



Certification
Stroke Centers
in **Latin America**



World Stroke
Organization



SIECV
SOCIEDAD IBEROAMERICANA DE
ENFERMEDAD CEREBROVASCULAR

STROKE CENTERS CERTIFICATION GUIDE WSO/SIECV

I. INTRODUCTION

Certification of stroke centers is critical to ensure that hospitals implement and monitor all priority evidence-based strategies that change the natural history of stroke, reducing mortality and disability.

It is a great opportunity for continuous improvement of services and qualification of comprehensive assistance in the region, with the commitment of stroke centers as organizers and trainers of the entire local network.

Purpose

The purpose of stroke centers certification is to increase the quality of stroke care in Latin America improving outcomes for stroke patients. We will encourage the hospitals to apply, after fulfilling the criteria, for certification as WSO/SIECV Stroke Centers. We will work together with country Medical Societies and Health Managers (Ministries of Health/Health Secretaries). The certification is a priority step to guide the national stroke care by evidence-based pathways that cover the entire chain of care.

This program is designed to guarantee the implementation of priority elements in stroke centers, increasing the quality and safety of care and improving long-term stroke patients outcomes. With a team of stroke experts, we will offer suggestions for improving services, materials for team training, continuing education, scientific publications, in addition to the international certification published on our website and in the application that will be available to the population. We hope that in the future the certification will also lead to better reimbursement for health services.

The Tools

The WSO/SIECV certification is based on the WSO Roadmap for Quality Stroke Care. The roadmap is an implementation resource that 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.

The Roadmap classifies the services in 3 levels: 2 stroke centers (Essential and Advanced) and 1 Minimal healthcare services for areas with low access to doctors and resources for stroke care. It suggests resources and protocols to be implemented in each level. The goal is to achieve as many checkmarks as possible in the roadmap check-list to provide the highest possible level of stroke services.

For the WSO/SIECV Certification the Executive Committee defined the mandatory criteria to each level of stroke center and the proportion of elements available in the center needed to obtain the certification (according to all resources listed on the roadmap).

II. THE CERTIFICATION PROCESS

1. Fill the Test Form to evaluate your hospital. You can see your classification according to the roadmap, the proportion of elements available according to all resources suggested, the items you need to complete all elements suggested. If you don't reach the minimal criteria for classification, you can see items you need to improve to reach the classification or to reach a superior level.

2. To apply for certification

2.1. Fill the Application for Certification Form

2.2. All mandatory items are considered minimal requirements to apply for classification to each category

2.3. Beyond the mandatory requirements, hospitals will need to reach at least 75% of recommended elements to get the Latin American Stroke Center Certification. In the second certification the centers will need to reach 85% of the recommended elements. Also, to show improvement in the quality indicators

2.4. Should be demonstrated 4 months of data collection in the registry and performance measures

3. The Electronic interactive resource will show the % of resources available in the hospital according to all suggested in the WSO Roadmap category prior to the visit to evaluate potential candidates. If the system confirms the criteria, the hospital will be pre-certified and the center will receive a request for more documents for certification (in preparation for the onsite visit). The onsite visit will occur from 2 to 6 months after the application. In this period the center can be prepared for the certification (complete the trainings, start or improve the quality indicators registry, for example).

The following documents should be uploaded in the platform (should be uploaded by 1 month before the onsite visit):

3.1 Hospital and Stroke Center Structure (Infrastructure - number of hospital beds, ICU, number of CT scanners, number of Resonators, number of beds in the stroke unit, etc., and list of professionals from the stroke team and specialties).

3.1.1 Continuing Medical Education (CME) - Training Certificates - Which may be presented during the visit:

- NIHSS Certificate: Mandatory for all neurologists and one representative from the Emergency Nursing service, Stroke Unit and ICU.
- Modified Rankin scale: Mandatory for all neurologists and the professional evaluator outcomes.
- Training to nurses, nursing assistants and other professionals from the multidisciplinary team in stroke - 4 horas/year - Swallowing, Fever management, Glycemia management, Mobilization, Secondary prevention, Anticoagulation, etc.). Will be possible to present the certificates onsite, informing the attendance list, the program and the learning evaluation mechanism.

- Training for nurses and nursing assistants in the management of patients with acute stroke - 2 hours / year. Will be possible to present the certificates onsite, informing the attendance list, the program and the learning evaluation mechanism.
- Training for emergency physicians - 4 hours / year. Will be possible to present the certificates onsite, informing the attendance list, the program and the learning evaluation mechanism.
- Training for stroke unit, angiosuite and neurological ICU physicians - 8 hours / year. Will be possible to present the certificates onsite, informing the attendance list, the program and the learning evaluation mechanism.
- Training for Physiotherapists and OT - 4 hours / year. Will be possible to present the certificates onsite, informing the attendance list, the program and the learning evaluation mechanism.

3.2 Written protocols used (reference or description)

3.3 Stroke patients pathway

3.4 Performance measures – what indicators are measured? Local registry? National? International? (if international, what registry?) Frequency of evaluation? What they do after the evaluation? (action plans). There should be a plan for data use. Typically, monthly or quarterly review by an interprofessional group at the stroke center. Quality Improvement projects should be derived from gaps or deficiencies borne out by the data.

3.5 Who is the person responsible for the data collection? (to monitor quality) – name and profession (usually a nurse coordinator)

3.6 What strategies are used for quality improvement? Frequency? Discussion of quality indicators, case discussion, etc.

3.7 Meetings of stroke center: upload or present during the onsite visit, the list of participation in the trainings, case discussion, scientific meeting, discussion of quality indicators, etc

3.8 Report whether there is organization of stroke network and pre-hospital care. Describe if there is.

You will receive a contact from the certification committee to help you in the preparation for onsite certification to explain the process.

4. On-site hospital evaluation (to all types of centers)

Will include:

1. Opening Meeting: meeting between the reviewers with leaders of hospital (the Coordinator of Stroke Center and nurse responsible for stroke program, stroke unit team, stroke team, emergency coordinator - team)

- a. Introductions of the reviewers and hospital team
- b. Explanation about the certification process
- c. Explanation about the onsite visit by the doctor reviewer

d. Stroke program overview (20 minutes presentation by the coordinator of stroke program)

- Development of the program (when start, how was developed?)
- Infrastructure
- Program organization
- Interdisciplinary team in all areas inside the hospital (emergency department, stroke unit team -or general ward, ICU)
- Continuum of care / line of care
- Program quality monitoring (quality indicators, meetings to review the results, weekly meetings of stroke team, education of stroke team and areas – emergency, ICU)

Guidelines

e. Presentation by the nurse reviewer the results of the center application (according to the roadmap – what they have and what is missing)

f. Organization of the visit

2. List of patients with stroke in the hospital to be reviewed and evaluate the pathway. Tracing their care from arrival to the hospital to discharge and evaluating the application of hospital policies and evidence-based practices and principles.

3. Review 3-5 patients included in the registry and compare to the medical records (nurse).

4. Review of quality improvement projects and performance indicators

5. Review the structure of local network, contact with pre-hospital, protocols

6. Review of personnel and credentialing

7. Visit to the Emergency Room (ER), Intensive Care Unit, Stroke Wards/Unit, angio suite (in Advanced centers) and meet with the coordinator of stroke center and representatives of the stroke team, and other professionals from the hospital and ER

8. 4 months of data collection in the registry and performance measures must be included in the platform before the visit

9. Closing session with findings

10. Reviewers should fill the forms (during the visit, about the structure, personal, protocols) – in Brazil, to few also the specific check list

The evaluators will identify potential deficiencies/areas of improvement and centers will be asked for actions plans to improve the service (to be presented in the next certification)

After the visit and after receiving the plans for improvement, the certification board will review the application for the final decision on approval - the hospital will receive the results in up to 1 month.

III. RECERTIFICATION

One year after on site certification, the hospital will be evaluated for re-certification. After this, to maintain the certification, each year the quality indicators will be reviewed (online) and the hospital will be visited for re-certification each two years.

IV. SOME COUNTRIES HAVE SPECIFIC COUNTRY REQUIREMENTS FOR CERTIFICATION TO BE REVIEWED DURING THE CERTIFICATION.

BRAZIL: The centers that apply for the certification must comply with the requirements established by the Brazilian Ministry of Health, which organizes them into Type I, II and III Centers as established below:

Type I:

Hospital centers that play the role of reference for the care of stroke patients, that provide and perform the procedure with the use of thrombolytic agents, in accordance with specific Clinical Protocols and Therapeutic Guidelines and that meet the following requirements:

- Provide emergency care 24h/day, including weekends;
- Perform computerized tomography of the skull 24 hours a day;
- Have a team trained in emergency care for stroke patients, including a doctor, nurse, nursing assistants and coordinated by a neurologist with a specialist in neurology, recognized by the Consejo Federal de Medicina (CFM) or Consejo Regional de Medicina (CRM) or neurology residency training program recognized by the Ministry of Education (MEC);
- Provide written clinical and care protocols
- Provide coverage of neurological care, available within 30 minutes after the patient's admission (on call or remote call or specialized neurological support through telemedicine);
- Have monitored beds for stroke care, with a doctor 24 hours / day and trained professionals, who may be in the emergency department or in the Intensive Care Unit (ICU);
- Laboratory blood test 24h/7d
- Have a Neurosurgery team 24 hours / day (onsite or available within a maximum of two hours); and
- Hemotherapy department.

Type II:

In addition to the Type I requirements, you must have an Acute Stroke Unit. It requires a defined physical area with at least 5 beds exclusively for the care of stroke patients (ischemic, hemorrhagic or TIA), during the acute phase (up to 72 hours after admission), even offering intravenous thrombolytic treatment. The service is carried out in a multidisciplinary way, with the inclusion of physiotherapy and speech therapy. Treatment of the acute phase is coordinated by the neurologist.

Hospital must perform the following procedures: electrocardiogram, full-time laboratory blood test, radiology service. And have mandatory access through a commitment period to the following procedures: Hemotherapy, Color Doppler ultrasound, transthoracic and transesophageal echocardiography, CT angiography, MRI, MRI, transcranial echodoppler and neuroradiology interventionist.

Human Resources:

Each acute stroke unit must have at least:

- One coordinator, with a specialist degree in Neurology recognized by the CFM or CRM or neurology residency training program recognized by the Ministry of Education (MEC);
- Doctor 24 hours a day;
- Nurse 24 hours a day;
- An exclusive nursing assistant for each 4 (four) beds, 24h/day;
- Daily support from a physiotherapist;
- Daily support from Speech-Language Pathologist;
- Neurological support 24 hours a day, 7 days a week, including holidays;

Material resources:

Acute stroke unit must have a minimum of 5 (five) beds with the following equipment and materials:

- Hospital beds with side rails, corresponding to the number of beds enabled
- One stethoscope / bed;
- At least two infusion pumps per bed, with an operational reserve of 1 device for every 3 beds;
- Medical compressed air and oxygen with pressure regulating valves and vacuum point for each bed;
- Materials for aspiration;
- Kit, per unit, for emergency care containing medications and the following materials: one bag valve mask, laryngoscopy, endotracheal tubes / cannulas, endotracheal tube fixation, Guedel cannulas and sterile guidewire;
- Defibrillator / cardioverter equipment: One for the unit;
- Portable electrocardiograph: One for the unit;
- Capillary glucose measurement equipment, specific for hospital use: one for the unit;
- Transport stretcher, with side rails, support for parenteral solutions and support for oxygen tanks: one for every five beds;
- Portable Oxygen Tanks;
- Mask with different oxygen concentrations: One for every three beds;
- Continuous monitoring of heart rate, cardioscopy, pulse oximetry and non-invasive pressure, respiratory rate and temperature, one for each bed.

Type III:

In addition to the necessary requirements for Type II, you must have a Comprehensive Stroke Care Unit. The Comprehensive Unit includes the Acute Unit Stroke, which may or may not be in the same physical space. It is necessary to have at least 10 beds and aim to attend all cases of acute stroke admitted in the institution (except those that require intensive care and those for which palliative care support is chosen). It also has the function of continuing acute phase treatment, early rehabilitation and full etiological investigation.

Centers must have a specialized external consultation to support the Network (preferably its own or referenced).

Hospital must perform the following procedures: electrocardiogram, full-time laboratory blood test, radiology service, Hemotherapy, Color Doppler ultrasound, transthoracic and transesophageal echocardiography and angiography. And have mandatory access through a commitment period to the following procedures: CT angiography, MRI, MRI angiography, transcranial echodoppler and neuroradiology interventionist.

Human Resources:

Each Comprehensive Stroke Care Unit must have at least:

- One coordinator, with a specialist degree in Neurology recognized by the CFM or CRM or neurology residency training program recognized by the Ministry of Education (MEC);
- Doctor 24 hours a day;
- Daily support from Neurologist 24h / 7 days a week including holidays;
- Nurse 24 hours a day;
- One exclusive nursing assistant for each 4 (four) beds, 24h/day;
- One physiotherapist for each ten beds (6h/day);
- One Speech-Language Pathologist for each ten beds (6h/day);
- One Occupational Therapist for each ten beds (6h/day);
- One Social Assistant 6h/day Monday to Friday;
- Psychological, nutritionist and pharmaceutical support at the institution;

Material resources:

Comprehensive Stroke Care Unit must have at least ten (10) beds with the following equipment and materials:

- Hospital beds with side rails, corresponding to the number of beds enabled;
- One stethoscope / bed;
- Two infusion pumps per bed, with an operational reserve of 1 device for every 3 beds;
- 50% of beds with capacity for continuous monitoring of respiratory rate, pulse oximetry, heart rate, electrocardiography, temperature, non-invasive blood pressure;
- Medical compressed air and oxygen with pressure regulating valves and vacuum point for each bed;
- Mask with different oxygen concentrations: One for every five beds;
- Materials for aspiration;
- Portable electrocardiograph: One for the unit;
- Kit, per unit, for emergency care containing medications and the following materials: one bag valve mask, laryngoscopy, endotracheal tubes / cannulas, endotracheal tube fixation, Guedel cannulas and sterile guidewire;
- Defibrillator / cardioverter equipment: One for the unit;
- Capillary glucose measurement equipment, specific for hospital use: one for the unit;
- Transport stretcher, with side rails, support for parenteral solutions and support for oxygen tanks: one for every five beds;
- Portable Oxygen Tanks;

Comprehensive Stroke Care Unit must monitor and record the following care and process indicators:

- DVT prophylaxis started to the second day;
- Discharge with antiplatelet agents in patients with non-cardioembolic stroke (except in specific situations);
- Discharge with oral anticoagulation in patients with atrial fibrillation (AF) or Flutter (unless contraindicated);
- Use of antiplatelet agents, when indicated, started up to the second day of hospitalization;
- Discharge with statin for patients with atherothrombotic stroke (unless contraindicated);
- Discharge with a prophylactic and rehabilitative therapy plan;
- % patients with acute cerebrovascular disease treated in Stroke Unit;
- Hospital stay of the stroke patients with the aim of reducing it;
- Complications: DVT, pressure injuries, pneumonia, urinary tract infection;
- ICD-10 specific for the type of stroke at discharge;
- Hospital mortality due to stroke, with the aim of reducing it;
- Door-to-CT scan Time (DTC) < 25 minutes;
- Door-to-needle Time (DTN) < 60 minutes.

CHILE: Mandatory requirement that the Neurologist be responsible for the thrombolytic treatment.

COLOMBIA: considerations:

- Due to the unavailability of devices for prolonged electrocardiographic monitoring, this item will not be counted.
- For Advanced Stroke Centers, thrombolytic treatment must be performed by a Neurologist.

| Criteria for Stroke Centers Certification | | |
|--|--------------------------------|-------------------------------|
| All mandatory items are considered minimal requirements to apply for classification to each category | | |
| At least 75% of recommended elements are required for certification | | |
| | Essential Stroke Center | Advanced Stroke Center |
| Emergency Department | | |
| Emergency Department available | Mandatory | Mandatory |
| Emergency Department 24h/7days/week | Mandatory | Mandatory |
| | | |
| Access to basic diagnostic services | Mandatory | Mandatory |
| Laboratory blood test 24/7 (CBC, electrolytes, urea, glucose, INR, PT) | | |
| Electrocardiogram (12 lead) 24/7 | Mandatory | Mandatory |
| Computed Tomography (CT) scan brain 24h/7 days | Mandatory | Mandatory |
| Capability to do CT Angiography (CTA) 24/7 | Recommended | Mandatory |
| Transthoracic Echocardiogram | Mandatory | Mandatory |

| | | |
|--|-------------|-------------|
| Vascular Doppler ultrasound | Mandatory | Mandatory |
| Holter monitors | Recommended | Recommended |
| | | |
| Access to advanced diagnostic services | | |
| Magnetic Resonance Imaging (MRI) | | Mandatory |
| Capability to do MR Angiography | | Recommended |
| CT or MR Perfusion scans | | Recommended |
| Prolonged ECG monitoring devices | | Recommended |
| Transcranial Doppler | | Recommended |
| Transesophageal Echocardiogram | | Recommended |
| | | |
| Access to hyperacute stroke care | | |
| Protocols for rapid evaluation and diagnosis of stroke patients in Hospital/Emergency department 24hours/day, 7days/week, with time metrics assessment | Mandatory | Mandatory |
| Access to intravenous thrombolysis | Mandatory | Mandatory |
| IV thrombolysis 24h/ 7 days | Mandatory | Mandatory |
| Access to physicians with stroke expertise in acute stroke care available 24h/7 days | Mandatory | Mandatory |
| Check below the specialist responsible for thrombolysis treatment in your hospital (check all available) | | |
| Neurologist | () | () |
| Neurosurgeon | () | () |
| Emergency physician | () | () |
| Intensivist | () | () |
| Other speciality | () | () |
| Access to stroke specialists through telestroke modalities, and teleradiology | () | () |
| Thrombolysis (minimal number recommended per year) | 10 | 20 |
| | | |
| Access to emergency medical services –EMS– (ambulance)? () Yes () No | | |
| If yes: | | |
| Training of ambulance crews to identify stroke signs using FAST mnemonic or similar | Recommended | Recommended |
| Work with ambulance systems to have stroke identified as a high priority transport emergency | Recommended | Recommended |
| | | |
| Access to nurses and nursing assessment with stroke training | | |

| | | |
|---|-------------|-------------|
| Acute care settings (the training should be documented, at least 4 hours/year - the documentation can be uploaded in the platform or should be presented during the onsite visit) | Mandatory | Mandatory |
| Stroke unit settings (the training should be documented, at least 4 hours/year - the documentation can be uploaded in the platform or should be presented during the onsite visit, including stroke unit protocols, neurological assessment and swallow screen) | Mandatory | Mandatory |
| | | |
| Program to develop and maintain core competencies and stroke care | Mandatory | Mandatory |
| | | |
| Access to acute inpatient stroke care, where admitted stroke patients are cared for on: | Recommended | |
| (1 available, the item is positive) | Mandatory | |
| Stroke Unit (a defined group of beds, staff, and protocols that are used for the acute care of patients with a stroke) | () | () |
| Clustered model on same ward | () | () |
| | | |
| Members of a interdisciplinary stroke team | | |
| Neurologist | Recommended | Recommended |
| Neurologist with stroke expertise (or Stroke physician in some countries) | Mandatory | Mandatory |
| Access to physicians with expertise in stroke prevention and stroke rehabilitation | Recommended | Recommended |
| Nursing assistants | Mandatory | Mandatory |
| Pharmacist | Recommended | Recommended |
| Social worker/case manager | Recommended | Recommended |
| Palliative Care team | Recommended | Recommended |
| Physiotherapist | Mandatory | Mandatory |
| Occupational Therapist | Recommended | Recommended |
| Speech-Language Pathologist | Mandatory | Mandatory |
| Neurosurgeon | Recommended | Recommended |
| Neurointerventionalist (Interventional Neurologist OR Endovascular Neurosurgeon, OR Interventional Neuroradiologist) | | Mandatory |
| | | |
| Access to stroke unit protocols to guide acute stroke care based on best practice guidelines (Medical and nursing assessments) | | |
| Swallowing assessment performed | Mandatory | Mandatory |
| Nutrition, hydration | Mandatory | Mandatory |

| | | |
|--|-------------|-------------|
| Functional status, mobility, DVT risk | Mandatory | Mandatory |
| Level of dependency | Mandatory | Mandatory |
| Skin Integrity | Mandatory | Mandatory |
| Bladder and bowel continence | Mandatory | Mandatory |
| Temperature management | Mandatory | Mandatory |
| Positioning, mobilization | Mandatory | Mandatory |
| Access to stroke prevention therapies such as anti-platelet therapy, anticoagulants, lifestyle change recommendations, blood pressure management | Mandatory | Mandatory |
| | | |
| Access to advanced interventions | | |
| Endovascular thrombectomy 24/7 | | Mandatory |
| Thrombectomy (minimal number recommended per year) | | 10 |
| Neurosurgery for hemorrhagic stroke 24/7 (including clipping and intraventricular drain placement) | Recommended | |
| Hemicraniectomy for ischemic stroke 24/7 | | Mandatory |
| Products to reverse coagulopathy | Recommended | Recommended |
| Acute inpatient stroke units | Recommended | Recommended |
| Intensive care unit on site | Recommended | Mandatory |
| | | |
| Access to stroke rehabilitation services | | |
| Early access to rehabilitation therapies – including cross training of skills to nurses, nursing assistants and family members | Recommended | Recommended |
| Early functional assessments, goal setting and individualized rehab plans developed | Recommended | Recommended |
| | | |
| Organization of Stroke Care | | |
| Stroke Director | Mandatory | Mandatory |
| Nurse Coordinator | Mandatory | Mandatory |
| Stroke Task Force (meets monthly) discusses data, guides, performance improvement | Mandatory | Mandatory |
| Interdisciplinary meetings weekly to discuss patient progress against treatment goals; update management plans | Recommended | Recommended |
| Patient and family education, skills training, and involvement in care planning | Recommended | Recommended |
| Discharge planning | Recommended | Recommended |
| Stroke training programs for all levels of healthcare providers | Recommended | Recommended |

| | | |
|---|-------------|-------------|
| Participation in quality assessment of services (registry) - 4 months of data collection in the registry and performance measures must be included in the platform before the visit | Mandatory | Mandatory |
| Printed stroke patient educational materials | Recommended | Recommended |
| | | |
| Coordinated stroke care provided across geographically discrete regions | | |
| Stroke pathways that define movement of stroke patients across region to higher and lower levels of services as required | Recommended | Recommended |
| Coordinated referral system | | Recommended |
| Provide telestroke consultations to smaller and more rural centers | | Recommended |
| Education of population | Recommended | Recommended |
| | | |
| Implement research in stroke | | Recommended |

V. QUALITY INDICATORS:

Quality Indicators Form:

1. *Age
2. *Sex
3. *Stroke date: __/__/__ Stroke time (symptom onset or last time seen well) __:__()
unknown
Did the stroke occurred inside the hospital? (0) No (1) Yes
4. *Emergency arrival date (first hospital): __/__/__ Arrival time: __:__() Unknown
First destination hospital () Participant in the registry () Other hospital
5. *Stroke type: (1) Ischemic stroke (2) TIA (3) Hemorrhagic stroke (4) SAH () Other
6. *NIHSS arrival: _____ (0 to 42 or unknown)
7. Previous mRs (0) (1) (2) (3) (4) (5) (6)
8. *Internment date: __/__/__
9. *Patient was attended in: (1) Stroke unit (2) General ICU (3) Stroke unit + ICU (4) General ward (5) Intermediate Unit (6) Unknown
10. *Neuroimaging performed (0) None (1) CT (2) MRI (3) CT and MRI
10.1. Baseline ASPECTS (Advanced Centers) _____

11*Acute phase treatment

(0) None

(1) IV thrombolysis

(2) IA thrombolysis (chemical)

(3) Thrombectomy

(4) IV thrombolysis + thrombectomy

(5) IV thrombolysis + other endovascular treatment

(6) Other endovascular treatment only (i.e., angioplasty with stenting)

(7) Hemicraniectomy

12. *Reperfusion treatment date: ___/___/___

*IV thrombolysis time: ___:___

*Arterial puncture time: ___:___

*Final recanalization time (mechanical thrombectomy) ___:___

*Final mTICI: () 0 () 1 () 2a () 2b () 2c () 3

13. Reasons not to use tpa () time () large early hypodensity on CT () Platelets < 100.000
() INR >1.7 () anticoagulation () TIA () mild deficit () recent surgery () GI or GU bleed-
ing < 21 days () other reasons

14. Symptomatic intracranial bleeding up to 36 hours from arrival (0)No (1) Yes

15. *Patient diagnosed with atrial fibrillation or atrial flutter? (0) No (1) Yes

If Yes, it was diagnosed before the stroke? (0) No (1) Yes

16. *Dysphagia assessment was performed? (0) No (1) Yes (answer "yes" if the patient was unconscious or intubated, and the reason for not performing the assessment was registered in the patient medical records)

17. Treated with physical therapy? (0)No (1) Yes

18. *Prescription of antiplatelets on discharge for ischemic stroke? (0) No (1) Yes

19. *Prescription of anticoagulants on discharge for Patients with atrial fibrillation/flutter?
(0) No (1) Yes (2) No but planned (3) Unknown (4) Not applicable (death, contraindication or other)

20. DVT profilaxys (0) No (1) Yes

21. *mRs on discharge: (0) (1) (2) (3) (4) (5) (6)

If death - Cause of death: (1) Stroke (2) MI (3) Pulmonary embolism (4) Sepsis (5) Other

22. *Discharge date: ___/___/___

In 3 months:

22. *modified Rankin Scale:

(0) No symptoms

(1) No significant disability despite symptoms; able to carry out all usual duties and activities

(2) Slight disability; unable to carry out all previous activities, but able to look after own affairs without assistance

- (3) Moderate disability; requiring some help, but able to walk without assistance (ou andador).
- (4) Moderately severe disability; unable to walk and attend to bodily needs without assistance
- (5) Severe disability; bedridden, incontinent and requiring constant nursing care and attention
- (6) Death

QUALITY INDICATORS

- 1a. Door-to-needle time (median) _____ min
 % of patients with door-to-needle time < 60 min _____ (target > 50%)
 % of patients with door-to-needle time < 45 min _____
- 1b. Door-to-puncture time (median) _____ min
 % of patients with door-to-puncture < 120 min _____ (target > 50%)
 % of patients with door-to-puncture < 90 min _____
- 2. Eligibility for reperfusion
 Total eligibility _____% (number of patients reperfused / total number of ischemic stroke patients)
 Eligibility within the window for IV thrombolysis _____% (number of thrombolized patients / number of ischemic stroke patients arriving ≤ 4.5h of symptom onset)
- 3a. % Final TICl 2b-3 _____ (for Advanced Centers only)
- 3b. Time Puncture-to-recanalization _____ (for Advanced Centers only)
- 3. % Symptomatic intracranial hemorrhage _____
- 5. Swallowing assessment _____ %
- 6. Patients with suspected stroke who performed NCCT/MRI _____%
- 7. Discharge with prescription of antiplatelets in ischemic stroke patients _____% (target 100%)
- 8. Discharge with prescription of oral anticoagulants in patients with AF _____ % (target 90%)
- 9. Stroke patients attended in a stroke unit _____ (number of patients with “U-AVC = sim” / total number of patients with ischemic stroke, hemorrhagic stroke or TIA (target 90%)
- 10. mRS at discharge
 Inhospital mortality _____%
 Deaths by ischemic stroke/TIA _____%
 Deaths by hemorrhagic stroke _____%
- 11. Mean of the Modified Rankin Score in 90 days _____
 Modified Rankin Score 0 to 1 in 90 days _____%
 Modified Rankin Score 0 to 2 in 90 days _____%
 Modified Rankin Score 6 in 90 days _____%

VI. STROKE CENTER MEDICAL RECORD REVIEW (onsite visit)

Check the red box if the information in the medical records is the same in the quality indicators registry

HOSPITAL NAME:

DATE:

Patient initials:

AGE:

GENDER:

1. Stroke date/time (symptom onset or last time seen well): ___/___/___:___
() unknown

2. Emergency arrival date/time (first hospital): ___/___/___:___ () unknown

3. First destination hospital () Came from other hospital ()

4. Stroke type: (1) Ischemic stroke (2) TIA (3) Hemorrhagic stroke (4) SAH (5) Other

5. NIHSS at arrival: _____ (0 to 42 or unknown) ()

6. Acute phase treatment ()

(0) None

(1) IV thrombolysis

(2) IA thrombolysis (chemical)

(3) Thrombectomy

(4) IV thrombolysis + thrombectomy

(5) IV thrombolysis + other endovascular treatment

(6) Other endovascular treatment only (i.e., angioplasty with stenting)

(7) Hemicraniectomy

7. Reperfusion treatment date:

IV thrombolysis needle date/time ___/___/___:___ ()

Arterial puncture date/time: ___/___/___:___ (Advanced) ()

Final recanalization tdate/ime (MT) ___/___/___:___ (Advanced) ()

Final mTICI: () 0 () 1 () 2a () 2b () 2c () 3 ((Advanced) ()

8. Reasons for not use tpa/tnk

() time () large early hypodensity on CT () Platelets < 100,000 () INR > 1.7 () anticoagulation () TIA () mild deficit () recent surgery () GI or GU bleeding < 21 days () other reasons ()

9. Symptomatic intracranial bleeding ≤ 36 hours from arrival (0) No (1) Yes ()

10. Prescription of anticoagulants on discharge for patients with atrial fibrillation/flutter?
(0) No (1) Yes (2) No but planned (3) Unknown (4) Not applicable (death, contraindication or other) ()

11. mRs on discharge: (0) (1) (2) (3) (4) (5) (6) ()

Short History:

NOTES:

CONCERNS/WEAKNESS/DEFICIENCIES:

LOOP CLOSURE FOR IDENTIFIED CONCERNS? HOW CLOSED:

VII. REPORT ONSITE VISIT

Applied to the Hospital Level () Essential () Advanced

The evaluators will fill the check list during the onsite visit (the same used for application) e
fill the summary of visit

Name of the Hospital:

City:

Country:

Reviewers:

Doctor:

Nurse:

Date of visit: __/__/__

SUMMARY OF THE VISIT:

1.Pre-hospital:

Description

Suggestion:

2.Hospital:

Description

3. Stroke Service:

Description

Suggestion:

4.Emergency Department:

Description

Suggestion:

5.Clinical Lab and Radiology

Description

Suggestion:

6.Operating Room (Neurosurgery):

Description

Suggestion:

7.AngioSuite:

Description

Suggestion:

8.Post Anesthesia Recovery Unit:

Description

Suggestion:

9.Intensive Care Unit:

Description

Suggestion:

10.Stroke Unit:

Description

Suggestion:

11.Education health professionals:

Description

Suggestion:

12.Education of population:

Description

Suggestion:

13.Quality Improvement process:

Description

Suggestion:

14.Research:

Description

Suggestion:

15.Strengths:

16.Gaps:

REVIEWERS RECOMMENDATIONS FOR CERTIFICATION:

