

The
Canadian
Stroke Strategy



la
Stratégie
canadienne de l'AVC

CANADIAN STROKE STRATEGY CORE PERFORMANCE INDICATOR UPDATE 2010

DEVELOPED BY:
CSS INFORMATION & EVALUATION WORKING GROUP

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Canadian Stroke Network

Réseau canadien contre
les accidents cérébrovasculaires



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Table One: CSS Core Indicators Set 2010

(Based on Consensus Review Panel held December 2009)

Canadian Stroke Strategy Core System Indicators 2010	
#	Core Indicator
1.	Proportion of the population aware of 2 or more signs of stroke.
2.	The proportion of patients in the population that has any identified risk factors for stroke including: hypertension, obesity, smoking history, low physical activity, hyperlipidemia, diabetes, atrial fibrillation and carotid artery disease.
3.	The emergency department admission volumes for patients with ischemic stroke, intracerebral hemorrhagic stroke, subarachnoid hemorrhage, and transient ischemic attack. The hospital inpatient admission volumes for patients with ischemic stroke, intracerebral hemorrhagic stroke, subarachnoid hemorrhage, and transient ischemic attack.
4.	Total acute inpatient hospital length of stay (active LOS + ALC = total). ^{^*} Total inpatient rehabilitation hospital length of stay (active LOS + days waiting – service interruptions = total).
5.	Stroke death rates for 7-day in-hospital stroke fatality; 30 day all cause mortality; one-year all cause mortality, for patients with ischemic stroke, intracerebral hemorrhagic stroke, subarachnoid hemorrhage, and transient ischemic attack .*
6.	Proportion of acute stroke and TIA patients that are discharged alive that are then readmitted to hospital with a new stroke or TIA diagnosis within 90 days of index acute care discharge. ^{^*}
Canadian Stroke Strategy Core Clinical Indicators 2010	
7.	Proportion of acute ischemic stroke patients who arrive at hospital within 3.5 hours of stroke symptom onset.
8.	Proportion of all ischemic stroke patients who receive acute thrombolytic therapy. *
9.	Proportion of all thrombolysed ischemic stroke patients who receive acute thrombolytic therapy within one hour of hospital arrival. *
10.	The proportion of all acute stroke patients who are managed on a designated geographically defined integrated, acute, and/or rehabilitation stroke unit at any point during hospitalization. * Median total time spent on a stroke unit for each patient during inpatient stay. [^]
11.	Proportion of stroke patients who receive a brain CT/MRI within 24 hours of hospital arrival. ⁺
12.	Proportion of patients with documentation of an initial dysphagia screening during

	admission to ED or acute inpatient care or inpatient rehabilitation. ^{^*}
13.	Proportion of acute ischemic stroke and TIA patients who receive acute antiplatelet therapy within the first 48h hours of hospital arrival. ^{^+}
14.	Proportion of stroke patients with a rehabilitation assessment within 48 hours of hospital admission for acute ischemic stroke and within 5 days of admission for hemorrhagic stroke. ⁺
15.	Proportion of acute ischemic stroke patients discharged on antithrombotic therapy unless contraindicated. [*]
16.	Proportion of acute ischemic stroke patients with atrial fibrillation who are treated with anti-coagulant therapy unless contraindicated. ⁺
17.	Proportion of patients with TIA who are investigated and discharged from the emergency department who are referred to organized secondary stroke prevention services. ⁺ Percentage of patients referred to organized secondary stroke prevention services who are seen within 72 hours
18.	Wait time from ischemic stroke or TIA symptom onset to carotid revascularization. ⁺
19.	Distribution of discharge locations (dispositions) for acute stroke patients from acute inpatient care to: home (with and without services); inpatient rehabilitation (General or specialized); long term care; and to palliative care (each stratified by stroke type and severity). [*]
20.	Wait times for inpatient stroke rehabilitation services from stroke onset to rehabilitation admission. ⁺ Wait times for outpatient stroke rehabilitation services from stroke onset to outpatient rehabilitation admission.
21.	Distribution of discharge locations (dispositions) from inpatient rehabilitation to: home (with and without services); acute care (for acute medical issues or as repatriation to home community); and to long term care (each stratified by stroke type and severity).
i	Proportion of all stroke patients with documentation of education provided for patient, family and/or caregivers during acute inpatient care or inpatient rehabilitation stay. ^{!+}

[^] New core indicator – previously part of larger set of CSS best practice indicators, and/or part of Accreditation indicator set and elevated to core indicator for 2010

^{*} CSS core indicators that are also mandatory indicators for the Accreditation Canada Stroke Distinction Program

⁺ CSS core indicators that are also optional indicators for the Accreditation Canada Stroke Distinction Program

[!] Indicator on documentation of patient education is considered a *developmental indicator* that will be monitored closely for data quality and validity prior to being considered as a part of the CSS core indicator set.

For additional indicators associated with each stroke best practice recommendation, please refer to the current CSS Performance Measurement Manual, found at www.canadianstrokestrategy.ca

Table Two: CSS Stroke Case Definitions 2010

The following stroke code groupings should be applied when identifying stroke cases for performance measurement and ongoing monitoring. Activities related to this may include quality improvement, surveillance and research in stroke.

The Canadian Stroke Strategy is working in collaboration with the Public Health Agency of Canada Surveillance division on several initiatives. The case definitions for stroke contained in the following table are aligned with codes used in PHAC reports on stroke care and will be applied to the stroke component of the National Chronic Disease Surveillance System (NCDSS). They also apply to the Canadian Stroke Strategy - Canadian Institutes of Health Information Special Project #340 – Stroke Quality Improvement (for collecting stroke indicators using regular NACRS and/or DAD abstraction and submission to CIHI).

Canadian Stroke Strategy Stroke Case Definitions 2010			
Group	Acute Stroke Main Category	ICD-9 codes *	ICD-10 codes *
1.	Acute stroke	430	160 (excl 160.8)
		431	161
		433.x1 ^c	163 (excl 163.6) ^a
		434	164 ^d
		362.3 ^b	H34.1 ^b
	Acute stroke plus transient ischemic attack	435	G45 (excl G45.4)
		362	H34.0 ^b
Acute Stroke Sub Categories			
2.	Ischemic stroke (includes acute but ill-defined cerebrovascular)	433.x1 ^c	163 (excl 163.6) ^a
		434	164 ^d
		436	H34.1
3.	Subarachnoid hemorrhage	430	160 (excl 160.8)
4.	Intracerebral hemorrhage	431	161
5.	Transient ischemic attack	435	G45 (excl G45.4)
		-	H34.0*
6	Acute Stroke where patient transferred to same institution for rehab where the patient has a rehab code as MRDx followed by stroke in 2nd position of diagnostic codes ^g		First position:
			Z50.x, Z51.5, Z54.x
			Second Position:
			Any acute stroke code listed in Group #1

Additional Stroke Sub-Categories (to be reported separately) ^a			
7.	Cerebral Cortical Vein Thrombosis ^a		I63.6
	Intracranial Venous Sinus Thrombosis (nonpyogenic) ^a	437.6	I67.6
	Intracranial thrombophlebitis ^a	325	G08
8.	Arteriovenous Malformation (cerebral) [^]		I60.8 (Ruptured)

Notes

* In all case selections, ICD9 and ICD10 coding should be applied to the 5th digit (ICD9) or 4th digit (ICD10) where available. See specific notes below regarding exceptions and exclusions to the case codes.

- a. 437.6, I63.6, I67.6, G08 – *Cerebral venous thrombosis and thrombophlebitis*. These are uncommon in adults (<<1% of all stroke) and have a different pathology compared to arterial stroke. In children a much greater proportion of strokes are due to venous thrombosis. These should be analyzed and reported as a separate group, and not directly included in the ‘acute stroke’ grouping.
- b. 362.3/H34.0/H34.1 - *Transient/Central Retinal Artery Occlusion*. Impractical to include retinal vascular occlusion if 4th digit coding is not available; include where this information is available. Considerable variation will exist across provinces for this code, however. Overall impact of including this code may be small.
- c. 433 – This code requires 5th digit to determine acute stroke and should not be used if 5th digit not available; include where information is available and the fifth digit is coded as a ‘1’ indicating infarction present (ie. 433.x1, where x can be any number). Note recent sensitivity analysis by PHAC has found that 434 has high sensitivity without needing the 5th digit so this criteria only applies to 433.
- d. I64 – *Stroke, not specified as hemorrhage or infarction*. Generally included in overall acute stroke. Cannot be counted on its own as a separate stroke type. Efforts should be made to reduce use of this code as almost all stroke patients receive a CT scan and based on the scan they should be able to be categorized as ischemic or hemorrhagic. Health records abstractors should be trained to recognize all possible terminology that may be used for ischemic stroke, in addition to the word ‘infarction’ to classify I-63. This term is not used as frequently as the following list: ischaemic stroke, small vessel stroke, lacunar stroke, stroke from atrial fibrillation, ischemic cerebrovascular insult presumably from an embolic location, cardio-embolic stroke, right MCA stroke, L MCA distribution secondary to small vessel ischemia. Abstractors should be provided with this additional list and efforts made to reduce use of I-64 category and increase specificity of coding.
- e. I62, 432 – Codes for non-specific hemorrhage or subdural hemorrhage are excluded. To be consistent with past coding practices for comparison purposes, these codes are included in the “all cerebrovascular disease” category. Some patients with these codes will have a hemorrhagic stroke syndrome rather than simply a subdural hemorrhage.
- f. Unruptured AV malformations and aneurysms are not considered stroke and are therefore not included in acute stroke case definitions. They are coded as Q28 in ICD_10, with Q28.2 and Q.28.3 specifically being for the cerebral vessels.
- g. Once the stroke cases are identified using the z-code definitions, then the cases should be re-distributed into the appropriate stroke type (ischemic, SAH, ICH, TIA) based on the first stroke code that follows the z-code and then included in all analysis for acute stroke.

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Table Three: Stroke Case Definitions for Rehabilitation

The National Rehabilitation Reporting System (NRS) housed at the Canadian Institute for Health Information (CIHI) contains detailed information for Canadian Adults receiving inpatient rehabilitation services. In Ontario participation in the NRS is mandatory for all designated inpatient rehab beds. Across Canada, more than 90% of all stand-alone inpatient rehab facilities contribute to the NRS as well as many inpatient rehab wards located within acute care hospitals.

The NRS minimum data set contains clinical data on functional status based on the 18-item FIM™ instrument, additional cognitive elements, socio-demographic, administrative, and health characteristics information. The NRS is completed on intake and discharge from inpatient stroke rehab and there is also an optional follow-up assessment component.

Until 2008-09, patients included in the NRS were grouped according to a Rehab Client Group (RCG) classification system. In addition, starting in 2008, a most responsible ICD-10 code was included in the NRS system along with the RCG.[^] Assignment to a specific RCG (e.g., stroke, brain dysfunction, neurological disorders, trauma, spinal cord, etc) is determined by the admitting physician and/or team during inpatient rehabilitation intake.

To identify stroke cases for performance measurement using the NRS, **Stroke RCG (01) only should be selected.*** It contains the following sub-categories:

RCG 01	Sub Category Descriptions
1.1	Left Body Involvement (Right Brain)
1.2	Right Body Involvement (Left Brain)
1.3	Bilateral Involvement
1.4	No Paresis
1.9	Other Stroke

[^] Note: The application of ICD-10 codes to the NRS is still new. Data quality testing is ongoing. Preliminary analysis suggests that ICD-10 codes alone may not comprehensively identify stroke patients suitable for inclusion in stroke rehabilitation data analysis and performance measurement initiatives. Therefore, at this time it is recommended that NRS RCG-01 be used for selecting a stroke cohort.

* Stroke patients who may be assigned to other RCG groups are likely to have other issues at play reducing the homogeneity of the cohort for analysis and should be excluded in general. Specific research questions may warrant inclusion of stroke patients in other RCG groups and this should be addressed on an individual project basis.

Table Four: Select Stroke Related Investigation Codes*

Stroke Investigations	ICD9 (CCP)	ICD10 (CCI)
Chest X-ray	87.39, 87.44, 87.49	3GY10
ECG	89.52	2HZ24
CT Scan	87.03	3AN20 Brain 3ER20 Head
MRI	88.91	3AN40 Brain 3ER40 Head
Carotid Doppler	88.71	3JE30
Leg Doppler	88.77	3KG30
Echocardiogram (2D)	88.72	3IP30
Echocardiogram (TEE)		
tPA Administration	99.10	1ZZ35HAC1 (IV) 1JW35HAC1 (IA)
Carotid Endarterectomy	50.12	1.JE.50, 1.JE.57, 1.JE.87

Table Five: Select Stroke Related Comorbidity and Complication Codes*

Co-Morbid Condition	ICD-9	ICD-10
Hypertension	401	I-10
Angina	411, 413.9	I-20
Atrial Fibrillation	427.3	I-48
Acute Myocardial Infarction	410	I-21
Diabetes Mellitus	250	E10 – E14
Complication		
Gastrointestinal hemorrhage	578	K-92.2
Venous thrombo-embolism of deep vessels of lower extremity	453.41, 453.42	I-80
Pneumonia	480 - 487	J-13, J-14, J-15
New Stroke	See Table Two for stroke case definitions	

**Note: These are not intended to be complete and exhaustive lists. For further diagnostic codes, please refer to ICD10 listings and the Canadian Interventions classification lists.*