frequency/Duration of Therapy

8. Restorative therapy post stroke should start as early as tolerated and increase gradually as the medical condition permits. (SCORE Level C, Ottawa Panel 1.57 Level A)

9. The patient should receive as much therapy as can be provided and find tolerable. (*Adapted* from RCP 4.5b Level A)

10. While the evidence suggests that more therapy results in better mobility, functional and quality of life outcomes (Ottawa Panel 1.17/1.30 Level A), the optimal amount of therapy is not known. The SCORE Panel recommends at least 2 hours (SCORE Level C) of individualized

supervised direct therapy with a physiotherapist, occupational therapist, or delegate for the arm and leg per day (Level B) during the sub-acute phase (SCORE Level B).

EMG Biofeedback

11. EMG Biofeedback systems should not be used on a routine basis. *(RCP 9.3.2a Level A)*

Training Techniques

12. Exercise and functional training should be directed to enhance motor control for restoring sensorimotor and functional abilities. (Adapted from SPREAD R9.13 Level A, Ottawa Panel 3.8 Level A)

13. Engage in repetitive and intense use of novel tasks that challenge the patient to acquire necessary motor skills to use the involved limb during functional tasks and activities. (Adapted from HSF-AH 6.1 Level A)

14. Following appropriate medical evaluation; patients in the post-acute phase should participate regularly in an aerobic exercise program that is designed with consideration of the patient's co-morbidities and functional limitations. (Adapted from VaDoD N-1 Level B; Ottawa Panel 2.1, Level A)

15. Task-specific training is recommended to improve performance of selected tasks for the lower extremity. (Adapted from SIGN 64 4.2.1 – Level B; Ottawa Panel 3.1 Level A)

16. Therapy directed at postural control should be included in the patient's therapy program. (SCORE Level C)

17. An extra 11 – 13 reps/days of sit-to-stand should be included in the patient's therapy program. (SCORE Level A)

Compensatory vs. Remedial therapy

18. There is insufficient evidence to recommend for or against NDT in comparison to other treatment approaches for motor retraining following an acute stroke. *(VaDoD S-8)*

Spasticity

19. Spasticity and contractures should be treated/prevented by antispastic pattern positioning, range-of-motion exercises, stretching and/or splinting. (AHCPR p.73 Level C)

20. Spasticity in the arm or leg, should not limit the use of strength training. (Adapted from RCP 9.3.4b Level C)

21. In patients with disabling or symptomatically distressing spasticity (RCP 9.3.4b) consider use of tizanidine and/or oral baclofen for spasticity resulting in pain, poor skin hygiene or decreased function. Tizanidine should be used specifically for chronic stroke patients. (Adapted from VaDoD S-9.2 Level B)

22. For post-acute stroke patients with focal and symptomatically distressing spasticity consider use of Botox injection to increase ROM and decrease pain (Adapted from RCP 9.3.5a Level A). Recommend against diazepam or other benzodiazepines during stroke recovery period due to possible deleterious effects on recovery, in addition to deleterious sedation side effects. (VaDoD S-9.3 Level B)

RECOMMENDATIONS FOR LOWER EXTREMITY REHABILITATION

Gait

23. Body weight supported treadmill training may be used in selected clients. The literature is inconclusive as of yet. (SCORE Level C)

24. Gait re-education with or without treadmill walking should be offered to improve walking ability. (Adapted from RCP 9.6.1b, Level B; *Ottawa Panel Level B or A*)

Assistive Technology

25. Recommend that wheelchair prescriptions be based on careful assessment of the patient and the environment in which the wheelchair will be used. (VaDoD N-2.4 Level C)

26. Assess the need for special equipment on an individual basis; once provided, equipment should be evaluated on a regular basis. (RCP 9.6.3a Level B)

27. Although ankle foot orthosis may help some patients with foot drop, they should not be used routinely without proper assessment prior to prescription and follow-up to establish their effectiveness in the individual. (SIGN 4.2.5 Level A)

28. Lower extremity orthotic devices should be considered if ankle or knee stabilization is needed to help the patient walk. Prefabricated bracing can be used initially, and more expensive customized bracing reserved for patients who demonstrate a long-term need. (AHCPR p.72 Level C)

29. Use adaptive devices for safety and function if other methods of performing the task are not available or cannot be learned. (Adapted from VaDoD N-2.1 Level C)

30. Walking assistive devices may be used to help with mobility, efficiency and safety, when needed. *(Adapted from VaDoD N-2.5 Level C)*

Functional Electrical Stimulation (FES) for the Lower Extremity

31. Functional electrical stimulation (FES) should be considered for use in improving muscle force, strength and function (gait) in selected patients. FES must not be assumed to have sustained effects. (*Adapted from* SIGN 4.2.6 Level A)

RECOMMENDATIONS FOR UPPER EXTREMITY REHABILITATION

Constraint-Induced Movement Therapy

32. Consider the use of constraint-induced therapy for a select group of patients – that is patients with 20 degrees of wrist extension and 10 degrees of finger extension, who have minimal sensory or cognitive deficits. To date, the only demonstrated benefit occurs in patients who received 6 to 8 hours of daily training for at least 2 weeks. (Score Level A) Adapted from VaDoD S-6 l)

Training Techniques

33. For patients whose arm and hand are predicted to be less than stage 2 as measured by the Chedoke-McMaster Stroke Assessment (CMSA), enhance sensory-motor recovery of the upper limb by using sensory motor stimulation. This consists of passive and active-assisted range of movement (Level A) that also includes placement of the upper limb in a variety of positions within the patient's visual field (Level C) (Adapted from HSF-AH 1.2a Level A and C)

34. Enhance sensory-motor recovery in the upper limb by using visual imagery. (HSF-AH 1.2c Level C)

Prevention of Shoulder Pain

35. The presence of pain in stroke patients should be identified early and treated appropriately. (SIGN 64 4.9 NE)

36. Identify factors that cause or exacerbate shoulder pain. (HSF-AH 2.1 Level C)

37. The following interventions to prevent shoulder pain should be considered:
    - i) use of foam supports *(RCP 9.4.2aii Level A, Ottawa Panel 9.15 Level A)*
    - *ii)* passive assisted movement within the pain-free range *(SCORE Level C)*
    - *iii)* position and support the limb to minimize pain *(SCORE Level C, Ottawa Panel 9.14 Level A)*
    - iv) protect the limb during functional mobility tasks *(Adapted from HSF AH 2.3b Level C)*
    - v) teach patient to respect the pain. *(HSF-AH 2.3c Level C)*
    - vi) facilitate active movement of the upper limb and trunk *(HSF-AH 2.3d Level C)*
    - vii) use some means of external support to protect the upper limb during wheelchair use (e.g. hemi tray, arm trough) *(HSF-AH 5.1g Level C)*
    - viii) with analgesics *(SCORE Level C)*

38. Encourage joint protection and minimize joint trauma:
    - a. careful handling of the upper limb during functional activities. *(Level B)*
    - *b.* shoulder should not be passively moved beyond 90 degrees of flexion and abduction unless the scapula is upwardly rotated and the humerus is laterally rotated. *(Level A)*
    - *c.* inappropriate to use overhead pulleys because they appear to contribute to shoulder tissue injury. *(Level A, Ottawa Panel 2.38 Level A)*
    - d. use of some means of external support to protect the upper limb (e.g. sling, pocket, by therapist) in Chedoke Stage 1 or 2 <u>only during transfers and mobility</u>. *(Level C, Ottawa Panel 9.14 Level A)* *(Adapted from HSF-AH 1.1)*

39. Maintain a comfortable, pain-free mobile arm and hand by instructions to the individuals or groups overseen by professional rehabilitation clinicians in an institutional or community setting that teach the patient and caregiver to perform self-range of motion exercises. (Adapted from HSF-AH 5.1b Level C)

40. To prevent shoulder pain educate staff and carers about correct handling of the hemiplegic arm. (Adapted from RCP 9.4.2iv Level B)

41. Instruct on proper positioning to reduce pain while sleeping. (Adapted from HSF-AH 3.3e Level C)

ROM and Modalities

42. Consider the following interventions to treat shoulder pain:
    i) Improve ROM through gentle stretching and mobilization techniques focusing especially on external rotation and abduction, as a means of preventing frozen shoulder and shoulder-hand-pain syndrome. Level B)
    ii) Modalities: Ice, heat and soft tissue massage (Level C)
    iii) Strengthening (Level C) *(Adapted from VaDoD S-11.3, C,D,F)*

43. Maintain a comfortable, pain-free, mobile arm and hand: encourage caregiver supervised self-range of motion exercises in the home. Continue to identify task or movement characteristics that increase shoulder pain. (Adapted from HSF-AH 5.1c Level C)

44. Reduction of hand oedema by:
    i) active self-range of motion exercises in conjunction with elevation (HSF-AH 8.2d Level C) to gain full range of movement of the fingers, thumb and wrist.
    ii) retrograde massage. (HSF-AH 1.3b Level C)
    iii) gentle grade 1-2 mobilizations for accessory movements of the hand and fingers. (HSF-AH 8.2b Level C)
    iv) cold water immersion (B) or contrast baths (C). (HSF-AH 8.2e Level B/C)

Functional Electrical Stimulation (FES) For Upper Extremity

45. FES may reduce shoulder subluxation in the short term (i.e. mean 5 weeks) but not in the long-term in patients with Chedoke stages 1 and 2 recovery of upper extremity. (Adapted from HSF AH7.3 Level A)

46. Functional Electrical Stimulation (FES) used alone for the wrist and forearm can reduce motor impairment and improve functional motor recovery. (SCORE Level A, Ottawa Panel 10.3 Level A)

47. FES may increase pain free ROM of lateral rotation of the shoulder (SCORE Level A)

RECOMMENDATIONS FOR RISK ASSESSMENT

Pressure Ulcer Risk Assessment

1. A head to toe skin assessment should be carried out with all patients at admission, transfer of care, and any time there is a change in health status. Particular attention should be paid to bony prominences. (RNAO 1.1, p.24, Level C)

2. Patients who are restricted to bed and/or chair should be assessed daily for pressure, friction and shear in all positions and during lifting, turning and repositioning. (RNAO 1.4, p.24, Level C)

3. All data should be documented at the time of assessment and reassessment. (RNAO 1.5, p.24, Level C)

4. Assessment of a patient's risk for the development of pressure ulcers is recommended using the "Braden Scale for Predicting Pressure Sore Risk". Interventions should be based on Braden's categories (Sensory perception, mobility, activity, moisture, nutrition, friction, and shear), rather than a total score. In some specific cases, where population specific risk assessment tools are available and tested for validity and reliability, these can be used for assessment. (RNAO 1.2, p.24, Level C)

5. All pressure ulcers are identified and staged using the National Pressure Ulcer Advisory Panel (NPUAP) criteria. (RNAO 1.3, p.24, Level C)

Pressure Ulcer Screening Tool: Braden Scale for Predicting Pressure Sore Risk

Dysphagia Risk Assessment

6. Keep all patients NPO until a healthcare professional, trained to administer and interpret a simple, valid, bedside testing protocol screens all stroke survivors for swallowing difficulties within 24 hours of being awake and alert. (SCORE Level C)

7. Patients should be reassessed for changes in their medical conditions and their swallowing status. (*Adapted from* SIGN-D, 2.1.1, p.3 Level B)

8. The gag reflex alone is a poor predictor of swallowing function and should not be used for screening for dysphagia in stroke patients. (SIGN-D 2.2.2, p.4 Level B)

9. Screening may include the following:
    a. Assessment of alertness and ability to participate in screening (SCORE Level C)
    b. Direct observation of signs and symptoms of oropharyngeal swallowing difficulties. (SCORE Level C)
    c. Administration of a 50-mL water swallowing test, as described by Kidd et al. 1994 (SCORE Level B)
    d. Assessment of pharyngeal sensation (SCORE Level B)
    e. Assessment of tongue protrusion (SCORE Level B)
    f. If a patient fails, refer to appropriately trained dysphagia expert (SCORE Level B)

10. A Speech Language Pathologist (SLP) or a trained healthcare professional* must demonstrate competencies in the following areas:
    a. Administration and interpretation of a water swallow test
    b. Recognition of the early signs and symptoms of dysphagia (abnormal tongue movement, wet voice quality, reduced sensation at posterior pharyngeal wall)
    (SCORE Level C)

** Where a SLP is not available, a health professional (trained in examination and interpretation of oral motor function, swallowing function, and videofluoroscopic swallowing assessments.)*

11. Any patient with an abnormal swallow should be seen by a SLP* who will define swallow physiology making recommendations regarding management and treatment. (Adapted from VaDoD G 1.3, p.13, Level C) The SLP will further advise the patient/caregiver and staff on safe swallow and consistency of diet and fluids. (Adapted from RCP 8.2b, p.39 Level A)

12. The assessment includes a clinical bedside examination and, if warranted, an instrumental examination. (SCORE Level C)

13. Assessment should include:
    a. Medical, developmental and swallowing history (such as medical diagnosis, nutrition, hydration and pulmonary status, etc.) (CASLPO #3a, p.11, SCORE Level C)
    b. Oral motor and sensory assessment (such as the structure, function, and sensation of the lips, tongue, velopharynx, etc.) (CASLPO #3b, p.11, SCORE Level C)
    c. Determine risk factors for dysphagia (Including cognition and communication) and potential complications including airway obstruction, aspiration of food and liquid, inadequate nutrition, and hydration (HSF #4b, SCORE Level C)

14. Trials of swallowing food and or fluids may be included in clinical assessment. Swallowing strategies such as various textures, volumes, postures, maneuvers may be included. (SCORE Level C)

15. Patients should be reviewed for dysphagia at least once a week after the initial assessment. (Adapted from SIGN-D, 2.1.1, p.3 Level B)

Nutritional Screening

16. Patient's nutritional status, including risk factors, should be established within 48 hours of admission to hospital by appropriately trained personnel. (Adapted from SIGN-D, 2.1.2, p.3 Level B)

17. Results from the screening process should guide appropriate referral to the dietitian for assessment and management (SIGN-D, 2.1.2b, p.3 Level C) which includes:
    a. Assess energy, protein, and fluid needs
    b. Recommend alterations in diet to meet energy, protein, and fluid needs
    c. Support alterations in food texture and fluid consistency, based on the assessment by a speech language pathologist or swallowing team.
    (HSF#6, p.8, Score Level C)

18. The patient's physician may monitor hydration status, initiate appropriate laboratory investigations and order supplementary intravenous fluid administration. (Adapted from HSF #4, p.7-8, SCORE Level C)

19. Nutritional assessment should be repeated at regular intervals throughout the episode of care. (Adapted from SIGN-D 2.1.2, p.3, Level B)

Dysphagia Screening Tool : TOR-BSST

Falls Risk Assessment

20. All patients post stroke should be screened for risk of falling by a clinician with appropriate skills* and experience at admission and all changes of environment. (SCORE Level C)

* Including nurses, Physiotherapists, or Occupational Therapist

21. The screening assessment for risk of falls should include identification of intrinsic and extrinsic risk factors associated with potential falls and fall injuries, as the basis for individual and environmental multi-factorial intervention strategies. (RNAO 3, p.23, Level B) Specifically the assessment should include:

    Intrinsic: (AGS, SCORE Level C)

    a. History including the following questions:
        i. How many prescription medications are you currently taking?
        ii. Can you get up from a chair *without* using your arms?
        iii. Do you ever feel that you are losing balance, but that the problem is in your legs, not your head?
        iv. When was the last time you had your eyesight checked?
        v. Do you have serious problems with you feet (corns, bunions, etc.)?
        vi. Do you have any other chronic medical problems

    b. Examination of mobility
        i. Gait and balance
        ii. lower extremity function
        iii. basic muscle strength
        iv. proprioception

    c. Examination of vision and perception

    d. Examination of cardiovascular status
        i. heart rate and rhythm
        ii. postural pulse and blood pressure
        iii. if appropriate, heart rate and blood pressure responses to carotid sinus stimulation

    Extrinsic:

    e. Environmental risks (AGS#2, p.667,SCORE Level C)

22. Those found to be at risk must undergo a comprehensive assessment. (SCORE Level C)

23. All patients with a fall post stroke should have an assessment of circumstances surrounding the fall to identify precipitating factors. (SCORE Level C)

Falls Screening Tools: **<u>Ambulatory Patients</u> – Timed Up and Go**
<u>Non-ambulatory Patients</u> - STRATIFY

Depression Risk Assessment

24. All patients with stroke should be viewed with a high level of suspicion for depression by the clinical team. Prior history of depression and previous risk factors of depression should be assessed as part of the initial screen. All patients with stroke should be screen for depression within 48 hours of gaining consciousness and prior to discharge throughout the continuum of care. (SCORE Level C)

25. The clinical team should be aware of the differences in the clinical features of delirium, dementia and depression. To facilitate this process the clinical team should use a structured tool to identify those stroke patients who are or at risk of depression. These tools include the Community Stroke Aphasic Depression Questionnaire (SADQ) (Sutcliffe & Lincoln. Clin Rehabil 1998; 12: 506-13) and the Hospital Anxiety Depression Scale. (SCORE Level C)

Depression Screening Tools:
Community Stroke Aphasic Depression Questionnaire
Hospital Anxiety Depression Scale

Cognition Risk Assessment

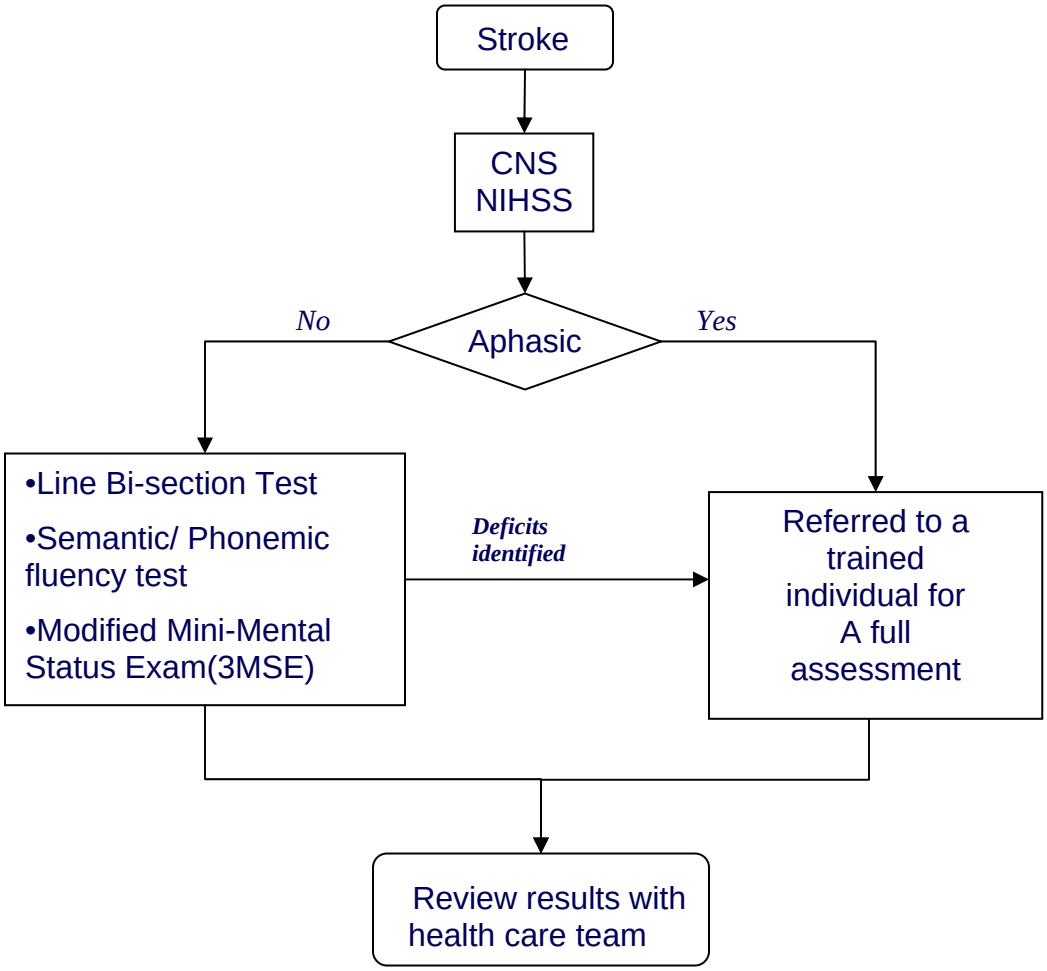
26. If screening suggests a cognitive deficit, a more detailed assessment by an appropriately trained individual* should be performed. (SCORE Level C)

* Psychologist or psychiatrist

27. All patients post stroke must undergo a screening of cognitive functions within 48 hours of regaining consciousness or change in care/facility by a trained individual. (SCORE Level C)

28. The screening should be done using a validated tool for the stroke population, which should include
    a. Arousal/alertness:
    b. Attention (sustains 5 seconds);
    c. Language;
    d. Orientation;
    e. Neglect;
    f. Memory (To flag for dementia);
    g. Executive Dysfunction;
    h. Apraxia (SCORE Level C)

Cognition Screening Algorithm:
Modified Mini-Mental Status Exam
Line Bisection Test
Semantic Fluency Test



Notes:
****Patient needs to be alert to participate in the cognitive screen.***
****With changes in medical status and/or environment, a reassessment of patient's cognition is warranted.***

Figure 1. Algorithm for Cognitive screening in stroke patients.

SECTION D: ASSESSMENT TOOLS

Braden Scale for Predicting Pressure Sore Risk

Sensory Perception Ability to respond meaningfully to pressure-related discomfort	1 Completely limited Unresponsive (does not moan, flinch or grasp) to painful stimuli due to diminished level of consciousness or sedation, or limited ability to feel pain over most of body surface.	2 Very Limited Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness, or has a sensor impairment that limits the ability to feel pain or discomfort over ½ of body.	3 Slightly Limited responds to verbal commands but cannot always communicate discomfort or need to be turned or has some sensory impairment that limits ability to feel pain or discomfort in 1 or 2 extremities.	4 No Impairment Responds to verbal commands, has no sensory deficit that would limit ability to feel or voice pain or discomfort.	
Moisture Degree to which skin is exposed to moisture	1 Constantly moist Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	2 Very Moist skin is often, but not always moist. Linen must be changed at least once a shift.	3 Occasionally moist Skin is occasionally moist, requiring an extra linen change approximately once a day.	4 Rarely moist Skin is usually dry, linen only requires changing at routine intervals.	
Activity Degree of physical activity	1 Bedfast Confined to bed.	2 Chairfast Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	3 Walks occasionally Walks occasionally during the day, but for very short distances with or without assistance. Spends majority of each shift in bed or chair.	4 Walks frequently Walks outside the room at least twice a day and inside room at least every 2 hours during waking hours.	
Mobility Ability to change and control body position	1 Completely immobile Does not make even slight changes in body or extremity position without assistance.	2 Very limited Makes occasional, slight changes in body or extremity position but unable to make frequent or significant changes independently.	3 Slightly limited Makes frequent thought slight changes in body or extremity position independently.	4 Walks frequently Makes major and frequent changes in position without assistance.	
Nutrition *Usual* food intake pattern.	1 Very Poor Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Take fluids poorly. Does not take a liquid dietary supplement, or is NPO and/or maintained on clear liquids or IVs for more than 5 days.	2 Probably inadequate rarely eats a complete meal and generally eats only about 1.2 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement, or receives less than optimum amount of liquid diet or tube feeding.	3 Adequate Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy) each day. Occasionally will refuse a meal, but will usually take a supplement if offered, or is on a tube feeding or TPN regimen, which meets most of nutritional needs.	4 Excellent Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products daily. Occasionally eats between meals. Does not require supplementation.	
Friction and Shear	1 Problem Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Spasticity, contractures or agitation lead to almost constant friction.	2 Potential problems Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair restraints, or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	3 No apparent problem Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair at all times.	NOTE: Patients with a total score of 16 or less are considered to be at risk of developing pressure ulcers. (15 or 16 = low risk; 13 or 14 = moderate risk; 12 or less = high risk)	
				TOTAL SCORE	

UNIVERSITY HEALTH NETWORK

TOR-BSST

The Toronto Bedside Swallowing Screening Test

(addressograph)

DATE:_____ TIME: _____ Patient Number:_____

A) Before water intake:

(Mark either normal, abnormal or unable to assess for each task.)

1. Have patient say 'ah' and judge voice quality.	Normal ☐	Abnormal ☐	Unable to assess _____
2. Ask patient to stick their tongue out and then move it from side to side.	Normal ☐	Abnormal ☐	Unable to assess _____
3. Stroke posterior wall of throat on each side and ask patient if they can feel it.	Normal ☐	Abnormal ☐	Unable to assess _____

B) Water Intake:

While the patient is sitting upright give **10 x 5ml (teaspoon)** boluses followed by a **sip from a cup**. Ask patient to **say "ah"** after each swallow. *If any **coughing or change in voice quality** occurs**, stop the test** and check appropriate box**. Do not mark normal findings** in this section**.** If you are unable to continue the water swallows to your satisfaction of patient safety, record the reason for terminating in the **Unable to Assess** box.*

1 TSP. SWALLOWS	***Cough during/ after swallow***	***Wet voice after swallow***	***Unable to Assess (Give reason)***
Swallow 1	☐	☐	_____
Swallow 2	☐	☐	_____
Swallow 3	☐	☐	_____
Swallow 4	☐	☐	_____
Swallow 5	☐	☐	_____
Swallow 6	☐	☐	_____
Swallow 7	☐	☐	_____
Swallow 8	☐	☐	_____
Swallow 9	☐	☐	_____
Swallow 10	☐	☐	_____
2) Free drinking from a cup	☐	☐	_____
3) Drool during water swallows?	☐		

C) After water intake:

1. Have patient say 'ah' again and judge voice quality	Normal ☐	Abnormal ☐	Unable to Assess _____

D) Results:

☐ **Passed** (no abnormal results) ☐ **Failed** (1 or more abnormal results)

If Failed initiate referral to SLP

Nurse's Signature: _____

Canadian Stroke Network
Réseau Canadien contre les accidents cérébrovasculaires

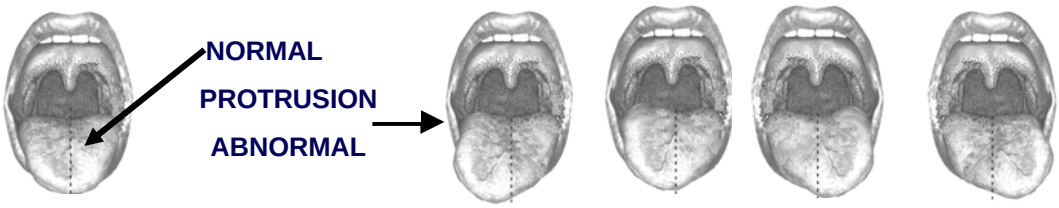
Some Guidelines and Tips for the TOR-BSST

Remember to have tongue depressors, swabs, a cup with water, a teaspoon and a flashlight ready before starting the screening test.

A. Before water intake:

1. ***"I want you to say "ah" for 5 seconds using your speaking voice."***
   - Model a clear "ah" for the patient.
   - Remind them not to sing "ah" or use a quiet voice.
   - Remember to take note of the patient's voice when speaking. If his/her voice sounds different when saying "ah" re-instruct the patient to use a normal voice using any of the suggestions above.
   - **You are looking for any breathiness, gurgles, hoarseness, or whisper quality to the voice. If you perceive any of these, even to a mild degree, mark as abnormal.**
   - **If you think that the patient sounds like a smoker, some one with a cold or sore throat, or has a creaky voice, mark ABNORMAL.**

2. ***"Open your mouth a little bit. Now stick out your tongue as far as it will go."*** *then* ***" Now move it back and forth across your mouth."***
   - **You are looking for any deviation of the tongue towards one side on protrusion. If there is deviation, mark as abnormal and you do not have to look at tongue movement.**
   - **If no deviation, look at movement from side to side. Any difficulty in moving the tongue to one side or preference of movement to one side, mark as abnormal.**



3. ***"I'm going to touch somewhere in your mouth and it may be a bit uncomfortable. After I touch with the stick, I want you to tell me where you felt it."***
   - You may need an extra tongue depressor to lower the body of the
   - tongue and give you a view of the oropharynx.
   - **If the patient shows an obvious gag or movement of the soft palate**
   - **and walls of the oropharynx, mark as normal even if verbal responses**
   - **are not accurate.**
   - **In the absence of a gag response, judge the patient to have normal**
   - **sensation if the responses are accurate.**

Targets for Pharyngeal Sensation

B. Water Swallows: Mark any coughing, including delayed coughing, and any wetness of voice as abnormal.

- The patient can take the water unassisted if you judge that they are able.
- Ensure that full teaspoon amounts are given.
- Lightly palpate the throat to monitor for movement of the larynx on the first few swallows.
- **You are looking for any coughing or change in the patient's voice suggesting wetness. If you perceive this, mark accordingly and stop the water swallows.**
- **If you see what looks like a stifled or suppressed cough, mark this as a cough.**
- **If there is no coughing or wet voice, you don't have to mark in this section of the form.**
- **Note any drooling, and mark as abnormal. You do not have to stop the trials if there is drooling.**

C. Voice after Water Swallows:

- Wait one minute after the end of the water swallows.(You can use this time to clear away the cup etc. and mark the form)
- Ask the patient to say "ah" as in the first part of the screen.

D. Final Scoring:

If you have marked ***any*** of the ***items*** as ***abnormal***, score the patient as ***Failed.***

STRATIFY

SCORE

1. Did the patient present to hospital with a fall or **has he or she fallen on the ward since admission?** (Yes = 1, No = 0) _____ Score

   Do you think the patient is:

2. Agitated? (Yes = 1, No = 0) _____ Score
3. Visually impaired to the extent that everyday function is affected? (Yes = 1, No = 0) _____ Score
4. In need of especially frequent toileting? (Yes = 1, No = 0) _____ Score
5. Transfer* and mobility** score of 3 or 4? (Yes = 1, No = 0) _____ Score

   Transfer* score _____ + mobility** score: _____ = _____

*Transfer Score:	**Mobility Score:
0 = Unable to move	0 = Immobile
1 = Major Help needed	1 = Independent with aid of wheelchair
(1 or 2 people, physical aids)	2 = Walks with help of one person
2 = Minor Help (verbal and physical)	3 = Independent
3 = Independent	

Total Score

_____ Total Score

A patient who scores >2 is at risk of falls.

Reference: Oliver, D., M. Britton, et al. (1997). "Development and evaluation of evidence based risk assessment tool (STRATIFY) to predict which elderly inpatients will fall: case-control and cohort studies." BMJ **315**(7115): 1049-53.

TIMED UP AND GO

The timed up and go is a quick and practical method for testing basic mobility manoeuvres.

The test consists of one multiple phase task. The patient begins seated in a chair. He/she is asked to rise from an arm chair, stand still momentarily, walk to a line on the floor 3 metres away, turn, return, turn around and sits down again.

Scoring:

1. Time.
2. The client is scored according to the time in seconds required to complete the task. The observer's perception of the client's risk of falling is rated on a 5-point ordinal scale.
    1. Normal
    2. Very slightly Abnormal
    3. Mildly abnormal
    4. Moderately abnormal
    5. Severely abnormal

Reference: Podsiadlo, D, Richardson S. The timed "up and go": A test of basic functional mobility for frail elderly persons. Journal of the American Geriatrics Society 1991: 39: 142-148.

COMMUNITY STROKE APHASIC DEPRESSION QUESTIONNAIRE

Please indicate how often in the past week the patient has shown the following behaviours.

Behaviour	Days this week			
	Every day	**4-6**	**1-3**	**Not at all**
1. Did his/her waking cause a disturbance in sleep patterns?	3	2	1	0
2. Did he/she have weeping spells?*	3	2	1	0
3. Did he//she have restless disturbed nights?*	3	2	1	0
4. Did he/she initiate activities?	0	1	2	3
5. Did he/she avoid eye contact when you spoke to him/her?*	3	2	1	0
6. Did he/she burst into tears?*	3	2	1	0
7. Did he/she smile when you spoke to him/her?	0	1	2	3
8. Did he/she complain of aches and pains?*	3	2	1	0
9. Did he/she refuse to eat meals?	3	2	1	0
10. Did he/she get angry?*	3	2	1	0
11. Did he/she refuse to participate in social activities?*	3	2	1	0
12. Did he/she laugh at a joke?	0	1	2	3
13. Is he/she restless and fidgety?*	3	2	1	0
14. Did he/she sit without doing anything?*	3	2	1	0
15. Did he/she concentrate on activities?	0	1	2	3
16. Did he/she take care of his/her appearance to the best of their ability?	0	1	2	3
17. Did he/she seem to enjoy social activities or outings?	0	1	2	3
18. Did he/she keep him/herself occupied during the day?*	0	1	2	3
19. Did he/she take sleeping tablets	3	2	1	0
20. Did he/she take interest in events around him/her?	0	1	2	3
21. Did he/she look at you when you approached him/her?	0	1	2	3

* Questions included in the SADQ-10 questions

Scoring of the SADQ-H

Tick appropriate box; add scores of boxes marked; total = 0 - 30 (SADQ 10) or 0-63 (SADQ 21); higher score indicates more depression.

References:

SADQ-H (Hospital version): Lincoln NB, Sutcliffe LM, Unsworth G. Validation of the Stroke Aphasic depression Questionnaire (SADQ) for use with patients in hospital. Neuropsychological Assessment 2000;1:88-96

SAD-Q-10 (Shorter version): Sutcliffe LM, Lincoln NB. The assessment of depression in aphasic stroke patients: the development of the Stroke Aphasic Depression Questionnaire. Clinical Rehabilitation 1998;12(6):506-13.

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HOSPITAL ANXIETY DEPRESSION SCALE

Doctors are aware that emotions play an important part in most illnesses. If your doctor knows about these feeling he will be able to help you more.

This questionnaire is designed to help your doctor to know how you feel. Read each item and circle the reply, which comes closest to how you have been feeling in the past week.

Don't take too long over your replies; your immediate reaction to each item will probably be more accurate than a long thought out response.

1. I feel tense of 'wound up':
    a. Most of the time
    b. A lot of the time
    c. From time to time, occasionally
    d. Not at all
2. I still enjoy the things I used to enjoy:
    a. Definitely as much
    b. Not quite as much
    c. Only a little
    d. Hardly at all
3. I get a sort of frightened feeling as if something awful is about to happen:
    a. Very definitely and quite badly
    b. Yes, but not too badly
    c. A little, but it doesn't worry me
    d. Not at all
4. I can laugh and see the funny side of things:
    a. As much as I always could
    b. Not quite as much now
    c. Definitely not so much now
    d. Not at all
5. Worrying thoughts go through my mind:
    a. A great deal of the time
    b. A lot of the time
    c. From time to time but not too often
    d. Only occasionally
6. I feel cheerful:
    a. Not at all
    b. Not often
    c. Sometimes
    d. Most of the time

7. I can sit at ease and feel relaxed:
    a. Definitely

b. Usually
c. Not often
d. Not at all

8. I feel as if I am slowed down:
    a. Nearly all the time
    b. Very often
    c. Sometimes
    d. Not at all
9. I get a sort of frightened feeling like ‘butterflies’ in the stomach:
    a. Not at all
    b. Occasionally
    c. Quite often
    d. Very often
10. I have lost interest in my appearance:
    a. Definitely
    b. I don’t take so much care as I should
    c. I may not take quite as much care
    d. I take just as much care as ever
11. I feel restless as if I have to be on the move:
    a. Very much indeed
    b. Quite a lot
    c. Not very much
    d. Not at all
12. I look forward with enjoyment to things:
    a. As much as ever I did
    b. Rather less than I used to
    c. Definitely less than I used to
    d. Hardly at all
13. I get sudden feelings of panic:
    a. Very often indeed
    b. Quite often
    c. Not very often
    d. Not at all
14. I can enjoy a good book or radio or TV programme:
    a. Often
    b. Sometimes
    c. Not often
    d. Very Seldom

FOR HOSPITAL USE ONLY D = _____ A = _____

How to score the hospital anxiety and depression scale.

The hospital anxiety and depression scale gives measure of anxiety (7 items), depression (7 items) or emotional distress (all 14 items).

Anxiety: Odd number items (1, 3, 5, 7, 9, 11, 13)
Depression: Even number items (2, 4, 6, 8, 10, 12, 14)
SCORING:

Items: 1, 3, 5, 6, 8, 10, 11, 13	Score a = 3, b = 2, c = 1, d = 0
Items: 2, 4, 7, 9, 12, 14	Score a = 0, b = 1, c = 2, d = 3

Each sub-scale has a range of 1-21.

For each sub-scale:
Normal = 0 – 7,
Borderline = 8 – 10,
Caseness = > 11 and should be referred for further assessment

References:

Zigmond, AS and Snaith, RP. The hospital anxiety and depression scale. Acta Psychiatr Scand 1983; 67: 361-370.

MINI MENTAL STATUS EXAM/MODIFIED MINI MENTAL STATUS EXAM (MMSE/3MSE)

Patient _____ **Date** _____ / _____ / _____
Mo Day Year

☐ **Male** ☐ **Female**

Patient Age _____ **Patient highest level of Education** _____
Years Years

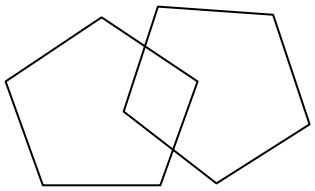
Normal or DX _____ **3MS** _____ **MMS** _____
100 30

Examiner Name _____

3MSE	MMSE	Mini Mental Status Exam (MMSE)/Modified Mini Mental Status Exam (3MSE)
_____ 5		**DATE AND PLACE OF BIRTH** *'Ask Patient the date and where are we?'* Date: year _____ month _____, day _____ Place: City (Town) _____ Province _____
_____ 3	_____ 3	**REGISTRATION** *'Name 3 objects: One syllable words, 1 second to say each. Then ask the patient all 3 after you have said them.'* (No of Presentations:_____) (ex. Shirt, Brown, Honesty; Shoes, black modesty, etc)
_____ 7	_____ 5	**MENTAL REVERSAL** *'Ask patient to begin with 100 and count backwards by 7. Stop after 5 subtractions. 1 point for each correct. Alternatively spell "world" backwards.' (100, 93, 86, 79, 72, 65 or DLROW)* *5 to 1* *Accurate* *2* *1 or 2 errors/misses* *0* *1*

3MSE	MMSE	Mini Mental Status Exam (MMSE)/Modified Mini Mental Status Exam (3MSE)
____ 9	____ 3	**FIRST RECALL** *'Ask patient if he can recall the three words you previously asked hi to remember.'* Spontaneous recall 3 After "something to wear" 2 "Shoes, shirt, socks" 0 1 Spontaneous recall 3 After "a colour" 2 "Blue, Black, Brown" 0 1 Spontaneous recall 3 After "a good personality quality" 2 "Honesty, Charity, Modesty" 0 1
____ 15	____ 5	**TEMPORAL ORIENTATION** *'Ask patient for the date. Then ask for part specifically omitted.'* *Year* Accurate 8 Missed by 1 year 4 Missed by 2-5 years 0 2 *Season* Accurate or within 1 month 0 1 *Month* Accurate of within 5 days 2 Missed by 1 month 0 1 *Day of Month* Accurate 3 Missed by 1 or 2 days 2 Missed by 3-5 days 0 1 *Day of Week* Accurate 0 1
____ 5	____ 5	**SPATIAL ORIENTATION** *'Ask in turn, Can you tell me the name of this place?'* Province 0 2 Country 0 1 City (town) 0 1 Hospital 0 1

3MSE	MMSE	Mini Mental Status Exam (MMSE)/Modified Mini Mental Status Exam (3MSE)
_____ 5	_____ 2	**NAMING** *'Show the patient the following items and ask what it is.'* (MMS: Pencil _____, Watch ____) Forehead ____, Chin ____, Shoulder ____, Elbow ____, Knuckle ____
_____ 10		**FOUR-LEGGED ANIMALS** (30 sec) 1 point each
_____ 6		**SIMILARITIES** *Arm-Leg* Body part; limb, etc. 2 Less correct answer 0 1 *Laughing-crying* Feeling, emotion 2 Other correct answer 0 1 *Eating sleeping* Essential for life 2 Other correct Answer 0 1
_____ 5	_____ 1	**REPETITION** *'Ask the patient to repeat the sentence after you.'* "I would like to go home/out" 2 1 or 2 missed/wrong words 0 1 "NO IFS ____ ANDS ____ OR BUTS ____"
_____ 3	_____ 1	**READ AND OBEY "CLOSE YOUR EYES"** *'Have the patient read the phrase "CLOSE YOUR EYES". The letters should be large and dark enough for the patient to read. Ask him to read the sentence and do what it says.'* Obeys without prompting 3 Obeys after prompting 2 Reads aloud only 0 1 (Spontaneously or by request)

3MSE	MMSE	Mini Mental Status Exam (MMSE)/Modified Mini Mental Status Exam (3MSE)
_____ 5	_____ 1	**WRITING** *'Give the patient a blank piece of paper and ask her to write a sentence for you. Do not dictate a sentence; it is to be written by the subject spontaneously. To score correctly, it must contain a subject and verb and be sensible. It should be a complete thought. Correct grammar and punctuation are not necessary.'* (1) I WOULD LIKE TO GO HOME/OUT. (MMS. Spontaneous sentence: 0 1)
_____ 10	_____ 1	**COPYING TWO PENTAGONS** (1 min) *"On a piece of paper, draw intersecting pentagons, and ask to copy. To score correctly, all ten angles must be present and two must intersect. Tremor and rotation are ignored.'* Each Pentagon 5 approximately equal sides 4 4 5 unequal (>2:1) sides 3 3 Other enclosed figure 2 2 2 or more lines 0 1 0 1  Intersection 4 corners 2 No-4-corner enclosure 0 1
_____ 3	_____ 3	**THREE-STAGE COMMAND** *'Give verbal instructions, then present a sheet of paper'* ____ Take this paper with your Right/left hand ____ Fold it in half, and ____ Hand it back to me
_____ 9		**SECOND RECALL** *'Ask patient if he can recall the three words you previously asked hi to remember.'* Something to wear 0 1 2 3 Colour 0 1 2 3 Good personality quality 0 1 2 3

Reference: Teng, EL and Chui HC. The Modified Mini-Mental State (3MS) examination. J Clin Psychiatry. 1987 Aug;48(8):314-8.

LINE BISECTION

Healthy Control	Neglect Patient
	

APPENDIX A: SCORE EXPERT PANEL

SCORE Project Leaders

Mark Bayley MD, FRCPC
Medical Director of the NeuroRehabilitation Program, Toronto Rehabilitation Institute
Specialty: Rehabilitation of acquired brain injury, stroke, multiple sclerosis, neurological pharmacology and functional outcome measurement after rehabilitation.

Margaret Harrison, RN, PhD
Professor, School of Nursing, Queen's University
Specialty: Knowledge transfer,

Nicol Korner-Bitensky, OT, PhD
Associate Professor, School of Physical and Occupational Therapy, McGill University

Sharon Wood-Dauphinee, BPT, MSc, PhD
Professor, School of Physical and Occupational Therapy, McGill University
Specialty: Stroke, Quality of Life, Methods and Measurement, Epidemiology

Robert. W Teasell, MD, FRCPC
Professor, University of Western Ontario
Chair and Chief, St. Joseph's Health Care, London
Specialty: Stroke Rehabilitation

Project Team

Susan Barreca, PT (Dip), BA
Research Clinician, Physiotherapist, McMaster University, Hamilton Health Sciences
Specialty: Upper Limb

Sandra Black, MD, FRCP(C)
Professor of Medicine, Head of Neurology, University of Toronto & Sunnybrook and Women's Health Science Center
Specialty: Stroke and Cognitive/Behavioural Neurology

Lucie Brosseau, PhD
Associate Professor, University of Ottawa
Ontario Ministry of Health Career Scientist
Specialty: University research chair in evidence based practice, guidelines development

Johanne Desrosiers OT, PhD
Professor, University of Sherbrooke
Specialty: Upper Extremity, Participation, Older Adults

Ian Graham, PhD
Senior Scientist, Clinical Epidemiology, Ottawa Health Research Institute
Specialty: Research Utilization, Knowledge Translation, Implementation Research, Practice Guideline quality appraisal and evaluation, adaptation and implementation

Susan Jaglal, PhD
Professor, University of Toronto
Specialty: Epidemiology, Health Services

Jeffrey Jutai, PhD (Psychology), C. Psych.
Associate Professor, University of Western Ontario, Department of Physical Medicine and Rehabilitation
Specialty: Assistive technology devices, Rehabilitation outcomes measures

Mary Lewis
Senior Manager, Government Relations, Heart and Stroke Foundation of Ontario

Rosemary Martino, SLP, PhD
University Health Network and University of Toronto
Specialty: Dysphagia Assessment

Nancy Mayo, PhD
Associate Professor, McGill University

Carol Richards, BSc (PT), MSc, PhD
Professor, Laval University
Specialty: Stroke Research (Gait)

Expert Panel

Duane Bishop, MD
Psychiatrist, Rhode Island, USA

Anna Bluvol, RN, MScN
Nurse Clinician, St. Joseph's Health Care; Parkwood Hospital

Dina Brooks, BSc (PT), MSc, PhD
Assistant Professor, Department of Physical Therapy, University of Toronto
Specialty: Exercise in Chronic Populations

Brenda Brouwer, PhD
Professor, Queen's University, School of Rehabilitation Therapy
Specialty: Motor Control, Stroke Rehabilitation

Karen Brunton, BSc, PT
Clinical Educator, Toronto Rehabilitation Institute
Specialty: Stroke rehabilitation – Physiotherapy Management

Paul Comper, PhD
Manager Neurology Stream/CPL Psychology, Toronto Rehabilitation Institute

Helene Corriveau, PhD
Professor, University of Sherbrooke
Specialty: Prevention of Falls

Nicholas E. Diamant, MD, FRCP(C)
Professor of Medicine and Physiology
University Health Network, University of Toronto
Specialty: Neuromuscular control of the gastrointestinal tract, swallowing physiology, GI motility disorders

Chantale Dumoulin, PhD,
Post Doctoral, McGill University
Specialty: Urinary Incontinence

Lisa Durkin SLP, MHSc
Practice Leader, Speech Language Pathology
Specialty: Medical speech language pathology

Janice Eng OT/PT, PhD
Associate Professor, School of Rehabilitation Sciences, University of British Columbia
Specialty: Neurological rehabilitation, clinical trials, mobility

Andrea Fisher, RN
Nurse Clinician, The Ottawa Hospital

Louise Fullerton, RN

Joyce Fung, BSc (PT), PhD
Associate Professor, School of Physical and Occupational Therapy, McGill University
Specialty: Motor control, Stroke rehabilitation, Neurophysiology

David J Gladstone, MD, FRCP(C)
Assistant Professor (Neurology), University of Toronto
Director, Inpatient Stroke Services
Division of Neurology and Regional Stroke Centre
Sunnybrook and Women's College Health Sciences Centre, Toronto
Specialty: Cerebrovascular Diseases, Restorative Neurology, Rehabilitation, Pharmacology, Clinical Trial Design, Outcome Measures, and Knowledge Translation

Antoine Hakim, MD PhD
Scientific Director & CEO, Canadian Stroke Network

Debbie Holtom CNN(C), BNSc, Med
ACNP Neurosciences, Kingston General Hospital
Specialty: Acute Stroke Management

Linda Kelloway, BScN, CNN(C)
Regional Stroke Education Consultant, The West GTA Stroke Network
Specialty: Education, Acute Rehabilitation

Laura Klassen, BPT, MSc.
Assistant Professor, University of Saskatchewan, School of Physical Therapy
Specialty: Neurological Rehabilitation and Acute Care

Katie Lafferty
Executive Director, Canadian Stroke Network

Mindy Levin, BSc (PT), PhD
Associate Professor, University of Montreal
Specialty: Motor Control, Motor Learning, Recovery of arm function after stroke

Marilyn MacKay-Lyons, BSc (PT), MSC (PT), PhD
Associate Professor, Dalhousie University
Specialty: Stroke Rehabilitation, Aerobic Conditioning, Gait recovery

Francine Malouin, PhD
Professor, Laval University
Specialty: Gait assessment and training trials

Giselle Mann MPH, PhD
Research Scientist, University of Florida
Specialty: Dysphagia, Epidemiology

Charmaine Martin, RN
Hamilton Health Sciences

Lise Poissant, PhD, Post-Doc Fellow
Clinical and Health Informatics Research Group, McGill University

Howard Rocket
Individual 5 years post stroke

Nancy Salbach, BSc (PT), PhD,
Post Doctoral Fellow, University of Toronto
Specialty: Gait speed recovery, walking recovery, RCTs epidemiology, Stroke, Biostatistics

Abe Snaiderman, MD
Physician ABI/Neuropsychiatrist, Toronto Rehabilitation Institute

Rosa Sourial, RN
McGill University Health Centre

Mark Speechley BA, MA, PhD
Associate Professor, University of Western Ontario
Specialty: Fall prevention, elderly, injuries

Kim Staikos, RN CCN
Nurse Clinician, Parkwood Hospital, London, ON
Specialty: Stroke Rehabilitation

Catriona Steele, SLP, PhD
SLP, Scientist Toronto Rehabilitation Institute

Scott G. Thomas, PhD
Associate Professor, Faculty of Physical Education and Health, University of Toronto
Specialty: Exercise Physiology, Cardiovascular, and Rehabilitation

Molly Verrier, Dip P& OT MHSc
Chair and Associate Professor,
Department of Physical Therapy and Rehabilitation Science, University of Toronto
Specialty: Restorative motor control, service delivery, stroke, SCI

Shelley Yantha, RN
Toronto Western Hospital

Canadian Stroke Network

Réseau Canadien contre
les accidents cérébrovasculaires