

Stroke Flow Evaluation Framework

	Indicator	Source ¹	Responsibility	Frequency	Currently collected	Currently reported	Target	Reference(s) for Target
Acute Sector								
1 ¹ .	Percentage patients admitted to stroke unit (# of stroke ⁱⁱⁱ patients admitted to geographically defined stroke unit/total stroke patients admitted to hospital)	Organizational data CIHI 340 "Stroke unit admission" Registry of the Canadian Stroke Network, Ontario Stroke Audit	Decision support Ontario Stroke Network	Quarterly, annually Biannually	Yes ¹ Yes	No Yes	>=75%	Accreditation Canada Stroke Distinction Core Indicator Protocols 2010 Organised inpatient (stroke unit) care for stroke. Stroke Unit Trialists' Collaboration. 2009 The Cochrane Collaboration. The Cochrane report concluded that stroke unit care improves outcomes for all ischemic and ICH patients (regardless of age, sex, or stroke severity). The target excludes subarachnoid haemorrhages, ischemic and ICH strokes where care is best managed on a specialty unit e.g. intensive care or other critical care, cardiac, palliative, trauma, transplant, neurosurgery.
2.	Percentage stroke patients discharged to: I. Inpatient rehabilitation (# of stroke patients discharged to inpatient rehabilitation/total stroke patients admitted to hospital)	DAD	Decision support	Quarterly, annually	Yes	No	I. 37-42.3% (percentage of stroke discharged to inpatient rehab)	I. The target of 37% is derived from the article: Willems D, Salter K, Meyer M, McClure A, & Teasell R. Determining the Need for In-Patient Rehabilitation Services Post-Stroke: Results from Eight Ontario Hospitals, Healthcare

¹ Mandatory as of April 1st 2012

Stroke Flow Evaluation Framework

	Indicator	Source	Responsibility	Frequency	Currently collected	Currently reported	Target	Reference(s) for Target
	II. Percentage of stroke patients repatriated (discharged to another acute facility).						II. No target at this time. Suggestion to collect data for trend analysis.	Policy, 2012;7(3): e105-e118. The benchmark of 42.3% is derived from the Ontario Stroke Report Card, FY 2010/11. This was determined using the Achievable Benchmarks of Care methodology II. n/a
3.	Median and Average LOS for admitted ischemic and hemorrhagic stroke patients I. Including ALC ^{iv} days II. Excluding ALC days	DAD CIHI Portal	Decision support	Quarterly, annually	Yes	Yes	I. Including ALC days: 6-8 days II. Excluding ALC days: 5-7 days maximum	
4.	Time to rehab referral (Referral date minus event date)	E-Stroke database	Stroke Networks	Quarterly, annually	Yes	Yes	3-5 days or as soon as medically stable	Biernaskie et al. Efficacy of Rehabilitation Experience Declines with Time after Focal Ischemic Brain Injury. The Journal of Neurosciences. Feb 4 2004 24(5):1245-1254 Salter et al Impact of Early vs Delayed Admission to Rehabilitation on Functional Outcomes in Persons with Stroke. Journal of Rehabilitation Medicine 2006 38:113-117 Teasell et al Evidence Based Review of Stroke Rehab

Stroke Flow Evaluation Framework

	Indicator	Source	Responsibility	Frequency	Currently collected	Currently reported	Target	Reference(s) for Target
								14 th Edition. Managing the Stroke Rehabilitation Triage Process. 2011 www.EBRSR.com Bernhardt et al A Very Early Rehabilitation Trail for Stroke Rehab (AVERT) Phase II Safety and Feasibility Stroke 2008;39:390-396
5.	Percentage discharged to outpatient rehab (# of stroke patients discharged to outpatient rehabilitation/total stroke patients admitted)	E Stroke database	Stroke Networks	Quarterly, annually	Yes	Yes	13% ²	The Impact of Moving to Stroke Rehabilitation Best Practices in Ontario. Ontario Stroke Network Meyer et al Sept 2012
6.	Staffing ratios for 7 day/week coverage (FTEs/dedicated stroke bed) for OT, PT, SLP	Organizational data	Decision support	Annually	No	No	Minimum allied health staffing (6 bed unit): 1 FTE PT 1 FTE OT 0.6 FTE SLP Calculation based on direct to indirect workload of 80:20 and provision of 45 min. direct therapy per patient per day, with a goal to move patients quickly to rehab by day 5-7 by providing early intense rehab 7 days a week.	Canadian Stroke Strategy: A Guide to the Implementation of Stroke Unit Care. A Resource for the Implementation of Canadian Best Practice Recommendations for Stroke Care, 2009, page 11.

² Further study may be required to ensure the current estimate reflects access to outpatients services for all appropriate stroke patients in the Toronto area.

Stroke Flow Evaluation Framework

	Indicator	Source	Responsibility	Frequency	Currently collected	Currently reported	Target	Reference(s) for Target
7.	Number of dedicated beds for stroke.	Organizational data	Decision support	Annually	No	Yes	Dedicated number of beds, as per the stroke flow recommendations by organization.	<p>Canadian Stroke Strategy: A Guide to the Implementation of Stroke Unit Care. A Resource for the Implementation of Canadian Best Practice Recommendations for Stroke Care, 2009, page 11.</p> <p>Saposnik et al. Hospital Volumes and Outcomes. Does it Matter? Neurology. 2007; 69: 1142-1151</p>
8.	Proportion of stroke patients who receive a brain CT/MRI within 24 hours of hospital arrival	Organizational data and/or CIHI 340 "Stroke unit admission"	Decision support	Quarterly, annually	No	No	100%	Canadian Stroke Strategy: Canadian Best Practice Recommendations for Stroke Care, 2010, Section 3.3, pages 67-68.
		Registry of the Canadian Stroke Network, Ontario Stroke Audit	Ontario Stroke Network	Biannually	Yes	Yes		

Stroke Flow Evaluation Framework

Rehab Sector																																																
	Indicator	Source	Responsibility	Frequency	Currently Collected	Currently Reported	Target	Reference (s) for Target																																								
1 ⁱⁱ	Number of stroke ^v admissions (RCG 1) to: I. High intensity inpatient rehab by RPG ^{vi} (1100-1160) II. LTLD by RPG (1100-1160)	CIHI portal Organizations with LTLD to track	Decision support	Quarterly, annually	Yes	Report by RPG from CIHI portal	System-wide stroke admissions by RPG: 41.5% severe; 49.5% moderate; 9% mild (Stroke Flow). Admissions by organization by RPG: as per Stroke Flow recommendations, based current system utilization with revision required in one year.	Stroke Flow Recommendations, based on E-Stroke Rehab Referral System review with a shift of mild patients to outpatient programs. Teasell et al. Evidence Based Review of Stroke Rehab 2011 14 th Edition. Rehabilitation of Severe Stroke. www.ebrsr.com																																								
2.	I. Median and Average LOS by RPG (1100-1160) II. Percentage of ALC days by RPG (1100-1160)	CIHI portal	Decision support	Quarterly, annually	Yes	Report by RPG from CIHI portal	<p>QBP LOS targets 2013</p> <table border="1"> <thead> <tr> <th>Stroke Severity</th> <th>RPG</th> <th>Target LOS</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Severe</td> <td>1100</td> <td>48.9</td> </tr> <tr> <td>1110</td> <td>41.8</td> </tr> <tr> <td rowspan="3">Mod</td> <td>1120</td> <td>25.8</td> </tr> <tr> <td>1130</td> <td>25.2</td> </tr> <tr> <td>1140</td> <td>14.7</td> </tr> <tr> <td rowspan="2">Mild</td> <td>1150</td> <td>7.7</td> </tr> <tr> <td>1160</td> <td>0</td> </tr> </tbody> </table>	Stroke Severity	RPG	Target LOS	Severe	1100	48.9	1110	41.8	Mod	1120	25.8	1130	25.2	1140	14.7	Mild	1150	7.7	1160	0	<p>OSEP Median LOS for specialty rehab programs by RPG CIHI NRS data FY10/11 (n=3548)</p> <table border="1"> <thead> <tr> <th>Stroke Severity</th> <th>RPG</th> <th>Target Median LOS</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Severe</td> <td>1100</td> <td>48</td> </tr> <tr> <td>1110</td> <td>39</td> </tr> <tr> <td rowspan="3">Mod</td> <td>1120</td> <td>33</td> </tr> <tr> <td>1130</td> <td>27.5</td> </tr> <tr> <td>1140</td> <td>22</td> </tr> <tr> <td rowspan="2">Mild</td> <td>1150</td> <td>19</td> </tr> <tr> <td>1160</td> <td>14</td> </tr> </tbody> </table> <p>Meyer et al. Length of Stay Benchmarks for Inpatient Rehabilitation after Stroke. Disability and Rehabilitation. 2012;34 (13): 1077-1081</p>	Stroke Severity	RPG	Target Median LOS	Severe	1100	48	1110	39	Mod	1120	33	1130	27.5	1140	22	Mild	1150	19	1160	14
Stroke Severity	RPG	Target LOS																																														
Severe	1100	48.9																																														
	1110	41.8																																														
Mod	1120	25.8																																														
	1130	25.2																																														
	1140	14.7																																														
Mild	1150	7.7																																														
	1160	0																																														
Stroke Severity	RPG	Target Median LOS																																														
Severe	1100	48																																														
	1110	39																																														
Mod	1120	33																																														
	1130	27.5																																														
	1140	22																																														
Mild	1150	19																																														
	1160	14																																														

Stroke Flow Evaluation Framework

									<table border="1"> <thead> <tr> <th>Stroke Severity</th> <th>RPG</th> <th>Target Median LOS</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Severe</td> <td>1100</td> <td>48</td> </tr> <tr> <td>1110</td> <td>37</td> </tr> <tr> <td rowspan="3">Mod</td> <td>1120</td> <td>30</td> </tr> <tr> <td>1130</td> <td>24</td> </tr> <tr> <td>1140</td> <td>20</td> </tr> <tr> <td rowspan="2">Mild</td> <td>1150</td> <td>20</td> </tr> <tr> <td>1160</td> <td>13</td> </tr> </tbody> </table>	Stroke Severity	RPG	Target Median LOS	Severe	1100	48	1110	37	Mod	1120	30	1130	24	1140	20	Mild	1150	20	1160	13
Stroke Severity	RPG	Target Median LOS																											
Severe	1100	48																											
	1110	37																											
Mod	1120	30																											
	1130	24																											
	1140	20																											
Mild	1150	20																											
	1160	13																											
3.	Time to start ^{vii} of outpatient services post referral receipt (Start of therapy date minus discharge date from acute care)	Organizations to track stroke volumes including: I. Includes patients from acute (all sources) II. Patients from inpatient rehab (all sources) III. Patients from the community (all sources)	Decision support	Quarterly, annually	Yes	No	Within 2 weeks	Canadian Stroke Strategy: Canadian Best Practice Recommendations for Stroke Care, 2010, Section 5.1, page 99.																					
4.	Time (median and ALOS) to high intensity inpatient rehab admission post stroke (Rehab admission date minus acute care admission date)	E-Stroke database	Stroke Networks	Quarterly, annually	yes	yes	5-7 days or as soon as medically stable	<p>Biernaskie et al. Efficacy of Rehabilitation Experience Declines with Time after Focal Ischemic Brain Injury. The Journal of Neurosciences. 2004;24(5):1245-1254</p> <p>Salter et al Impact of Early vs Delayed Admission to Rehabilitation on Functional Outcomes in Persons with Stroke. Journal of Rehabilitation Medicine 2006;38:113-117</p> <p>Teasell et al. Evidence Based Review of Stroke Rehab 14th Edition. Managing the Stroke Rehabilitation Triage Process.</p>																					

Stroke Flow Evaluation Framework

								2011 www.EBRSR.com Bernhardt et al. A Very Early Rehabilitation Trail for Stroke Rehab (AVERT) Phase II Safety and Feasibility. Stroke 2008;39:390-396
5.	Percentage of patients returned to ER or acute care within 10 days of transfer to high intensity rehabilitation program (also reason for return to acute care)	Organizational data	Decision support	Quarterly, annually	yes	No	No target at this time. Further monitoring of trends is required.	
6.	Proportion of patients receiving CCAC rehab while waiting for outpatients services. I. Outpatient referrals received from the community (CCAC).	Organizational data	Decision support	Quarterly, annually	No	No	No target at this time, as this serves as a monitoring indicator of the responsiveness of the outpatient programs and would be zero if the outpatient programs are adequately meeting system needs.	
7.	Intensity of inpatient therapy, by profession (OT, PT, SLP), per stroke patient per day	Organizational data (workload measurement)	Decision support	Quarterly, annually	No	No	Minimum of 3 hours of task-specific therapy (OT, PT, SLP).	Canadian Stroke Strategy: Canadian Best Practice Recommendations for Stroke Care, 2010, Section 5.3, page 106.
8.	Final discharge disposition for stroke patients following inpatient rehabilitation: I. Percentage discharged home with and without	CIHI portal NRS "Discharge destination"	Decision support	Quarterly, annually	Yes	Yes	Percentage of stroke patients discharged home: 100% of mild strokes 75% of moderate strokes	Kalra et al., Stroke 1993;26:2031-2034 Kalra and Eade, Stroke 1995;26:2031-2034

Stroke Flow Evaluation Framework

	<p>services</p> <p>II. Percentage discharged to a LTC facility or nursing home</p> <p>III. Percentage requiring readmission to an acute care hospital for all cause</p>						43-47% of severe strokes	Teasell et al., Canadian Journal of Neurological Sciences 2005; 32:512-517
9.	Average follow-up FIM at 4 and 12 months post discharge from rehab (inpatient and outpatient)	<p>CIHI Portal for rehab patients only</p> <p>Organizational data for outpatient and LTLD rehab</p>	Decision support	Quarterly, annually	Some orgs	Report from CIHI portal for inpatient rehab	No target at this time. Further monitoring of trends is required.	
10.	Follow-up quality of life (Reintegration to Normal Living Index) 4 and 12 months post discharge from rehab (inpatient and outpatient).	Organization data	Decision support	Quarterly, annually	No	No	No target at this time. Further monitoring of trends is required.	

ⁱ All data elements to be reported at the organizational and aggregate level

ⁱⁱ Indicators 1-5 for acute and rehab are core system monitoring indicators

ⁱⁱⁱ Inclusion Criteria for Acute Adult Inpatient Admissions for Stroke/TIA -Coding criteria used by ICES and the Ontario Stroke Evaluation Program:

- Based on the most responsible diagnosis/condition or “M” when “M” was a stroke or TIA using ICD 10 codes below.
- Unique clients only

Stroke Type	ICD-10 Code
Transient ischemic attack	G45 (excl. G45.4)
Acute stroke	H34.0, H34.1, I60 (excl. I60.8), I61, I63 (excl. I63.6), I64
Subarachnoid hemorrhage	I60 (excl. I60.8)
Intracerebral hemorrhage	I61

Stroke Flow Evaluation Framework

Ischemic stroke	I63 (excl. I63.6), I64, H34.0, H34.1
Stroke type not specified/undetermined	I64

Excluded:

- Elective admissions
- Type 1 Pre admit comorbidity - not considered if “M” was not a stroke.
- Type 2 post admit comorbidity not included unless it was recorded as “M”
- Type 3 secondary diagnosis excluded
- Service transfers W,X,Y not considered for this purpose

Listed below are the diagnosis prefix codes that would be used to capture diagnosis type 2. Prefix 5 is used to capture conditions arising before the operation and prefix 6 is used to capture conditions arising during or after the procedure.

Stroke Flow Evaluation Framework

**Field 01
Diagnosis
Prefix**

Prefix	Description
C	Cause of death codes
Q	Questionable or query diagnoses (no documented confirmation of diagnoses) Prefix Q must not be used with external cause ICD-10-CA codes
5	<p>A post-admit comorbidity (Diagnosis Type 2) that arose after admission and before the first intervention episode occurring in (the):</p> <ul style="list-style-type: none"> • Main OR (01) for any intervention; or • Cardiac Catheter Room (08) for any intervention; or • Another facility (Out-of-hospital [OOH]) for select cardiac interventions (see page 6.10-9) <p>Prefix 5 does not apply to Day Surgery and Obstetrical (including Caesarean sections performed in the Main OR) cases.</p>
6	<p>A post-admit comorbidity (Diagnosis Type 2) that arose during or after the first intervention episode occurring in (the):</p> <ul style="list-style-type: none"> • Main OR (01) for any intervention; or • Cardiac Catheter Room (08) for any intervention; or • Another facility (Out-of-hospital [OOH]) for select cardiac interventions (see page 6.10-9) <p>Prefix 6 does not apply to Day Surgery and Obstetrical (including Caesarean sections performed in the Main OR) cases.</p>
8	Prefix 8 is assigned to Diagnosis Code Z51.5 Palliative Care when palliative care is documented as a known component of the patient's care prior to admission.

Revised
2010-2011

Revised
2010-2011

Stroke Flow Evaluation Framework

WAIT TIME STRATEGY Better Access to Care

Provincial ALC Definition

The healthcare system aspires to deliver care in a setting that is congruent with the clinical needs of a patient as defined by the patient's health status, treatment plan and goals.

The definition applies to all patient populations waiting in all patient care beds in an acute or post acute care hospital in Ontario.

Definition:

When a patient is occupying a bed in a hospital and does not require the intensity of resources/services provided in this care setting (Acute, Complex Continuing Care, Mental Health or Rehabilitation), the patient must be designated Alternate Level of Care (ALC)¹ at that time by the physician or her/his delegate. The ALC wait period starts at the time of designation and ends at the time of discharge/transfer to a discharge destination² (or when the patient's needs or condition changes and the designation of ALC no longer applies).



Note 1

The patient's care goals have been met *or*

- progress has reached a plateau *or*
- the patient has reached her/his potential in that program/level of care *or*
- an admission occurs for supportive care because the services are not accessible in the community (e.g. "social admission").

This will be determined by a physician/delegate, in collaboration with an interprofessional team, when available.

Note 2

Discharge/transfer destinations may include, but are not limited to:

- home (with/without services/programs),
- rehabilitation (facility/bed, internal or external),
- complex continuing care (facility/bed, internal or external),
- transitional care bed (internal or external),
- long term care home,
- group home,
- convalescent care beds,
- palliative care beds,
- retirement home,
- shelter,
- supportive housing.

This will be determined by a physician/delegate, in collaboration with an interprofessional team, when available.

Final Note

The definition **does not** apply to patients:

- waiting at home,
- waiting in an acute care bed /service for another acute care bed/service (e.g., surgical bed to a medical bed),
- waiting in a tertiary acute care hospital bed for transfer to a non tertiary acute care hospital bed (e.g., repatriation to community hospital).

1

^{iv} Provincial ALC Definition:

^v Inclusion Criteria for Adult Inpatient Rehabilitation Admissions for Stroke/TIA -Coding criteria used by ICES and the Ontario Stroke Evaluation Program:

All patients >= 18 years with a diagnosis of stroke (using ICD10 codes see acute section) discharged from an acute care hospital and admitted to inpatient rehabilitation and classified as Rehabilitation Client Groups 1 (stroke) in the CIHI-NRS database in the same fiscal year.

Stroke Flow Evaluation Framework

- Based on unique clients (i.e. does not include multiple visits)
- Length of stay refers to the total time spent in inpatient rehabilitation and is calculated using the admission and discharge dates in the NRS database
- Active length of stay excludes days waiting for discharge from inpatient rehabilitation and service disruptions (e.g. short readmissions to acute care)

^{vi} RPG's for Stroke:

RPG Stroke	Admission FIM
1100	M=12-38
1110	M=12-38
1120	M=39-50
1130	M=51-84, C=5-25
1140	M=51-84, C=26-29
1150	M=51-68, C=30-35
1160	M=69-84, C=30-35

^{vii} Definition for start of therapy across organizations = date of Initiation of first therapy treatment. Does not include an initial assessment for eligibility.