

COGNITION BEST PRACTICE IN STROKE UPDATE 2013

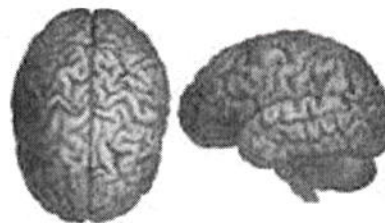


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A Stroke affects the Brain Potentially Causing Deficits in

- ▣ Physical
- ▣ Cognitive/Perceptual
- ▣ Communication
- ▣ Mood
- ▣ Personality
- ▣ Behaviour



Stroke & Cognition

- ▣ 66% of stroke patients experience cognitive impairment
- ▣ Cognitive impairment is an important predictor of functional outcome
- ▣ **Cognitive impairment is associated with**
 - 1) ↓ ADLs
 - 2) ↓ IADLs
 - 3) ↑ length of hospital stay
 - 4) ↓ number of patients returning home

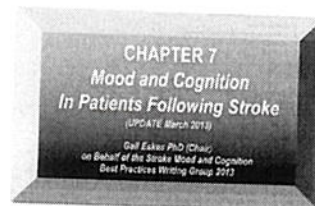
Canadian Best Practice Recommendations for Stroke Care Fourth Edition 2013



CANADIAN BEST PRACTICE RECOMMENDATIONS FOR STROKE CARE

Fourth Edition

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on Behalf of the Canadian Stroke Best Practices and Standards Advisory Committee



Canadian Best Practice Recommendations for Stroke Care Fourth Edition 2013

Purpose:

- ▣ ↓ practice variations in the care of stroke patients across Canada
- ▣ ↓ the gap between knowledge and practice
- ▣ ↑ the occurrence of the best care within the most appropriate setting

Accomplish by

- ▣ Emphasizing cognitive screening throughout the continuum of care
- ▣ Revised vascular cognitive impairment definitions
- ▣ Updates on medications in vascular cognitive impairment

Vascular Cognitive Impairment Defined

- ▣ A syndrome affecting at least one cognitive ability
- ▣ On a continuum from mild cognitive deficits to dementia
- ▣ Can result from any aspect of cerebrovascular disease including small white matter disease, TIAs, strokes

Most Prevalent Cognitive Deficits with Stroke Patients

- ▣ Global
 - ▣ Attention
 - ▣ Executive functioning
 - ▣ Speed of thinking

- ▣ Focal stroke-related deficits
 - ▣ Unilateral inattention
 - ▣ Language/communication – aphasia

Rehabilitation Approaches

- ▣ **the remedial or restorative approach:** remedial strategies are designed to repair processes and restructure or rebuild damaged neural networks e.g., unilateral inattention

- ▣ **the adaptive or compensatory approach:** compensatory strategies focus on adaptive behaviours e.g., attention, memory

Acute, Rehabilitation, Community

- ▣ **Acute** - Screening & general identification of possible cognitive impairments
- ▣ **Rehabilitation** - Multidisciplinary assessment and treatment development and implementation
 - Facilitating recovery
 - Individual and family education
 - Shift to determining the longer term problems
- ▣ **Community** - Treatment shifts to the use of compensatory strategies to minimize negative effects of stroke-related deficits

Cognitive Screening - When

- ▣ When suspect cognitive impairment
- ▣ When vascular risk factors for cognitive deficits are present (hypertension, diabetes, TIAs, stroke, white matter disease, atrial fibrillation & other cardiac diseases, & sleep apnea)
- ▣ Throughout the stages of stroke care - ER, acute care, inpatient rehabilitation, community rehab
- ▣ During the transitions between different healthcare settings

Strengths of Cognitive Screening Tools

- ▣ Quick and easy to administer and score
- ▣ Different professionals/ disciplines can be trained to administer
- ▣ Most not copyrighted so inexpensive and accessible
- ▣ Help with directing resource use

Weaknesses of Cognitive Screening Tools

- ▣ Cannot provide information about specific cognitive skills or problems (individual items should not be used as if subtests or to describe individual cognitive abilities)
- ▣ Problems with reliability means that each person's score needs to be approached with caution
- ▣ Performance significantly affected by age and education which can cause misdiagnosis

Cognitive Screening Tools

- ▣ Requires clinical judgment including an understanding of the tool being used and the disease or problem being investigated
- ▣ There are more “grey” areas in interpretation than with most medically/technology based tools (e.g., blood pressure versus MoCA score)



Cognitive Assessment- Purpose

- ▣ Determine the nature and severity of cognitive impairments and ongoing cognitive strengths
- ▣ (Identify mild disturbances in cases where screening is unclear)
- ▣ Anticipate impact of cognitive changes on ADLs, IADLs, vocational and/or educational involvement, driving, discharge destination and decision-making capacities
- ▣ Facilitate rehabilitation by making restorative and/or compensatory strategy recommendations
- ▣ Identification and monitoring of improvements due to recovery/rehabilitation
- ▣ Educate individual and family about cognitive change and implications, compensatory strategies, and the recovery process

Stroke (2006) 37, pgs 2220-2241

Original Contributions

National Institute of Neurological Disorders and Stroke-Canadian Stroke Network Vascular Cognitive Impairment Harmonization Standards

Yuliana Harshbarger, MD, DSc, Christiana Lakso, MD, Eric C. Peterson, MD, PhD, Manoj M. Behera, MD, PhD, David E. Nyenhuis, PhD, Sandra R. Black, MD, William J. Powers, MD, Charles DeCarli, MD, Jose G. Martinez, MD, Eug N. Kalaria, PhD, FRCP, Henry V. Vinters, MD, David M. Holtzman, MD, Gary A. Rosenberg, MD, Andrew Wallin, MSc, Nicholas D. Sklar, MD, John E. Morley, MD, Catherine G. Lubiano, PhD

Background and Purpose—Over 1 million individuals will experience a stroke, dementia or both. Moreover, twice as many individuals will have cognitive impairment due to dementia as either stroke or dementia. The currently used stroke scales do not measure cognitive skills domains critical to the functional status of cognitive impairment, and are limited to individuals with cognitive impairment, particularly in the early stages and especially with cognitive impairment related to vascular factors, or vascular cognitive impairment.

Methods—The National Institute of Neurological Disorders and Stroke (NINDS) and the Canadian Stroke Network (CSN) convened a meeting to discuss diagnosis, epidemiology, neuropsychology, brain imaging, neuropathology, reported clinical studies, biomarkers, genetics, and clinical trials in vascular dementia, cognition, clinical and research methods for the diagnosis and study of vascular cognitive impairment.

Results—The results of these discussions are reported below.

Conclusions—The development of vascular cognitive impairment is a key step in a process of asc, validation and refinement. Using the same methods with large clinical trials in the early stages of cognitive impairment, will make studies comparable, and by integrating knowledge, will accelerate the pace of progress. (Stroke. 2006;37:2220-2241.)

Key Words—dementia; disorder; CADASIL; syndrome; cerebral infarction; neurovascular disease; dementia; genetic; cognition; vascular infarction; vascular; neuropsychology; stroke; vascular dementia

Over 1 of 10 will experience a stroke, dementia or both, and over 10 million people in the United States have been diagnosed with cognitive impairment.¹ It is estimated that 10 million people have cognitive impairment, with up to a third developing from dementia.² Commonly measured psychopathological³ indicate that up to 20% of dementia cases show significant cognitive impairment. However, the same risk factors that predict mild-to-moderate cognitive impairment also predict risk for cognitive impairment.^{4,5}

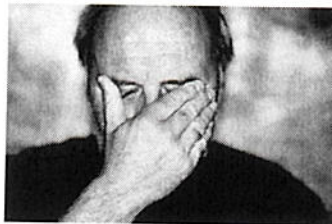
Cognitive impairment that is limited to or associated with vascular factors has been termed "vascular cognitive impairment" (VCI).^{6,7} VCI can occur either alone or in association with Alzheimer disease (AD). Indeed, there appears to be a strong bidirectional relationship between AD and VCI, with each other contributing to the other's pathogenesis.^{8,9}

Because vascular risk factors are modifiable, it should be possible to prevent, postpone, or mitigate VCI as well as the vascular complications of AD. However, progress in VCI research has been hindered by lack of standardized diagnostic criteria for the condition. None of the current stroke scales

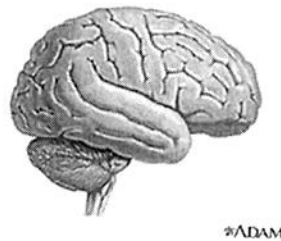
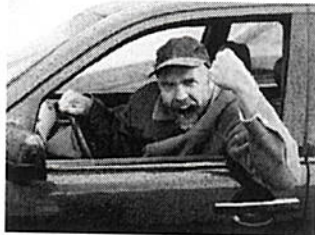
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Stroke, Cognitive Impairment & Depression

- ▣ Depression contributes to cognitive impairment in stroke patients
- ▣ So when screening for cognitive impairment also screen for mood
- ▣ Remission of depression after antidepressant medication is associated with ↑ cognitive function



All Recommended Cognitive Screenings for Vascular Cognitive Impairment include a Mood and a Behaviour Screening Also



Recommended Cognitive Screenings for Vascular Cognitive Impairment

- ▣ **60 minute protocol** suggested when a summary of cognitive impairment by ability is needed
- ▣ **30 minute protocol** suggested with people suspected of having vascular cognitive impairment
- ▣ **5 minute protocol** suggested as a quick at bedside or physician office screening and for research

**Recommended Cognitive Screening for
Vascular Cognitive Impairment
- 60 Minute Protocol -**

- ▣ COWAT (verbal fluency - letters)
- ▣ Animal naming
- ▣ WAIS III Digit Symbol Coding
- ▣ Trails A & B
- ▣ Boston Naming 2nd Ed - short form & Recognition
- ▣ Rey-Osterrieth Complex Figure
- ▣ California Verbal Learning Test II (CVLT) or Hopkins Verbal Learning Test (HVLT)
- ▣ Neuropsychiatric Inventory - Questionnaire Version
- ▣ Centre for Epidemiologic Studies-Depression Scale (CES-D)

**2006 Canadian Stroke Network Vascular
Cognitive Impairment Harmonization
Standards - 30 Minute Protocol**

- ▣ Semantic/Category Fluency (Animal Naming)
- ▣ Phonemic/Letter Fluency (Controlled Oral Word Association Test)
- ▣ Digit Symbol-Coding from the Wechsler Adult Intelligence Scale, Third Edition
- ▣ Hopkins Verbal Learning Test (HVLT)
- ▣ Center for Epidemiologic Studies-Depression Scale
- ▣ Neuropsychiatric Inventory, Questionnaire Version (NPI-Q)
- ▣ Supplemental: MMSE, Trail Making Test

2006 Canadian Stroke Network Vascular Cognitive Impairment Harmonization Standards - 5 Minute Protocol

- ▣ 5-Word Memory Task (registration, recall, recognition)
- ▣ 6-Item Orientation
- ▣ 1-Letter Phonemic Fluency

- ▣ Supplemental: Remainder of the MoCA, Semantic Fluency (Animal Naming), Trail Making Test, MMSE (to be administered at least 1 hour before or after the above tests or on a different day)

Mini-Mental State Exam MMSE

MINI-MENTAL STATE EXAM		
Level of Consciousness		
SCOPE - one point for each correct response unless otherwise specified.	MAXIMUM SCORE	ACTUAL SCORE
ORIENTATION		
1. Ask for the date. Then specifically ask for year, month, day of the week, season, and day of the month. (20pts)	20	_____
2. "Can you tell me the name of the (state), (country), (county), (borough), (city)?" (5pts)	5	_____
REGISTRATION		
3. "Repeat these 3 words: Box, Tree, Ship." (3pts) <small>After you have said all 3, ask the patient to repeat them. NUMBER OF WORDS CORRECTLY REPEATED: _____</small>	3	_____
ATTENTION AND CALCULATION		
4. "I want you to subtract from 100 by 7's. Stop when 4 exponents. (100, 93, 86, 79, 72, 65)" (5pts) <small>SCOPE: one point for each correct subtraction of 7 from the previous number.</small>	5	_____
5. "Repeat 'WORLD' backwards." (1pt) <small>SCOPE: number of letters in correct order = (2)(3)(4) = 5; (3)(4)(5) = 2</small>	1	_____
RECALL		
6. "Do you remember the words I gave you earlier? What were they?" (3pts)	3	_____
LANGUAGE		
7. NAMING: Point to a white watch and ask for its name. (1pt) <small>Do not accept a synonym. It should contain a watch and a verb and make sense. Correct grammar and punctuation are not necessary.</small>	1	_____
8. REPEITION: Ask the patient to repeat "No 10, what is this?" (1pt)	1	_____
9. COMPREHENSION: Place a piece of paper in front of the patient and say "Take the paper in your right hand, hold it to your ear, and put it on the floor." (1pt)	1	_____
10. READING: CLOSE YOUR EYES. Ask the patient to read it and to do what it says. (1pt)	1	_____
11. WRITING: Ask the patient to write a sentence on the back of the page. Do not dictate a sentence. It should contain a subject and a verb and make sense. Correct grammar and punctuation are not necessary. (1pt)	1	_____
VISION SPATIAL		
12. Ask the patient to take the design, at 13, and copy it on the back of the page. Do not dictate or order the copy. If error and correction are ignored allow 1 minute to start and 2 minutes to complete task. (3pts)	3	_____
TOTAL SCORE	30	_____



Montreal Cognitive Assessment MoCA

Montreal Cognitive Assessment MoCA

- ▣ 10 minute cognitive screening tool
- ▣ Developed in Montreal
- ▣ Only 1 validation study published in JAGS 2005; Nasreddine et al., 2005
- ▣ Developed to screen patients who present with mild cognitive impairment but score normal on the MMSE
- ▣ Score out of 30
- ▣ 26 or above is normal
- ▣ Add 1 point to total if less than or equal to 12 years of education
- ▣ No norms for stroke population

Vascular Cognitive Impairment Management

- ▣ Aggressively medically manage patient's vascular risk factors
- ▣ Tailor rehabilitation goals to patient's values & focus and account for cognitive deficits and strengths
- ▣ Cognitive rehabilitation relies on compensatory and remedial strategies
- ▣ Patients with evidence of cognitive impairment, mood issues, or behavioural changes on screening should be referred to an appropriate healthcare professional for additional investigation and treatment

Vascular Cognitive Impairment Performance Measures

- ▣ ↑ in control of high blood pressure and other risk factors
- ▣ ↑ in number of patients screened cognitively at CVA occurrence, and three, six and 1 year following rehabilitation
- ▣ ↑ in number of patients screened cognitively at each transition point along the stroke care continuum when cognitive status changes are suspected
- ▣ ↑ in number of stroke patients referred for in-depth neuropsychological assessments

Questions?

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Resources

- ▣ Hachinski et al (2006) Canadian Stroke Network Vascular Cognitive Impairment Harmonization Standards - Stroke (2006) 37, pgs 2220-2241
- ▣ Canadian Best Practice Recommendations for Stroke Care Fourth Edition March 2013
www.strokebestpractices.ca

Resources

- ▣ www.strokebestpractices.ca
- ▣ www.canadianstrokenetwork.ca
- ▣ www.heartandstroke.ca
- ▣ www.ontariostrokenetwork.ca
- ▣ www.strokengine.ca
- ▣ www.stroke.org (National Stroke Association [American])
- ▣ www.ebrsr.com (Evidence Based Review of Stroke Rehabilitation [Canadian])