

Table 1: Canadian Stroke Best Practice Recommendations Stroke Rehabilitation Screening and Assessment Tools

a. Tools to Assess Functional Capacity and Activities of Daily Living

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Functional Independence Measure (FIM) Keith et al., 1987	The FIM is an assessment tool for physical and cognitive disability and is intended to measure burden of care.	18-items evaluating 6 areas of function: self-care, sphincter control, mobility, locomotion, communication and social cognition. <u>Score Interpretation:</u> Maximum score is 126, with higher scores indicating greater levels of functional independence. Scores can also be calculated for motor and cognitive subscales. <u>Administration:</u> Observation; approx. 30 minutes to complete.	The FIM has been well-studied for its validity and reliability within stroke populations; however, it has been suggested that reliability is dependent on the individual administering the assessment (Salter et al. 2012). <u>Specialized Training:</u> Required.	Available for purchase. www.udsmr.org/WebModules/FIM/Fim_About.aspx
AlphaFIM Stillman et al., 2009	The AlphaFIM is a shortened version of the Functional Independence Measure.	6-items assessing motor (eating, grooming, bowel management and toilet transfers) and cognitive (expression and memory) function. <u>Score Interpretation:</u> The Alpha-FIM is scored like the original FIM scale, with scale scores ranging from 6-42. <u>Administration:</u> Approx. 5 minutes to complete.	Requires less time to complete than the original FIM. Alpha-FIM scores may be transformed to projected FIM scores using a proprietary algorithm (Lo et al. 2012). <u>Specialized Training:</u> Required	Available for purchase. www.udsmr.org/WebModules/Alpha/Alp_About.aspx
Modified Rankin Scale (mRS) Rankin, 1957	The mRS is an assessment tool for rating global outcomes.	Individuals are assigned a subjective grade or rank ranging from 0 (no symptoms) to 5 (severe disability) based on level of independence with reference to pre-stroke activities rather than observation of task-based performance. Administration: Interview; 15 minutes to complete.	The scale's categorical options have been criticized as being broad and poorly defined (Wilson et al. 2002). <u>Specialized Training:</u> Not required.	Free www.rankinscale.org/
Barthel Index of Activities of Daily	The BI is an assessment	The BI consists of 10 common ADLs, 8 related	Widespread familiarity of the BI	Free

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
<p>Living (BI)</p> <p>Mahoney et al., 1965</p>	<p>tool for evaluating independence in self-care activities.</p>	<p>to personal care and 2 related to mobility.</p> <p><u>Score Interpretation:</u> The index yields a total score out of 100 with higher scores indicating greater functional independence.</p> <p><u>Administration:</u> Self-Report (less than 5 minutes) or direct observation (up to 20 minutes).</p>	<p>contributes to its interpretability.</p> <p>The BI is relatively insensitive and a lack of comprehensiveness may result in problems with ceiling and floor effects (Duncan et al. 1997).</p> <p><u>Specialized Training:</u> Not required.</p>	<p>http://www.strokecenter.org/wp-content/uploads/2011/08/barthel.pdf</p>
<p>Frenchay Activities Index (FAI)</p> <p>Holbrook et al., 1983</p>	<p>The FAI is an assessment tool for instrumental activities of daily living.</p>	<p>15-items representing activities in 3 domains: domestic chores, leisure and work, and outdoor activities.</p> <p><u>Score Interpretation:</u> Summed scores range from 15-60, with lower scores indicating less frequent activity.</p> <p><u>Administration:</u> Interview; approx. 5 minutes to complete.</p>	<p>The FAI provides complementary information to that obtained from the Barthel Index, with the FAI representing higher level ADLs (Pederson et al. 1997)</p> <p>Age and Gender may influence scores (Holbrook & Skilbeck 1983; Appelros 2007).</p> <p><u>Specialized Training:</u> Not required.</p>	<p>Free</p> <p>www.rehabmeasures.org/PDF%20Library/Frenchay%20Activities%20Index.pdf</p>
<p>6 Minute Walk Test (6MWT)</p> <p>Butland et al., 1982</p>	<p>The 6MWT is an assessment tool for walking capacity and endurance.</p>	<p>The total distance (i.e., meters or feet) walked during the trial period is measured and recorded. The number and duration of rests can also be measured.</p> <p><u>Administration:</u> Observation; 6 minutes to complete.</p>	<p>Age, height, weight, and sex should each be considered when interpreting results. Encouragement may also impact test results: the published standardized protocol should be used (ATS, 2002).</p> <p>As a test of submaximal walking capacity, this test may be best suited to those with moderate-severe impairment (Salter et al. 2012). Variations of this test include the 2 minute and 12 minute walk tests.</p> <p><u>Specialized Training:</u> Required reading.</p>	<p>Free</p> <p>www.cscnc.unc.edu/spir/public/UNLICOMMSMWSixMinuteWalkTestFormQxQ08252011.pdf</p>

b. Tools to Assess Stroke Severity

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Canadian Neurological Scale (CNS) Côté et al., 1986	The CNS is an assessment tool for neurological impairment.	Items include an assessment of mental activity (level of consciousness, orientation and speech) and motor activity (face, arms and legs) for patients with or without comprehension deficits in the acute stage. <u>Score Interpretation:</u> Maximum score is 11.5; lower scores indicate higher severity. <u>Administration:</u> Approximately 5-10 minutes or less to complete by an administrator.	Quick and simple tool completed by a trained health care practitioner. Used in the acute phase of stroke. <u>Specialized Training:</u> Not Required.	Free www.strokecenter.org/wp-content/uploads/2011/08/canadian.pdf
National Institutes of Health Stroke Scale (NIHSS) Brott et al., 1989	The NIHSS is an assessment tool for neurological status following a stroke.	11 items which include an assessment of level of consciousness, facial palsy and the presence of neglect or visual, sensory, motor, language or speech deficits. Items are answered according to a 3 or 4 point ordinal scale. <u>Score Interpretation:</u> Maximum score is 42; higher scores indicate a greater level of severity. (1-4=mild; 5-14=mild to moderate; 15-24=severe; >25=very severe) <u>Administration:</u> Approximately 5-10 minutes to complete by an administrator.	Can be completed by non-neurologists. Shortened versions are available. The suitability of the item assessing limb ataxia has been questioned, and several items cannot be assessed in patients with severe stroke. <u>Specialized Training:</u> Required.	Free www.strokecenter.org/wp-content/uploads/2011/08/NIH_Stroke_Scale.pdf
Orpington Prognostic Scale (OPS) Kalra & Crome, 1993	The OPS is an assessment tool for stroke severity and has been found to be beneficial in identifying a patient's suitability for rehabilitation.	4 items which include an assessment of motor functioning in the arm, proprioception, balance and cognition. <u>Score Interpretation:</u> Maximum score is 6.8; higher scores indicate a greater level of severity. (<3.2=mild to moderate; 3.2 - 5.2 = moderate to moderately severe; >5.2 = severe or major).	Quick and simple tool that does not require additional equipment for administration. Should not be used until the patient's medical condition has stabilized. <u>Specialized Training:</u> Not Required.	Free www.uwhealth.org/files/uwhealth/docs/pdf/spep_orpington_scale.pdf

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		<u>Administration:</u> Approximately 5 minutes or less to complete by an administrator.		

c. Tools to Assess Motor Function

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Fugl-Meyer Assessment of Motor Recovery after Stroke (FMA) Fugl-Meyer et al.,1975	The FMA is an assessment tool for motor functioning following a stroke.	155 items assessing motor function in the upper and lower extremity, balance, sensation, range of motion and pain. <u>Score Interpretation:</u> Maximum score is 226 (66 for upper extremity, 34 for lower extremity, 14 for balance, 24 for sensation, 44 for range of motion and 44 for pain); higher scores indicate greater functional performance. <u>Administration:</u> Approximately 30 minutes or more to complete by direct observation.	Widely used and validated. Shortened versions are available and the motor scale of the tool can be administered on its own. Requires additional equipment (e.g. tennis ball) and should be administered by a trained therapist (Occupational Therapist or Physiotherapist). <u>Specialized Training:</u> Required.	Free http://www.rehabmeasures.org/lists/rehabmeasures/disform.aspx?ID=908
Rivermead Motor Assessment (RMA) Lincoln and Leaditter, 1979	The RMA is an assessment tool for motor performance.	38-items of increasing difficulty representing 3 domains: gross function, leg and trunk movement, and arm movement. <u>Score Interpretation:</u> Scores range from 0-38, with higher scores indicating better motor ability. <u>Administration:</u> Observation; up to 45 minutes to complete.	Although the RMA can be time consuming, administration is faster with high functioning individuals because of the progressing difficulty of the measure. Some concern has been reported regarding the validity of the RMA (Adams et al. 1997; Kurtais et al. 2009). The RMA should be administered by a physiotherapist. <u>Specialized Training:</u> Not required.	Free www.strokenet.ca/assessment/rma/
Stroke Rehabilitation Assessment of	The STREAM is an assessment tool for motor	30 items assessing voluntary movement of the upper and lower limbs and basic mobility. Items are answered based on a 3 or 4 point	Quick and simple tool that does not require additional equipment for administration. A shortened version is	Free http://ptjournal.apta.or

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Movement (STREAM) Daley et al., 1999	functioning following a stroke.	ordinal scale. <u>Score Interpretation:</u> Maximum score is 70 (20 each for upper and lower limb and 30 for basic mobility); higher scores indicate greater mobility. <u>Administration:</u> Approximately 15 minutes to complete by an administrator.	available. Floor and ceiling effects have been noted for the STREAM raising concerns about the ability to capture change in patients who are functioning at the higher or lower end of the scale. <u>Specialized Training:</u> Not required.	g/content/79/1/8.full.pdf+html

d. Tools to Assess Mobility

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Berg Balance Scale (BBS) Berg et al., 1989	The BBS is an assessment tool for balance in older adults.	14-items in which patients are asked to maintain positions or complete movement tasks of varying levels of difficulty. All items are common to everyday life. <u>Score Interpretation:</u> Total scores range from 0-56, with scores of less than 45 generally accepted as being indicative of balance impairment. <u>Administration:</u> Observation; approx. 10 -15 minutes to complete.	The BBS requires little equipment or space to complete and has demonstrated high levels of reliability even when administered by an untrained assessor (Berg et al. 1995). Sensitivity may be reduced among severely affected patients as the BBS includes only one item relating to balance in a seated position (Mao et al. 2002). <u>Specialized Training:</u> Not required.	Free http://www.strokinge.ca/assess/bbs/
Chedoke-McMaster Stroke Assessment Scale (CMSA) Gowland et al., 1993	The CMSA is a screening and assessment tool for physical impairment and disability.	The CMSA consists of two inventories. The physical impairment inventory assesses 6 domains (should pain, postural control and arm, hand, leg, and foot movement), whereas the disability inventory assesses gross motor and walking function. <u>Score Interpretation:</u> The impairment and disability inventories yield total scores out of 42 and 100, respectively, with lower scores indicating greater impairment.	The CMSA is relatively comprehensive and has been well studied for reliability and validity (Poole and Whitney 2001). Taking approximately 1 hour to complete, the length and complexity of the CMSA may decrease the scales utility in clinical practice (Poole and Whitney 2001). <u>Specialized Training:</u> Required reading.	Free http://www.rehabmeasures.org/PDF%20Library/CMSA%20Manual%20and%20Score%20Form.pdf

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		<u>Administration:</u> Observation; up to 60 minutes to complete.		
Clinical Outcome Variables (COVS) Seaby and Torrance, 1989	The COVS is an assessment tool for functional mobility.	13 - items assessing mobility with respect to transfers, rolling, lying to sitting, sitting balance, ambulation, wheelchair mobility and arm function. <u>Score Interpretation:</u> Total scores range from 13 - 91, with lower scores indicating less functional mobility. <u>Administration:</u> Observation; 15 - 45 minutes to complete.	Provides detail in areas of mobility not assessed by global functional assessments such as the FIM (Barclay-Goddard 2000). Although reliability of the COVS has been demonstrated, further evaluation of validity is required (Salter et al. 2012). Administration of the COVS requires a fairly lengthy list of equipment. <u>Specialized Training:</u> Required reading.	Available for purchase http://www.irrd.ca/covs/
Functional Ambulation Categories (FAC) Holden et al., 1984	The FAC is an assessment tool for rating ambulation status.	Individuals are assigned a subjective grade based on 5 broad categories of walking ability, with scores ranging from 0 (cannot walk or needs help from more than 1 person) to 5 (can walk independently anywhere). <u>Administration:</u> Observation; approx. 5 minutes to complete.	The FAC may be subject to ceiling effects. Further research is needed to evaluate responsiveness in higher functioning populations (Salter et al. 2012). <u>Specialized Training:</u> Not required.	Free http://www.strokengine.ca/?s=functional+ambulation+categories
Rivermead Mobility Index (RMI) Collen et al., 1991	The RMI is an assessment tool for functional mobility.	15 - items, 14 of which involve yes/no questions regarding performance of functional activities and 1 that involves unassisted standing for 10 seconds. <u>Score Interpretation:</u> Scores range from 0 - 15, with higher scores indicating better functional mobility. <u>Administration:</u> Self-report and observation; less than 5 minutes to complete.	Caution in the interpretation of the tests' hierarchical scaling has been advised as modifications (e.g., use of assistive devices) are not considered (Collen et al. 1991). <u>Specialized Training:</u> Not required.	Free http://www.strokengine.ca/?s=rivermead

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Timed “Up and Go” Test (TUG) Podsiadlo and Richardson, 1991	The TUG is a screening tool for basic mobility and balance.	Individuals are asked to stand from a seated position, walk 3 meters (using an aid if required), turn, walk back to the chair, and reseat themselves. <u>Score Interpretation:</u> The total time to complete the test is recoded with shorter intervals indicating better mobility and balance. <u>Administration:</u> Observation; approx. 3 minutes to complete.	The TUG addresses relatively few aspects of balance and yields a narrower assessment than more comprehensive balance measures, such as the Berg Balance Scale (Whitney et al. 1998). <u>Specialized Training:</u> Not required.	Free http://www.strokingengine.ca/?s=timed+up+and+go

e. Tools to Assess the Upper Extremity

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Action Research Arm Test (ARAT) Lyle, 1981	The ARAT is an assessment tool for upper extremity function and dexterity.	19 - items assessing four areas of function: grasp, rip, pinch, and gross movement. <u>Score Interpretation:</u> Scores range from 0 - 57, with lower scores indicating greater impairment. <u>Administration:</u> Observation; approx. 10 minutes to complete.	Significant floor and ceiling effects have been identified (Van der Lee et al.2002). <u>Specialized Training:</u> Not required.	Free http://www.strokingengine.ca/?s=action+research+arm+test
Box and Block Test (BBT) Mathiowetz et al., 1985	The BBT is an assessment tool for unilateral gross manual dexterity.	Individuals are asked to move small blocks, one at time, from one compartment to another within 60 seconds. <u>Score Interpretation:</u> Scores are calculated by summing the number of blocks transported within the trial period. <u>Administration:</u> Observation; approx. 5	Established norms increase the interpretability of BBT results. Seated administration may increase the accessibility of the test. Because the BBS requires adequate strength and grip to transport blocks, it may be best suited for those with mild-moderate hemiparesis/weakness	Standardized equipment available for purchase http://www.pattersonmedical.com/app.aspx?cm=d=getProductDetail&ke

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		minutes to complete.	(Chanubol et al. 2012). <u>Specialized Training:</u> Not required.	y=070_921018701
Chedoke Arm and Hand Activity Inventory (CAHAI) Barreca et al. 2004	The CAHAI is an assessment tool for arm and hand function.	13 bilateral functional tasks (e.g. do up five buttons, carry a bag up stairs, pour a glass of water). <u>Score Interpretation:</u> Total scores range from 13 to 91, with lower scores indicating greater impairment. <u>Administration:</u> Observation; approx. 25 minutes to complete.	The CAHAI has demonstrated good validity and reliability in stroke populations and evaluates a wide range of functions that are not considered in other measures of arm and hand function (Barreca et al. 2005). <u>Specialized Training:</u> Required.	Free http://www.cahai.ca/
Nine Hole Peg Test (NHPT) Mathiowetz et al., 1985	The NHPT is an assessment tool for fine manual dexterity.	Individuals are asked to, one at a time, insert 9 pegs from a container into a board with 9 empty holes and then to move the pegs back into the container while being timed. <u>Score Interpretation:</u> Two-trials are performed with each hand, with the final time being an average of the two trials. Lower scores indicate better dexterity. <u>Administration:</u> Observation; approx. 5 minutes to complete	The NHPT has demonstrated good reliability and validity (Salter et al. 2012). Norms for age, gender, and hand dominance have been established; however, norms produced from the original study may not transfer well commercial versions of the test (Davis et al. 1999). The NHPT is susceptible to practice effects. <u>Specialized Training:</u> Not required.	Standardized equipment available for purchase http://www.pattersonmedical.com/app.aspx?cmd=getProduct&key=IF_921029571
Wolf Motor Function Test (WMFT) Wolf et al., 2001	The WMFT is an assessment tool for upper extremity motor ability.	17 items of increasing complexity and progressing from proximal to distal joint involvement. Tasks are performed as quickly as possible and are assessed in terms of time, strength, and movement quality. <u>Score Interpretation:</u> Scores range from 0 - 75 with higher scores indicating greater motor	Provides assessment of both performance time and quality of movement. Floor effects have been reported for individuals with severe impairment (Salter et al. 2012). Further evidence regarding reliability and	Free http://www.strokingengine.ca/?s=wolf+motor+function+test

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		ability. <u>Administration:</u> Observation; approx. 30 - 45 minutes to complete.	validity when used in clinical practice (i.e., real-time observation) is required. <u>Specialized Training:</u> Required.	

f. Tools to Assess Mood and Cognition

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Beck Depression Inventory (BDI) Beck et al., 1961	The BDI is a screening tool for depression and, if present, provides cut points for severity.	21 items relating to symptoms that have been found to be associated with the presence of depression. Items are presented in a multiple choice format ranging from 0 (no symptoms) to 3 (severe symptoms). <u>Score Interpretation:</u> Maximum score is 63; higher scores indicate greater severity. Graded levels of severity; a score of 10 is considered the cut point for depression. <u>Administration:</u> 5 - 10 minutes for self- report; 15 minutes with support.	Quick screening tool that does not require extra tools for completion. Level of depression may be overestimated in women and when completed by a proxy. Rate of misdiagnosis was up to 34% in patients with stroke (Aben, Verhey, Lousberg, Lodder, & Honig, 2002). <u>Specialized Training:</u> Not required.	Free http://www.strokengine.ca/?s=beck+depression+inventory
Geriatric Depression Scale (GDS) Yesavage et al., 1982	The GDS is a screening tool for depression and, if present, provides cut points for severity.	30 items relating to symptoms that have been found to be associated with the presence of depression. Items are presented in a yes/no response format. <u>Score Interpretation:</u> Maximum score is 30 and indicates the highest level of depression. Graded levels of severity; a score of 10 is considered the cut point for depression. <u>Administration:</u> 5 - 10 minutes for self- report.	Developed for use in the geriatric population. Short forms of the GDS are available. The tool has been cited as being more accurate for diagnosing women compared to men, and there are concerns with its use for cognitively impaired individuals. <u>Specialized Training:</u> Not required.	Free http://www.strokengine.ca/?s=geriatric+depression+scale
Hospital Anxiety and Depression Scale (HADS)	The HADS is a screening tool for anxiety and depression and,	14 items (7 anxiety items and 7 depression items). Items are presented in a multiple choice format ranging from 0 to 3.	Simple screening tool that does not require extra tools for completion. Does not contain questions related to the	Available for purchase. http://www.gi-assessment.co.uk/prod

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Zigmond & Snaith, 1983	if present, provides cut points for severity.	<u>Score Interpretation:</u> Maximum score is 21 for both anxiety and depression; higher scores indicate greater severity. (0-7=normal; 8-10=borderline abnormal; 11-21=abnormal) <u>Administration:</u> 2-6 minutes for self-report.	presence of somatic symptoms. <u>Specialized Training:</u> Not required.	ucts/hospital-anxiety-and-depression-scale-0
General Health Questionnaire (GHQ) Goldberg & Hillier, 1979	The GHQ is a screening tool for psychiatric disorders.	28 items each addressing a particular symptom related to 4 domains of distress (depression, anxiety, worrying, and social distress). Items are in the form questions with yes/no responses. <u>Score Interpretation:</u> Multiple scoring methods exist. Conventional method is to score based on presence or absence of a symptom. <u>Administration:</u> Approximately 5 minutes to complete by self-report.	Quick and simple tool that does not require additional materials for completion. Cut-off scores have not been properly validated for diagnosis of psychiatric disorders. <u>Specialized Training:</u> Required reading.	Available for purchase. https://shop.psych.acer.edu.au/acer-shop/group/SD
Mini-Mental State Examination (MMSE) Folstein et al., 1975	The MMSE is a screening tool for cognitive impairment.	11 items relating to 6 cognitive domains (orientation – in time and space, registration, attention and calculation, recall, language and read and obey). Items are in the form of questions or tasks. <u>Score Interpretation:</u> Maximum score is 30; higher scores indicate greater cognitive functioning. <u>Administration:</u> Approximately 10 minutes to administer.	Relatively quick and simple tool that requires no additional equipment. Has been reported to have a low sensitivity, noted especially for those individuals with mild cognitive impairment as well and patients with stroke. <u>Specialized Training:</u> Not required.	Available for purchase. http://www4.parinc.com/Products/Product.aspx?ProductID=MMSE
Montreal Cognitive Assessment (MoCA) Nasreddine et al., 2005	The MoCA is a screening tool for cognitive impairment.	11 items relating to 8 cognitive domains (visuospatial, executive, naming, memory, language, abstraction, delayed recall and orientation). Items are in the form of questions or tasks. <u>Score Interpretation:</u> Maximum score is	Relatively quick tool and is suitable for patients with mild cognitive impairment. Requires extra equipment (stopwatch and score sheet) and some training. <u>Specialized Training:</u> Required reading.	Free http://www.mocatest.org/

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		30; higher scores indicate greater cognitive functioning. Total score ≥ 26 is considered normal. <u>Administration:</u> Approximately 10 minutes to administer.		
Clock Drawing Test (CDT) Sunderland et al., 1989	The CDT is a screening tool for cognitive impairment.	Involves a command to draw a clock or to copy a clock. <u>Score Interpretation:</u> No universal system for scoring exists. Individual scoring systems are based on the number of deviations from what is expected from the drawing. <u>Administration:</u> Approximately 1-2 minutes to complete by the patient.	Quick and simple tool that does not require additional equipment for administration. Often used as a supplement to other cognitive assessment tools. The CDT is one component of the MoCA. <u>Specialized Training:</u> Not required.	Free http://www.strokenine.ca/?s=clock+drawing

g. Tools to Assess Visual Perception and Neglect

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
Behavioral Inattention Test (BIT) Wilson et al., 1987	The BIT is a screening and assessment tool for visual neglect.	Comprised of two sections: the BIT Conventional subtest (BITC) (6 tests) and the BIT Behavioral subtest (BITB) (9 tests). The BITC consists of tests such as Line Crossing, Letter Cancellation etc. and the BITB consists of tests such as Picture Scanning and Telephone Dialing. <u>Score Interpretation:</u> Maximum score and cut point for diagnosis of visual neglect are: (cut point/maximum score) 1. BITC: 129/146 2. BITB: 67/81 3. BIT: 196/227 <u>Administration:</u> Approximately 40 minutes to administer.	A shortened version of the BIT is available consisting of 3 tests from the BITC and 5 tests from the BITB. Lengthy test that requires additional equipment (e.g. photographs, clock, coins, cards etc.). <u>Specialized Training:</u> Not required.	Available for purchase. http://www.pearsonassess.ca/en/programs/00/51/95/p005195.html?CS_Category=%26CS_Catalog=TPC-CACatalog%26CS_ProductID=749129972

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
<p>Line Bisection Test (LBT)</p> <p>Schenkenberg et al., 1980</p>	<p>The LBT is a screening tool for unilateral spatial neglect.</p>	<p>Consists of a series of 18 lines for which patients are asked to mark the midpoint on each line. It is part of the BIT but can also be used as a stand-alone tool.</p> <p><u>Score Interpretation:</u> Scoring is completed by measuring the distance between the true midpoint of the line and the mark made by the patient. No cut point for the diagnosis of unilateral spatial neglect has been established for this test.</p> <p><u>Administration:</u> Approximately 5 minutes to complete by the patient.</p>	<p>Does not require extra tools for completion.</p> <p>The test is unable to differentiate between visual neglect and visual field deficits.</p> <p><u>Specialized Training:</u> Not required.</p>	<p>Available for purchase.</p> <p>http://www.pearsonassess.ca/en/programs/00/51/95/p005195.html?CS_Category=%26CS_Catalog=TPC-CACatalog%26CS_ProductID=749129972</p>
<p>Motor-free Visual Perception Test (MVPT)</p> <p>Colarusso & Hammill, 1972</p>	<p>The MVPT is an assessment tool for visual perception.</p>	<p>36 items assessing 5 domains of visual perception (spatial relations, discrimination – visual and figure-ground, visual closure and visual memory). Items are in the form of multiple choice questions with 4 possible answers.</p> <p><u>Score Interpretation:</u> Maximum score is 36; higher scores indicate greater visual perception.</p>	<p>Quick and simple tool and widely used.</p> <p>Administration requires extra equipment (test plates).</p> <p><u>Specialized Training:</u> Required.</p>	<p>Available for purchase.</p> <p>http://www.academichtherapy.com/detailATP.tpl?action=search&cart=14301685755462655&eqskudatarq=8962-9&eqTitledatarq=Motor-Free%20Visual%20Perception%20Test-4%20%28MVPT-4%29&eqvendordatarq=ATP&bobby=%5Bboby%5D&bob=%5Bbob%5D&TBL=[tbl]</p>

h. Tools to Assess Specific Impairments

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
<p>Modified Ashworth Scale (MAS)</p> <p>Bohannon & Smith, 1987</p>	<p>The MAS is an <u>assessment</u> tool for spasticity.</p>	<p>Number of items is dependent on the number of joints that are being assessed. Joint assessment involves the movement of a joint from either maximal extension or flexion to the opposite position over a one second count.</p>	<p>Quick assessment with no extra equipment required.</p> <p>The joint movement may cause some patient discomfort.</p>	<p>Free</p> <p>http://www.strokengine.ca/?s=modified+ashworth</p>

Assessment Tool	Purpose	Items and Administration	Additional Considerations	Availability
		<p><u>Score Interpretation:</u> A score is reported for each joint assessed. Scores can range from 0-4 (0, 1, 1+, 2, 3, and 4); higher scores indicate greater rigidity or tone.</p> <p><u>Administration:</u> Variable depending on the number of joints being assessed; a single joint is assessed over a one second count.</p>	<p><u>Specialized Training:</u> Required.</p>	
<p>Frenchay Aphasia Screening Test (FAST)</p> <p>Enderby et al., 1987</p>	<p>The FAST is a screening tool for aphasia.</p>	<p>The items are related to 4 domains of language impairment (comprehension, speech, reading and writing).</p> <p><u>Score Interpretation:</u> Maximum score is 30; higher scores indicate greater language abilities.</p> <p><u>Administration:</u> Approximately 3-10 minutes to administer.</p>	<p>Quick and simple. An abbreviated version that only includes the comprehension and speech components is available.</p> <p>Extra equipment (a stimulus card) is required.</p> <p><u>Specialized Training:</u> Not required.</p>	<p>Available for purchase.</p> <p>http://www.stass.co.uk/publications/adults-with-slcN/fast</p>

Reference List

- Aben I, Verhey F, Lousberg R, Lodder J, Honig A. Validity of the beck depression inventory, hospital anxiety and depression scale, SCL-90, and Hamilton depression rating scale as screening instruments for depression in stroke patients. *Psychosomatics*. 2002;43:386-393.
- Adams SA, Pickering RM, Ashburn A, Lincoln NB. The scalability of the Rivermead Motor Assessment in nonacute stroke patients. *Clinical Rehabilitation* 1997;11(1):52-59.
- Appelros P. Characteristics of the Frenchay Activities Index one year after a stroke: a population-based study. *DisabilRehabil* 2007;29:785-790.
- ATS statement: guidelines for the six-minute walk test. *Am J Respir Crit Care Med* 2002;166(1):111-117.
- Barclay-Goddard R. Physical function outcome measurement in acute neurology. *Physiotherapy Can* 2000;52:138-145.
- Barreca S, Gowland CK, Stratford P, Huijbregts M, Griffiths J, Torresin W et al. Development of the Chedoke Arm and Hand Activity Inventory: theoretical constructs, item generation, and selection. *Top Stroke Rehabil* 2004;11(4):31-42.
- Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch.Gen.Psychiatry*. 1961;4: 561-571.
- Berg KO, Wood-Dauphinee S, Williams JL, Maki B. Measuring balance in the elderly: preliminary development of an instrument. *Physiotherapy Can* 1989;41:304-311.
- Berg KO, Wood-Dauphinee S, Williams JL. The Balance Scale: Reliability assessment with elderly residents and patients with acute stroke. *Scan J Rehab Med* 1995;27:27-36.
- Bohannon RW, Smith MB. Interrater reliability of a modified Ashworth scale of muscle spasticity. *Phys.Ther*. 1987;67:206-207.
- Brott T, Adams HP Jr, Olinger CP, Marler JR, Barsan WG, Biller J, et al. Measurements of acute cerebral infarction: a clinical examination scale. *Stroke*. 1989;20:864-870.
- Butland RJ, Pang J, Gross ER, Woodcock AA, Geddes DM. Two-, six-, and 12-minute walking tests in respiratory disease. *Br Med J (Clin Res Ed)* 1982;284(6329):1607-1608.
- Cavanagh SJ, Hogan K, Gordon V, Fairfax J. Stroke-specific FIM models in an urban population. *Journal of Neurological Nursing*. 2000;32(1):17-21.
- Chanubol R, Wongphaet P, Ot NC, Chira-Adisai W, Kuptniratsaikul P, Jitraphai C. Correlation between the action research arm test and the box and block test of upper extremity function in stroke patients. *J Med Assoc Thai* 2012;95(4):590-597.
- Colarusso RP, Hammill DD. *Motor-Free Visual Perception Test – Third edition*. Novato, CA: Academic Therapy Publications.2003.
- Collen FM, Wade DT, Robb GF, Bradshaw CM. The Rivermead Mobility Index: A further development of the Rivermead Motor Assessment. *Int Disabil Stud* 1991;13:50-54.
- Cote R, Hachinski VC, Shurvell BL, Norris JW, Wolfson C. The Canadian Neurological Scale: a preliminary study in acute stroke. *Stroke*. 1986;17:731-737.
- Davis J, Kayser J, Matlin P, Mower S, Tadano P. Clinical analysis. Nine-hole peg tests: are they all the same? *OT Practice* 1999; 4:59-61.
- Duncan PW, Samsa G, Weinberger M, et al. Health status of individuals with mild stroke. *Stroke* 1997;28:740-745.
- Daley K, Mayo N, Wood-Dauphinee S. Reliability of scores on the Stroke Rehabilitation Assessment of Movement (STREAM) measure. *Phys.Ther*. 1990;79:8-19.

- Enderby PM, Wood VA, Wade DT, Hewer RL. The Frenchay Aphasia Screening Test: a short, simple test for aphasia appropriate for non-specialists. *Int.Rehabil.Med.* 1987;8:166-170.
- Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. *J.Psychiatr.Res.* 1975;12:189-198.
- Fugl-Meyer AR, Jaasko L, Leyman I, Olsson S, Steglind S. The post-stroke hemiplegic patient. 1. a method for evaluation of physical performance. *Scand.J.Rehabil.Med.* 1975;7:13-31.
- Goldberg DP, Hillier VF. A scaled version of the General Health Questionnaire. *Psychol.Med.* 1979;9:139-145.
- Gowland C, Stratford PW, Ward M, et al. Measuring physical impairment and disability with the Chedoke-McMaster Stroke Assessment. *Stroke* 1993;24:58-63.
- Holbrook M, Skilbeck CE. An activities index for use with stroke patients. *Age and Ageing* 1983;12(2):166-170.
- Holden MK, Gill KM, Magliozzi MR, Nathan J, Piehl-Baker L. "Clinical gait assessment in the neurologically impaired. Reliability and meaningfulness." *Phys Ther* 1984;64(1):35-40.
- Kalra L, Crome P. The role of prognostic scores in targeting stroke rehabilitation in elderly patients. *J.Am.Geriatr.Soc.* 1993;41:396-400.
- Kurtais Y, Kucukdeveci A, Elhan A, Yilmaz A, Kalli T, Tur BS et al. Psychometric properties of the Rivermead Motor Assessment: its utility in stroke. *J Rehabil Med* 2009;41(13):1055-1061.
- Lyle RC. "A performance test for assessment of upper limb function in physical rehabilitation treatment and research." *Int J Rehabil Res* 1981;4:483-492.
- Lincoln NB, Leadbitter DA. Assessment of motor function in stroke patients. *Physiotherapy* 1979;65(2):48-51.
- Mao HF, Hsueh IP, Tang PF, Sheu CF, Hsieh CL. Analysis and comparison of the psychometric properties of three balance measures for stroke patients. *Stroke* 2002;33:1022-1027.
- Mathiowetz V, Volland G, Kashman N, Weber K. Adult Norms for the Box and Block Test of Manual Dexterity. *Am J Occup Ther* 1985;39:386-391.
- Mathiowetz V, Weber K, Kashman N, Volland G. Adult Norms for the Nine Hole Peg Test of Finger Dexterity. *Occup Ther J Res* 1985;5:24-33.
- Nasreddine ZS, Phillips NA, Bedirian V, Charbonneau S, Whitehead V, Collin I, et al. The Montreal Cognitive Assessment, MoCA: a brief screening tool for mild cognitive impairment. *J.Am.Geriatr.Soc.* 2005;53:695-699.
- Pedersen PM, Jorgensen HA, Nakayama H, Raaschou HO, Olsen TS. Comprehensive assessment of activities of daily living in stroke. The Copenhagen Stroke Study. *Arch Phys Med Rehabil* 1997;78:161-165.
- Podsiadol D, Richardson S. The Timed "Up and Go": a test of basic functional mobility for frail elderly persons. *J Am Geriatr Soc* 1991;39:142-148.
- Poole JL, Whitney SL. Assessments of motor function post stroke: A review. *Phys Occup Ther Geriatrics* 2001;19:1-22.
- Salter K, Jutai J, Zettler L, Moses M, McClure JA, Mays R, Foley N, Teasell R. Chapter 21. Outcome measures in stroke rehabilitation. In *The Evidence Based Review of Stroke Rehabilitation (15th edition)*. www.ebrsr.com/uploads/chapter-21- outcome-assessment-SREBR-15_.pdf. Updated August 2012.
- Schenkenberg T, Bradford DC, Ajax ET. Line bisection and unilateral visual neglect in patients with neurologic impairment. *Neurology.* 1980;30:509-517.
- Seaby L, Torrance G. Reliability of a physiotherapy functional assessment used in rehabilitation setting. *Physiotherapy Can* 1989;41:264-271.

- Sunderland T, Hill JL, Mellow AM, Lawlor BA, Gundersheimer J, Newhouse PA, et al. Clock drawing in Alzheimer's disease . A novel measure of dementia severity. *J.Am.Geriatr.Soc.* 1989;37:725-729.
- Van der Lee JH, Roorda LD, Beckerman H, Lankhorst GJ, Bouter LM. Improving the Action Research Arm test: a unidimensional hierarchical scale. *Clin Rehabil* 2002;16:646-653.
- Whitney SL, Poole JL, Cass SP. A review of balance instruments for older adults. *Am J Occup Ther* 1998;52:666-671.
- Wilson B, Cockburn J, Halligan P. Development of a behavioral test of visuospatial neglect. *Arch.Phys.Med.Rehabil.* 1987;68:98-102.
- Wilson JT, Hareendran A, Hendry A, Potter J, Bone I, Muir KW. Reliability of the modified Rankin Scale across multiple raters: benefits of a structured interview. *Stroke.* 2005;36(4):777-81.
- Wolf SL, Catlin PA, Ellis M, Archer AL, Morgan B, Piacentino A. Assessing Wolf motor function test as outcome measure for research in patients after stroke. *Stroke* 2001;32(7):1635-9.
- Yesavage JA, Brink TL, Rose TL, Lum O, Huang V, Adey M, et al. Development and validation of a geriatric depression screening scale: a preliminary report. *J.Psychiatr.Res.* 1982;17:37-49.
- Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr.Scand.* 1983;67:361-370.