World Stroke
Organization

Global Stroke
Guidelines and Action Plan:
A Road Map for Quality Stroke Care

STROKE REHABILITATION

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A ROAD MAP FOR QUALITY STROKE CARE

PURPOSE:

The WSO Roadmap to Delivering Quality Stroke Care is an implementation resource to accompany the *WSO Global Stroke Services Guideline and Action Plan*. This roadmap provides the framework for the implementation, monitoring and evaluation of stroke services globally.

It provides **standardization and consistency** for the selection of **evidence-based** recommendations, **approaches to implementations** in clinical practice, and the **calculation of performance measures** to create an environment of continuous quality improvement.

TARGET AUDIENCE:

The roadmap is intended to guide local healthcare officials and stroke care clinical groups in establishing stroke systems of care and implementing as many of the defined components as possible throughout the stroke continuum of care. The focus of the roadmap is on the processes of care and impacts on patient outcomes. It is recognized that not all regions will be able to provide all elements of quality stroke care; therefore the recommendations and performance indicators take into account what should be possible within three levels of service access.

It can be used by **local, regional, or country-level health authorities and service** providers as a foundation for their own evaluation frameworks for stroke.

Governments and funders should use these guidelines and action plan to review existing services, and identify service gaps. These groups could then prioritize gaps and look for solutions to improve access to services. **Clinicians and other healthcare workers** should use these guidelines and roadmap to scrutinize local care delivery, access to care and ongoing support to achieve recovery goals.

This roadmap will also provide valuable guidance to stroke **programs under development**, to help ensure that all key elements defined here are considered from the beginning of development.

FORMAT:

The roadmap is **organized along the continuum of care** starting at the onset of a stroke event through the acute phase (emergency department and inpatient care), stroke rehabilitation, prevention of recurrent stroke and concludes with community reintegration and long term recovery.

Each section represents a part of the continuum and enables users to **review and assess the structural elements and services available** for stroke care; **core evidence-based best practice** recommendations related to processes of care that should be operational; and, a list of **key quality indicators to monitor levels** of care provided and impact on patient and economic outcomes.

HOW TO USE:

Users of this Roadmap should:
1. **Review** the sections relevant to their phase of stroke services;
2. **Complete an assessment** of current services and resources, current recommendations in place, and current data collection methods and access; then
3. **Develop an implementation plan** to ensure that these core elements are optimized and additional elements added to improve the stroke services they provide.

IMPLEMENTATION:

1. Hands-on hardcopy resource
2. **Electronic interactive app/resource** where users can enter what elements they have available from a master check list and the program identifies current level, recommendations and performance measures.

STROKE REHABILITATION

This section focuses on rehabilitation goal setting, assessment, therapies and other and interventions to promote optimal ongoing physical, cognitive and emotional recovery for stroke survivors. The goals of stroke rehabilitation are to help stroke survivors regain as much independence in functioning and increase quality of life. Stroke rehabilitation could significantly improve outcomes for stroke survivors, and should be goal-oriented.

Stroke rehabilitation services and activities are delivered in the sub-acute phase, usually staring soon after a stroke occurs, once the person is medially stable, and it could be beneficial for weeks, months or even years following a stroke. Stroke rehabilitation ideally involves healthcare providers with expertise in stroke recovery, and takes place in many settings including inpatient rehabilitation units, community-based rehabilitation programs, acute care hospitals, day programs, and in the home, based on resource and facility availability.

Health Service Capacity for Stroke Care Checklists^

Please complete the following information to clearly identify the stroke services you are developing or assessing.

REGION:	ORGANIZATION COMPLETING CHECKLIST:	PRIMARY CONTACT PERSON:

SERVICE SCOPE:	GOALS OF THIS ASSESSMENT/COMMENTS: To be completed by local group
◯ Provincial/State/National Assessment	
◯ Regional/Local assessment	
◯ Large urban hospital with advanced stroke services (comprehensive stroke services)	
◯ Community hospitals with access to some stroke services	
◯ Community with health clinic as only health services available	
◯ Rural community with a visiting health worker	

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A. Stroke Services and Resource Availability

Please review each of these lists and tick all services and resources that you currently have in place and available for providing stroke care. Once completed, review your responses to determine which category of stroke services you most closely fit into.

Minimum Healthcare Services	Essential Stroke Services (In addition to services listed under Minimal stroke services)	Advanced Stroke Services (In addition to services listed under Minimal and essential stroke services)
○ Care provided in local communities without coordination across defined geographic regions	○ Access to physicians with stroke expertise (although may not be stroke specialists) • Physical and Rehabilitation Medicine • General/Family/Primary care physicians • Neurologist • Access to stroke specialists through telestroke modalities, and teleradiology	○ Access to physicians with stroke expertise in acute stroke care, stroke prevention and/or stroke rehabilitation • Physical and Rehabilitation Medicine • Neurologist • General/Family/Primary care physician • Program to develop and maintain core competencies in stroke care
○ Very limited access to physicians Provide assessment skill development • Provide training in basic stroke risk factor assessment: blood pressure, atrial fibrillation (pulse check), exercise, alcohol, diet (with respect to circumstances) • Basic skills in risk factor management, medications, lifestyle management • Training in basic rehabilitation techniques, mobility and positioning that can be passed on to family • Basic training in swallow screens and dysphagia management; and in temperature management	○ Access to nurses and nursing assessment with stroke rehabilitation training • Advanced practice nurses • Nurse practitioner	○ Access to stroke rehabilitation interdisciplinary team members • Physiotherapist • Occupational Therapist • Speech-Language Pathologist • Recreation therapists • Neuropsychological services • Social worker • Vocational Therapist • Rehabilitation Assistants • Nurses • Nursing assistants • Pharmacist • Social worker/case manager • Other _____
	○ Early access to rehabilitation therapies – including cross training of skills to nurses, nursing assistants and family members	
○ Variable access to healthcare workers (nurses or lay workers) • Training in basic stroke risk factor assessment: blood pressure, atrial fibrillation (pulse check), exercise, alcohol, diet (with respect to circumstances) • Training in basic rehabilitation techniques, mobility and positioning that can be passed on to family • Basic training in swallow screens and dysphagia management; and in temperature management	○ Access to stroke rehabilitation services • Early functional assessments, goal setting and individualized rehab plans developed • Inpatient stroke rehabilitation beds • Training programs for patients and families in simple rehabilitation techniques and self-management • Home care rehabilitation services for stroke patients • Organized outpatient stroke rehabilitation services • Local/private community stroke rehabilitation programs • Patient and family support groups	○ Provide telestroke consultations to smaller and more rural; centres ○ Printed stroke patient educational materials ○ Stroke training programs for all levels of healthcare providers ○ Data collection strategy and mechanisms • Stroke rehabilitation registry • Stroke rehabilitation database (local or regional)
○ Access to internet • Access to mobile stroke education (such as WSA) • Access to mobile tools such as Stroke Riskometer	○ Access to stroke rehabilitation unit care (WSA Module): • Geographically defined unit dedicated to the care of stroke patients - *Or, model of clustering stroke patients*	

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Minimum Healthcare Services	Essential Stroke Services (In addition to services listed under Minimal stroke services)	Advanced Stroke Services (In addition to services listed under Minimal and essential stroke services)

	• Members of a interdisciplinary stroke team
	  - *Physicians with stroke expertise*
	  - *Stroke Nurses*
	  - *Nursing assistants*
	  - *Pharmacist*
	  - *Social worker/case manager*
	  - *Palliative Care team*
	  - *Physiotherapist*
	  - *Occupational Therapist*
	  - *Speech-Language Pathologist*
	• Protocols for rapid evaluation and diagnosis of stroke patients
	• Protocols to guide stroke rehabilitation care based on best practice guidelines
	  - *Medical and nursing assessments:*
	  - *Swallow screen*
	  - *Nutrition, hydration*
	  - *Functional status, mobility, DVT risk*
	  - *Level of dependency*
	  - *Upper and lower limb function, gait and balance function*
	  - *Communication issues*
	  - *Vision and perceptual deficits*
	  - *Cognitive function*
	  - *Mood and depression screening and management*
	• Interdisciplinary meetings weekly to discuss patient progress against treatment goals; update management plans
	• Patient and family education, skills training, and involvement in care planning
	• Discharge planning
	
	◉ Limited coordinated stroke care provided across geographically discrete regions
	
	◉ Stroke training programs for all levels of healthcare providers	

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B. Core Stroke Care Recommendations

For each best practice recommendation, indicate with a tick whether the described practice is in place as a routine part of care; in development for implementation; not implemented, meaning the service/resource may be available but it is not currently part of stroke care within your services; or, the service/resource/equipment is not available within your facilities, therefore not possible to implement.

Health System and Stroke Recognition Core Evidence-Based Recommendations	Applicable Level of Health Services Capacity for Stroke Care			Supporting Evidence	Self Assessment
	Minimum	Essential	Advanced		
1. All patients with acute stroke should have an initial functional assessment to determine rehabilitation needs and receive an individualized rehabilitation plan.		✓	✓	Evidence level: A	☐ In place ☐ In development ☐ Not implemented ☐ Not available
2. All patients who are admitted to inpatient rehabilitation following stroke should be treated on a specialized stroke rehabilitation unit.		✓	✓	Evidence level: A	☐ In place ☐ In development ☐ Not implemented ☐ Not available
3. Therapy should include repetitive and intense use of tasks that challenge the patient to acquire the necessary skills needed to perform functional tasks and activities.	✓	✓	✓	Evidence level: A	☐ In place ☐ In development ☐ Not implemented ☐ Not available
4. Patients should receive adaptive training (such as the use of specialized devices) to improve performance of specific functional tasks.	✓	✓	✓	Evidence level: A	☐ In place ☐ In development ☐ Not implemented ☐ Not available
5. Spasticity and contractures can be prevented or treated by antispastic pattern positioning, range-of-motion exercises, and/or stretching. Routine use of splints is not recommended.	✓	✓	✓	Evidence level: B Evidence level: A	☐ In place ☐ In development ☐ Not implemented ☐ Not available
6. Healthcare workers and families should be taught to protect and support the paretic arm during movement, and to protect during wheelchair use by using a hemi-tray or arm trough.	✓	✓	✓	Evidence level: B	☐ In place ☐ In development ☐ Not implemented ☐ Not available
7. Patients should be made aware of their increased risk for falls and given a list of precautions to reduce their risk of falling.	✓	✓	✓	Evidence level: C	☐ In place ☐ In development ☐ Not implemented ☐ Not available
8. Patients should be assessed for post stroke pain, including persistent central pain and shoulder pain on affected side.		✓	✓	Evidence level: C	☐ In place ☐ In development ☐ Not implemented ☐ Not available

Health System and Stroke Recognition Core Evidence-Based Recommendations	Applicable Level of Health Services Capacity for Stroke Care			Supporting Evidence	Self Assessment
	Minimum	Essential	Advanced		
9. Patients should be assessed for communication deficits.	✓	✓	✓	Evidence level: C	☐ In place ☐ In development ☐ Not implemented ☐ Not available
10. Interventions to improve functional communication for patients with aphasia should be implemented (such as teaching families about the need for ongoing conversation, use of non-verbal strategies).	✓	✓	✓	Evidence level: B	☐ In place ☐ In development ☐ Not implemented ☐ Not available
11. Patients with aphasia should be referred to a speech-language pathologist for individualized therapy to improve communication ability.		✓	✓	Evidence level: C	☐ In place ☐ In development ☐ Not implemented ☐ Not available

Which recommendations are your highest priorities to implement?

What are your next steps to start development and implementation of these best practices?

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C. Key Stroke Quality Indicators

For each quality indicator, please note whether data is being actively and routinely collected; or, data collection processes are in development for the indicator; or, data may be available but it is not currently being collected; or, data for this indicator is not available at all so not able to collect or report it. Please tick the most appropriate box for each indicator.

Performance Measures	Numerator	Denominator	Self Assessment
1. Distribution of disability scores across stroke population using the modified Rankin Scale score at discharge from acute care and at 3 months post stroke.	Frequency distribution of modified Rankin scores for each patient at time of discharge from acute care and at three months post stroke onset. [(We will later use data to categorize MRS 0-2, MRS 0-5, or MRS 0-6.)]	All stroke and TIA patients admitted to an inpatient acute care hospital, And discharged alive	☐ Data collected ☐ In development ☐ Data not collected ☐ Data not available
2. Proportion of stroke patients in inpatient rehabilitation who are treated on an inpatient rehabilitation stroke unit.	Number of stroke and TIA patients admitted to an inpatient rehabilitation bed and treated on a specialized rehabilitation stroke unit at any time during their hospital stay	All stroke and TIA patients admitted to an inpatient rehabilitation hospital.	☐ Data collected ☐ In development ☐ Data not collected ☐ Data not available
3. Average amount of direct therapy received from each rehabilitation discipline each day (in minutes)	Median number of time (minutes) of direct therapy for each patient admitted to an inpatient rehabilitation bed (calculate overall, then separate out for each type of therapy received – e.g., PT, OT, SLP)	All stroke and TIA patients admitted to an inpatient rehabilitation hospital.	☐ Data collected ☐ In development ☐ Data not collected ☐ Data not available
4. Proportion of stroke patients in hospital or rehabilitation hospital who experience a fall post stroke or TIA	Number of stroke and TIA patients admitted to an inpatient setting (acute or rehabilitation) who experience at least one fall during their stay	All stroke and TIA inpatients in a health care hospital (split by acute hospital and rehabilitation hospital)	☐ Data collected ☐ In development ☐ Data not collected ☐ Data not available
5. The proportion of stroke patients who experience a fall who require medical treatment for injuries that were sustained during the fall.	Number of stroke and TIA patients admitted to an inpatient setting (acute or rehabilitation) who experience at least one fall during their stay that required medical intervention for injuries of the fall.	Number of stroke and TIA patients admitted to an inpatient setting (acute or rehabilitation) who experience at least one fall during their stay	☐ Data collected ☐ In development ☐ Data not collected ☐ Data not available

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What indicators are priority for us?

Who will collect the data?

How will the data be collected (electronically, on paper, etc)?

How will the data be analyzed? When? How often?

Who will receive the results?

The Roadmap to implementation of the WSO Global Stroke Guidelines and Action Plan includes several modules that together address the full continuum of stroke care. The following modules are available for you to use as part of stroke service planning, self-assessment and implementation. Each Roadmap module includes the relevant service and resource checklist, applicable stroke best practice recommendations and important key quality indicators. Some modules in the Roadmap include additional elements and expanded information to those in the published WSO Global Stroke Care Guidelines and Action Plan to be of further practical use for all sites.

Users of these tools are encouraged to review all modules of the Roadmap.

The following modules are available as part of the WSO Roadmap for Quality Stroke Care:

Introduction and Overview
1. Stroke System Development
2. Prehospital and Emergency Care
3. Acute Inpatient Stroke Care
4. Secondary Stroke Prevention
5. Stroke Rehabilitation
6. Community Reintegration and Long Term Recovery

World Stroke Organization - Clinical Practice Guideline
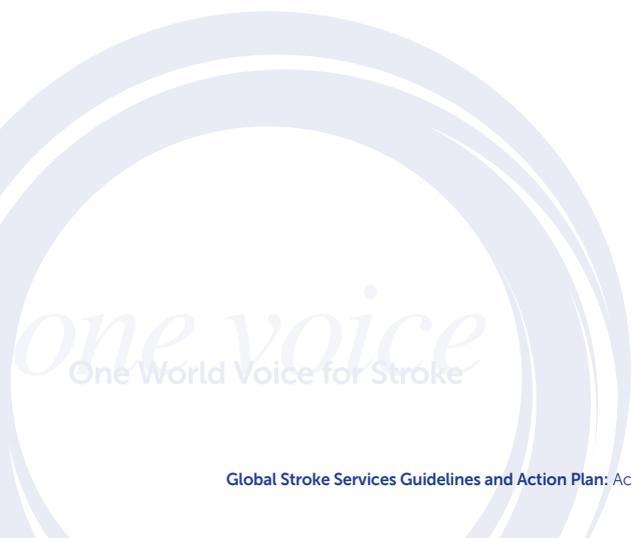http://www.world-stroke.org

Clinical Practice Guideline Guidelines recommended by the WSO Guidelines and Quality subcommittee.

WSO International Stroke Guildelines 2012; American Academy of Neurology guideline publication.
Evidence-based Guideline: Prevention of stroke in nonvalvular atrial fibrillation. Summary of Evidence-based Guideline for CLINICIANS. Summary of Evidence-based Guideline for PATIENTS and their FAMILIES
More information: https://www.aan.com/Guidelines/Home/ByTopic?topicId=20
Heart and Stroke Foundation resource for healthcare providers. Taking Action for Optimal Community and Long-Term Stroke Care (TACLS). French version: Agir en vue de soins optimaux communautaires et de longue durée de l'AVC.

One voice
One World Voice for Stroke

About the World Stroke Organization

OUR VISION: A LIFE FREE OF STROKE.

OUR MISSION:

The World Stroke Organization's mission is to reduce the global impact of stroke through prevention, treatment and long-term care. We work to reduce the impact of stroke on individuals, their families, and their communities. Our members campaign together to increase awareness of stroke risk and to improve treatment and care. We believe that reducing the global burden of stroke makes the world a healthier place for everyone.

Corporate partners

The World Stroke Campaign has been made possible through the generous financial contribution of its corporate partners.

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