



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

## **INTRODUCTION AND OVERVIEW**

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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.

# A ROAD MAP FOR QUALITY STROKE CARE

## PART I: INTRODUCTION AND OVERVIEW

Stroke is a leading cause of death and disability world-wide. Stroke systems of care, integrated approaches to stroke care delivery, and the availability of resources for stroke care vary considerably across geographic regions, creating a risk for sub-optimal care. The World Health Organization has committed to efforts to significantly reduce risk factors and mortality from non-communicable diseases by 2025. Mortality and morbidity from stroke could be significantly reduced through organized stroke care, including the implementation of evidence-based clinical practice guidelines and adoption of a continuous quality improvement philosophy and programs.



In 2014, the World Stroke Organization (WSO) published the first-ever *Global Stroke Services Guideline*<sup>1</sup> and Action Plan to support the efforts and progress of all regions to improve care and outcomes for people with stroke. One intent of the roadmap is that all regions use it as an opportunity to conduct a self-assessment of current stroke activities, then apply the findings to help inform decision-making and advocacy efforts to further develop stroke services to achieve the best services possible within geographical and resource access constraints. Several components are included within the *Global Stroke Services Action Plan* to facilitate and support stroke improvement efforts. First, a model has been developed that categorizes the availability of stroke services globally into three levels: access to **minimum** healthcare services, access to **essential** stroke services, and access to **advanced** stroke services (Figure 1). The Action Plan also includes a framework for stroke services that describes the continuum of stroke care addressed in the Action Plan and core elements within each phase of the continuum. Specific stroke best practice recommendations are then provided for each core element, and where appropriate and relevant, key quality indicators are also included.

1. Lindsay P, Furie KL, Davis SM, Donnan GA, Norrving B. World Stroke Organization global stroke services guidelines and action plan. *Int J Stroke*. 2014 Oct; 9(Issue Supplement A100):4-13.

# A ROAD MAP FOR QUALITY STROKE CARE

## Purpose of Global Stroke Action Plan Guidelines and Roadmap

This roadmap manual 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 implementation in clinical practice, and the calculation of performance measures to create an environment of continuous quality improvement. The roadmap is organized along the continuum of care starting at the onset of a stroke event through the hyperacute phase, acute inpatient care, stroke rehabilitation, prevention of recurrent stroke and concludes with community reintegration and long term recovery. These phases of care are not discreet and many activities described within each may occur concurrently, such as starting prevention therapies while undergoing rehabilitation.

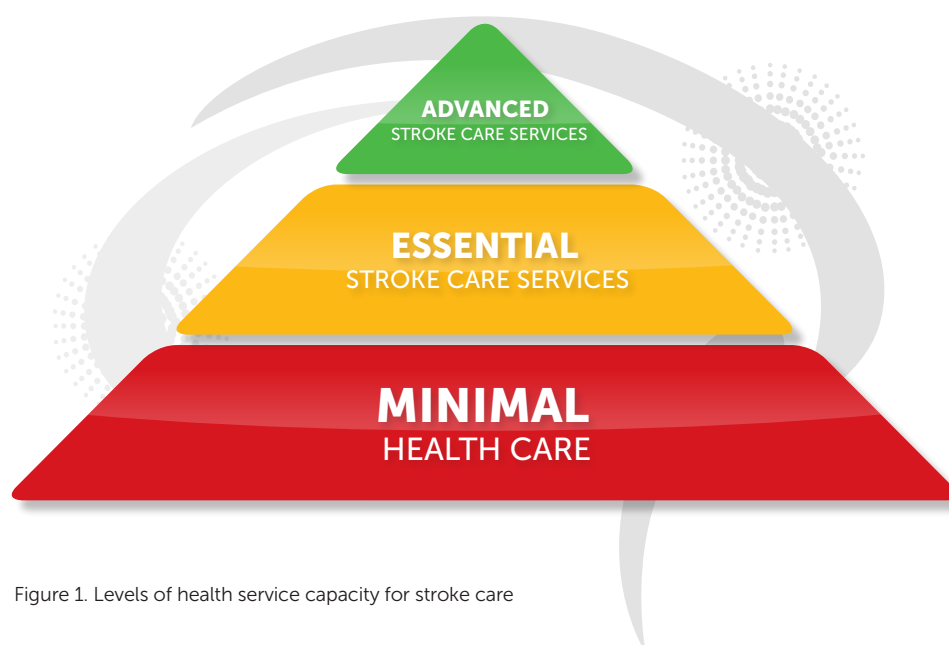


Figure 1. Levels of health service capacity for stroke care

**Target Audience:** The focus of the roadmap is on the processes of care and impacts on patient outcomes. 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 will be able to 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 programs under development, to help ensure that all key elements defined here are considered from the beginning of development.

Links to resources from countries around the globe are included in appendices and the reference list. For all groups working on stroke service improvement, the advantage of being aware of and using these existing tools is to allow more time to be spent on systems improvement and less time spent replicating efforts where valid materials already exist that can be adapted to meet local needs.

# A ROAD MAP FOR QUALITY STROKE CARE

## Global Stroke Services Framework for The Core Elements of Stroke Care Across the Continuum of Care

The purpose of the WSO Global Stroke Services Framework is to provide a roadmap which 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 Framework is presented in Figure 2.

The WSO Global Stroke Services Framework focuses on the continuum of care starting from the onset of stroke signs and symptoms all the way through to rehabilitation and reintegration into the community. The general dimensions of stroke management are recognition, assessment, diagnosis, intervention, prevention, education, technology and measurement. These are applied across the continuum from stroke recognition, acute care and prevention of complications, rehabilitation, prevention of recurrent stroke, community reintegration and longer term recovery.<sup>^</sup>

Within each of these stages of care and recovery, several key topics are identified that are considered most relevant in order to optimize stroke management globally. While it is recognized that primary prevention of vascular risk factors is a critical component of health care services, primary prevention is not the main focus of this framework or Action Plan. <sup>^</sup> However, this framework and the supporting Action Plan do focus on secondary prevention services that address the same prevention concepts (such as lifestyle, hypertension, atrial fibrillation and dyslipidemia).

## Adaptation of the WSO Global Stroke Care Guideline and Action Plan for Local Use

Stroke audits from around the world have repeatedly shown that a wide gap continues to exist between what the evidence shows as best practices in stroke care and the care that is actually delivered in practice. Goals of the WSO Global Stroke Care guidelines include to facilitate the implementation of evidence into practice, support clinical decision making, specify beneficial therapeutic approaches, and influence public policy (Kastner et al 2011).

The WSO global stroke care guideline includes a core set of stroke care recommendations and key quality indicators that have been established through a rigorous review and adaptation process (Lindsay et al; IJS 2014). They include:

- **System resource elements** that are required to deliver stroke care and implement recommendations.
- Evidence-based **best practice recommendations for stroke care**<sup>2</sup> which are applicable across the continuum of stroke care. For each recommendation there is an indication of the level of service capacity in which these recommendations may be realistically being carried out.
- **Key quality indicators** (core performance measures) that help determine what care is being provided the extent of implementation, and the quality of that care. These indicators may be considered as the foundation for ongoing quality improvement efforts.
- **System-level quality monitoring indicators** are also provided to help support systems change and ongoing improvement efforts.

2. For recommendations that are considered applicable where a minimum level of healthcare services exist, such as in remote and rural locations without organized stroke services (category 1), it is anticipated that local healthcare workers would be able to adapt these recommendations and provide some level of understanding and training to families of stroke survivors to enable them to better care for the person who experienced a stroke.

# A ROAD MAP FOR QUALITY STROKE CARE

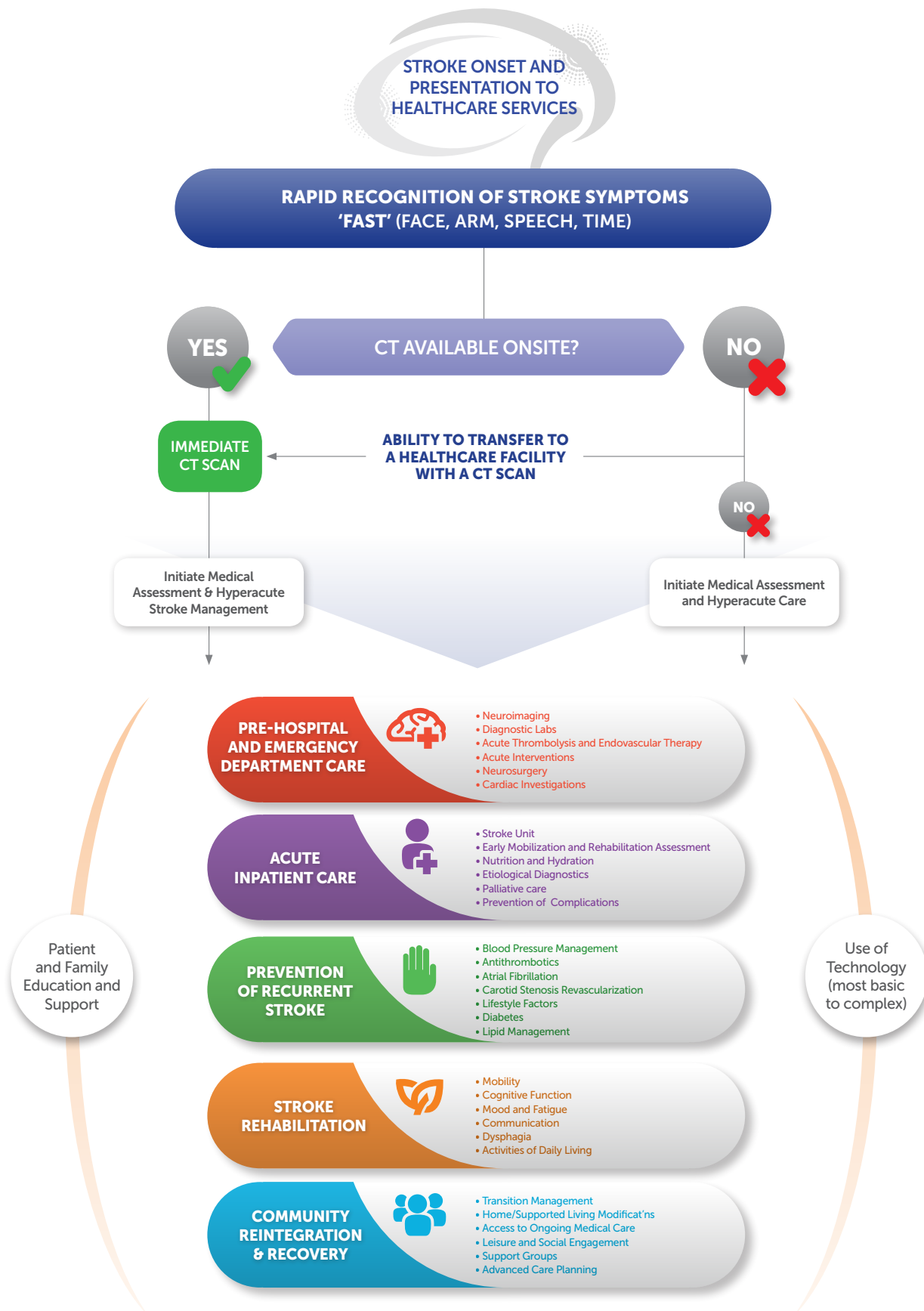


Figure 2. Global Stroke Services Framework

# A ROAD MAP FOR QUALITY STROKE CARE

**The WSO Global Stroke Care Guideline** defines ideal care of stroke patients across the continuum. This guideline highlights topics that have the highest levels of evidence for effectiveness or are considered key system drivers. We recognize that users of the WSO Stroke Care Guideline and Action Plan may only be able to implement some recommendations, and/or may be working on just some phases of the stroke care continuum (as defined in the framework above) at a time.

Figure 3 below describes the steps that should be undertaken when any local, regional or national group adopts and/or adapts the WSO Stroke Care Guideline for local use. It is then followed by more detailed descriptions for each step. Practical considerations are provided where possible for each step. This section also provides links to useful resources should more detailed information be required. In areas where resources are limited, some steps may be modified or skipped altogether. It is important to weigh the benefits and risks of doing this. For example, in establishing the working group, a decision may be made to keep it small; however, it should still ideally include representation from multiple disciplines.

The guideline should be adapted to local use by a group of people with a broad range of expertise relevant to the guideline topic being developed. The way the group works together can have a significant effect on the outcome of the process. For stroke care, healthcare professionals from the following disciplines should be considered for participation in guideline development: medicine (neurology, internal medicine, emergency, primary care, and rehabilitation medicine), nursing, rehabilitation (physiotherapy, occupational therapy, speech-language pathologists, rehab assistants), social work, psychology, and pharmacy. Other disciplines and system leaders may be relevant as well, depending on the phase(s) of the continuum being included in the guideline. **It is important to include stroke survivors, family members and informal caregivers as part of the group as well.**

Figure 3. Steps to adapting the WSO global stroke care guideline and action plan for local use.



Refer to Appendix 1 for detailed information on each step of this guideline adaptation process



## PART II: WSO STROKE SERVICES DELIVERY FRAMEWORK OVERVIEW

The Global Stroke Guidelines and Action Plan are presented in this Roadmap within a quality improvement model. 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, based on level of services available; and, a list of key quality indicators to monitor levels of care provided and impact on patient and economic outcomes. Further descriptions of each of these elements of the roadmap are provided below.

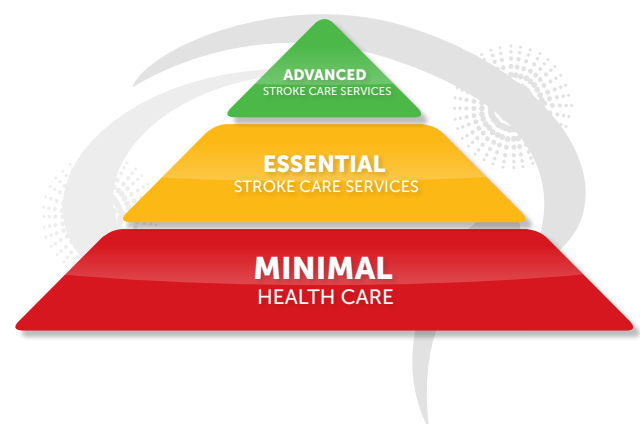
Users of this Roadmap should review the sections relevant to their phase of stroke services (system level, hyperacute, acute inpatient, prevention of recurrent stroke, stroke rehabilitation, community reintegration); complete an assessment of current services and resources, current recommendations in place, and current data collection methods and access; then, develop an implementation plan to ensure that these core elements are optimized and additional elements added to improve the stroke services they provide.

It should be noted that the recommendations and indicators provided here represent the basic core elements required to deliver optimal stroke care. The essential and advanced stroke services levels build upon and include all elements listed for the previous level of service plus additional services. As resources and expertise allow, stroke providers and systems should expand on these to include a broader set of recommendations within their own regions to increase comprehensiveness of evidence-based stroke care and surveillance. Additional recommendations for each part of the continuum and more in-depth recommendations and quality indicators are available through currently published guidelines from around the world. A list of high quality guidelines that were reviewed in the development of the WSO Global Stroke Guidelines and Action Plan are provided in the reference list.

### Element One: Identify Current Levels of Service Delivery and Capability (Self Assessment)

Models for stroke services delivery vary considerably from region to region, and depend on the availability of resources, including human resources, access to healthcare facilities, access to diagnostic and laboratory services, access to medications, and access to transportation.

Resource availability impacts the extent to which comprehensive stroke care can be provided across the continuum of care from acute stroke management, to rehabilitation, prevention of recurrent stroke, community reintegration and long term recovery. This first element lists core resources that are reasonable to expect at each service level from minimum to essential and advanced. They are provided in a check list that each stroke services development group should use to assess their own resource capacity and identify potential additional elements to put in place.





# A ROAD MAP FOR QUALITY STROKE CARE

The three levels of stroke service availability have been established as a key part of this framework for the purposes of developing the WSO Global Stroke Services Action Plan and its components. By completing the self-assessment, each group will understand where their services are categorized. This provides an opportunity to develop goals and plans to reach higher levels of services within resource ability.



Although not all core components of stroke services may be in place or accessible, all regions are encouraged to use this Action Plan to define their goals for stroke care delivery, then develop a strategy to achieve those goals over time. It is recognized that in lower and middle-income countries there is a wide range of accessibility to some of the most basic healthcare services. These models range from periodic healthcare worker visits to smaller/rural communities to basic organized services within larger communities, and more comprehensive services available in cities.

## Element Two: Core Stroke Care Recommendations

**Best Practice Guidelines** are recommendations for practice or policy decisions that are informed by sufficient high quality evidence. They describe the *most effective* health care practices, interventions, and processes determined by research evidence and in some cases, expert opinion, and consensus. Best practices guidelines can take the form of clinical practice/best practice recommendations or policy guidelines.

Through a multi-round Delphi process, a core set of stroke care recommendations have been identified that are considered reasonable to be implemented within the levels of minimal, essential and advanced stroke service models. These recommendations emphasize the fact that even in regions with the minimum of resources something can be done to improve care and outcomes for stroke patients. The recommendations are structured in an incremental model. This means that at the minimum level of services, a core set of recommendations should be implemented. Then at the essential level, all recommendations at the minimum level PLUS additional recommendations identified as reasonable at the essential level should be implemented. Likewise for those performing at a level of advanced stroke services, all recommendations listed for minimum and essential stroke services should be implemented plus additional recommendations for advanced service capability.

# A ROAD MAP FOR QUALITY STROKE CARE

## Evidence Levels:

All recommendations in this guideline are presented along with evidence levels that reflect the strength of available research to support the recommendation as of October 2015. These recommendations and evidence levels will be reviewed annually and adjusted as required to reflect emerging research findings. Levels of evidence provided are based on the findings from specific research studies; therefore, they are specific to the population studied and may not be applicable to all regions, they may not be reflective of local systems, and local stroke care providers should determine relevance to their own population.



recommendations are supported by strong evidence from systematic reviews, meta-analysis, and/or multiple randomized controlled trials with consistent findings;



recommendations are supported by moderate evidence from single randomized controlled trials, multiple trials with inconsistent findings, large observational studies, and/or large case controlled studies;



recommendations are supported by weak evidence from small observational or case controlled studies; or they are based on expert opinion and/or group consensus. These weaker recommendations are provided when they are considered key elements of stroke care, such as obtaining CT scans to confirm diagnosis.

## Element Three: Key Stroke Quality Indicators

Evaluation of stroke care delivery is an essential component of any organized stroke care system, no matter how big or small. Considerations for evaluation should be made early on in the planning process so that mechanisms for data collection can be established as part of the stroke services and guideline implementation plan.

As part of the WSO Global Stroke Care Guidelines and Action Plan, International Classification of Diseases codes were selected to identify appropriate stroke cases to include in a stroke performance measurement strategy. These are defined and included in Appendix 2. A core set of performance measures were then identified in tandem to the process to select core best practice recommendations. These key stroke quality indicators have been provided in this roadmap to increase focus, consistency and standardization of stroke care measurement across jurisdictions. In time it is hoped this information could be used to develop global benchmarks for delivery of stroke services at the minimum, essential and advanced levels of care, and help drive global stroke care improvement efforts through informed decision-making and system planning.

# A ROAD MAP FOR QUALITY STROKE CARE

To develop effective local stroke care measurement strategy quality indicators, several elements should be addressed:

- ➔ Define stroke case definitions
- ➔ Define inclusion and exclusion criteria for target patient population of interest (stroke type, age, gender, setting, phase of care etc)
- ➔ Identify key stroke quality indicators from WSO list below, and add additional indicators to sufficiently cover scope of services being delivered and accountabilities
- ➔ Identify required data elements and method to ensure all required elements are collected to calculate identified quality indicators
- ➔ Develop data collection repository and methodology (who will record data, when, where, how and on which patients)
- ➔ Determine time frames for data collection, analysis and reporting
- ➔ Determine report structure and format (online dashboard report cards should be considered where possible)
- ➔ Establish dissemination and communication plan of results of data analysis to all levels of providers, decision-makers and patient population

## Quality Definitions

**Standards of care:** are the bases of comparison in measuring or judging the capacity, quality, content, or extent of a particular object of activity. In the absence of evidence, standards may be informed by expert opinion. Standards can be considered as the basic requirements of a healthcare profession and are usually defined within policies, procedures, and standards of practice documents. Standards of care specify the minimum acceptable characteristics of what constitutes quality care.

They specify appropriate management based on strong scientific evidence and collaboration between healthcare professionals involved in the treatment of a given condition. Standards of care describe the level at which the average, prudent provider in a given community should practice and how similarly qualified practitioners would have managed the patient's care under the same or similar circumstances.

**Quality Indicator:** An objective measure of healthcare quality that has been developed to support self-assessment and quality improvement at the provider, hospital or systems level (ACC/AHA Performance Measures task force).

**Benchmark:** is the performance level which is recognised as the standard of excellence for a specific process of care or outcome and is used for comparisons across groups. Benchmarks provide standard values by which something can be measured, compared, or judged. Benchmarks can be identified through several techniques, including: validated research and statistical methods; identification of top performers; and the past performance of one's own organization.

**Target:** is the level of performance that an organization aims to achieve within a specified period of time. It is usually a value between the current actual level of performance and the benchmark, but could be equal to or greater than the benchmark. Target values take into account the resources and constraints with respect to meeting the standard of care.

**Threshold:** is the minimal acceptable level of performance. Performance rates that fall short of the threshold are considered poor performance and should result in corrective action.

*\*\* Performance rates outside the threshold - either above or below as defined by the specific measure - are considered poor performance*

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### **WSO Global Stroke Guidelines and Quality Committee:**

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### **Conflict of Interest Declarations:**

MP Lindsay: None; K. Furie: None; S. Davis: None; G. Donnan: None; B. Norrving: None.

# A ROAD MAP FOR QUALITY STROKE CARE

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 Guidelines 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.

# 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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