

Standard for Stroke Management

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1. Standard Scope

This Standard defines the service specifications, minimum requirements, and eligibility criteria for licensed Healthcare Providers and Facilities designated as one of various levels of Acute Stroke Centers based on international best practices and evidence-based guidelines; for licensed prehospital patient transport services including EMS, and interfacility transfer ambulance services; for health insurers; for licensed rehabilitation medicine facilities and allied support services; and unified medical operations monitoring and management of Abu Dhabi Stroke Management System operations.

It also defines the eligibility criteria for all stroke services in line with DoH Standard for Centers of Excellence in Stroke, evidence base and international guidance.

It integrates ongoing analysis and recommendations of the Sheikh Khalifa Stroke Institute (SKSI) from the ongoing partnership, recognizing and role it plays in development of the Stroke Management System in Abu Dhabi.

2. Definitions and Abbreviations

No.	Term /	Definition
2.1	(Acute) Stroke Ready Center (ASRC or SRC)	Stroke Ready Center, a hospital with 24hr emergency room services capable of receiving, evaluating, diagnosing, managing, and transferring an acute stroke patient to a primary or comprehensive stroke center. Management capability includes hyperacute imaging and intravenous thrombolysis but no dedicated stroke unit. Its thrombolysis protocol needs to be fully supported by a neurology team either in-house or by telemedicine. SRCs do not admit stroke patients. Rather, patients are stabilized, diagnosed, consulted, and transferred to a PSC or CSC.
2.2	Alberta Stroke Program Early CT Score (ASPECTS)	A quantitate score that measures the extent of early ischemic changes in anterior circulation hyperacute ischemic stroke
2.3	Ambulance	Any mode of transport operated by a licensed/authorized pre-hospital care service (PHCS), or agency utilized and equipped for clinical treatment of a person requiring medical monitoring, assessment, or treatment outside of a hospital setting.
2.4	Advanced Life Support (ALS)	Healthcare intervention for cardiopulmonary and respiratory
2.5	Ambulance Service	The business of transporting and/or providing emergency and non-emergency medical care to the sick or injured by ambulance. Ambulance service is inclusive of emergency response, interfacility transfer, and standby.
2.6	Ambulance Service Provider	A healthcare service provider engaged in the business of transporting and/or providing emergency and non-emergency medical care to injured or sick by ambulance, including but not limited to transport to or from healthcare facilities, from non-health institutions to healthcare facility, from home or roadside, or as a standby service.
2.7	American Heart Association (AHA)	Professional, nongovernmental organization developing certification requirements for chest pain, stroke, and other cardiovascular related injuries.
2.8	Basic Life Support (BLS)	Equipment and actions that can be used to provide initial healthcare to maintain airways and external cardiovascular circulatory support
2.9	BE FAST	Acronym capturing a rapid, simple screening for acute stroke signs and symptoms standing for (sudden loss of) Balance, (change in vision in one or both) Eyes, Facial drooping, Arm (or leg) weakness, Speech (slurred or trouble speaking or seems confused), Terrible ("thunderclap") headache or Time to call for help
2.10	Capacity	A combination of all the strengths, attributes, and resources available within an organization, jurisdiction, society, or community that can contribute to managing and reducing the level of risk and strengthening resilience.

2.11	Center of Emergency Preparedness and Response (CEPAR)	A center in the Department of Health - Abu Dhabi, DoH overseeing the regulation of patient transport systems, Special Program Pathways, and emergency preparedness and response.
2.12	Centralized Registry Data Abstraction	Data aggregation and analysis of SPP registry and all additional outcomes and performance data across the entire Pathway to monitor standard and identify novel critical performance indicators, process improvements, and other significant findings.
2.13	Cerebrospinal Fluid (CSF)	Fluid surrounding and supporting the brain and spinal cord that can be accessed for diagnostic and sometimes therapeutic reasons.
2.14	Chest Pain Ready Center (CPRC)	A hospital with 24hr ED service which has the capability of offering ECG interpretation and intravenous thrombolysis but does not have a cardiac angiography suite or coronary care unit. Its thrombolysis protocol needs to be fully supported by a cardiology team either in-house or by telemedicine. CPRC stabilizes, diagnoses, consults, and transfers patients to a PCPC (or CCPC if deemed necessary). Known complications of thrombolysis include ICH and require rapid, advanced Stroke Care.
2.15	Computed Tomography (CT)	Advanced radiographic study capable of taking X-rays along a 360-degree axis and rapidly reconstructing the images to provide detailed, 3 dimensional views
2.16	Computed Tomography Angiography (CTA)	CT that adds dyes into the bloodstream to capture more detail on the vascular structure and functionality of vessels and sites of internal hemorrhage
2.17	Comprehensive Stroke Center (CSC)	A tiering level of hospitals per the AH/SA for advanced, interventional management of stroke, the center provides high quality exceptional level of stroke care through licensed trained professionals in cerebrovascular and neurological disease across all associated disciplines including but not limited to neurology with cerebrovascular disease expertise, neuroradiology, neuro-interventional, neurocritical care and vascular neurosurgery.
2.18	Data Discovery	Comprehensive data analytics using all the data available from operations to discover novel critical failure points, deficiencies, process improvement recommendations, and any other significant findings worthy of further investigation.
2.19	Department of Health (DoH)	Department of Health The regulative body of the Healthcare Sector in the Emirate of Abu Dhabi, Established based on law No. (10) of 2018.Emergent Large Vessel Occlusion
2.20	Emergent Large Vessel Occlusion (ELVO)	Emergent Large Vessel Occlusion Term to describe blockage of a critical blood vessel that causes significant consequences to a patient's health
2.21	Emergency	A time-critical situation or state characterized by a clear and marked reduction in the abilities of people to sustain their normal living conditions, with resulting damage or risks to health, life, and livelihoods.
2.22	Get With The Guidelines (GWTG)	Data registries developed and provided by the American Heart/ Stroke Association for quality assurance and performance metrics of various treatment programs for heart disease and stroke management. They allow for international benchmarking and evidence-based performance improvement.
2.23	Health Liaison Officers (HLO)	Persons selected to ensure information flows between the DoH Unified Medical Operations Command Center, healthcare facilities, and healthcare professionals to address health agency operational capabilities and issues as they arise. For HEM, HLOs ensure information flows between the DoH Unified Medical Operations Command Center and healthcare facilities and professionals to address health agency operational capabilities and issues as they arise.
2.24	Intra-arterial (IA)	Referencing the accessing of arteries for monitoring physiologic measurements, administration of medications, or accessing anatomic structures for interventional healthcare techniques.
2.25	Intracerebral Hemorrhage (IH, ICH)	Abnormal bleeding within the parenchyma of the cerebrum in the brain

2.26	Intensive Care Unit (ICU)	A hospital ward equipped, staffed, and specialized in advanced, technological monitoring and care for critically ill or injured patients
2.27	Last Known Well (LKW)	Time when a stroke patient was known to have baseline brain neurological function
2.28	Key Performance Indicator (KPI)	Data element that is obtainable and reflective of quality and performance, can be tracked over time, and can be used to measure and drive quality assurance and performance improvement of systems
2.29	M2, M3 Strokes	M2 and M3 strokes are both types of strokes that occur in the middle cerebral artery (MCA), which is the most common artery involved in acute strokes. M2 strokes, caused by an occlusion in the M2 segment of the MCA, can lead to large infarct volumes and severe symptoms. Endovascular therapy (EVT) is often preferred over medical therapy for M2 occlusions. However, M2 occlusions that involve the eloquent cortex may benefit more from reperfusion therapy. M3 strokes caused by an occlusion in the M3 segment of the MCA can lead to highly circumscribed infarctions and specific neurologic deficits. Endovascular treatment for M3 strokes can be more challenging than for M2 strokes due to the increased risk of complications.
2.30	Magnetic Resonance Imaging (MRI)	An advanced, radiologic technology using powerful magnets to obtain detailed images of the body
2.31	Medical Direction System (MDS)	A system of physician-directed leadership, quality assurance, administrative and medical oversight that provides professional and public accountability for medical care provided in the pre-hospital setting.
2.32	Medical Emergency	Injury or illness that occurs suddenly or unexpectedly and poses an immediate risk/threat to a person's life, limb, body function or long-term health
2.33	Medical Operations Command (MOC)	A combination of operational technicians and information management systems used to monitor and manage integrated systems, operations, events, and incidents
2.34	Modified Rankin Score (mRS)	The Modified Rankin Score (mRS) is a 6 point disability scale with possible scores ranging from 0 to 5 ¹ . It is used to measure the degree of disability or dependence in the daily activities of people who have suffered a stroke or other causes of neurological disability ² . The mRS is the most widely used outcome measure in stroke clinical trials ¹³² . Standardized interviews to obtain an mRS score are recommended at 3 months (90 days) following hospital discharge ³ .
2.35	National Institutes of Health Stroke Scale (NIHSS)	A systematic, quantitative assessment tool to measure stroke-related neurological deficit. In clinical practice it can be used to evaluate and document neurological status in acute stroke patients, determine appropriate treatment and assist in standardizing communication between healthcare practitioners
2.36	Off-line (Prospective and Retrospective) Medical Direction	Direction including the administrative promulgation and enforcement of accepted standards for out-of-hospital care accomplished through both prospective (e.g., training, testing and certification of healthcare facilities, protocol development, operational policy and procedures development, and legislative activities), and retrospective methods (e.g., medical audit and review of care/ process improvement, direction of remedial education, and limitation of patient care functions)
2.37	On-line (Concurrent) Medical Direction	Direction provided directly to out-of-hospital facilities by the medical director or designee, generally in an emergency, either on-scene or by direct voice communication by radio, telephone, or other means as technology develops, and including person-to-person communication of patient status, and orders to be carried out

2.38	Pre-Hospital Care Service (PHCS)	A licensed and integrated medical care delivery organization provides emergency and non-emergency medical care in a pre-hospital setting. Interchangeable with Emergency Medical Service (EMS)
2.39	Primary Stroke Center (PSC)	A facility with the immediate availability of necessary personnel, infrastructure, equipment, expertise and programs to rapidly diagnose, treat and either admit or transfer the acute stroke patient. Primary Stroke Centers may be able to take referrals for some but not all conditions managed at a Comprehensive Stroke Center (e.g. Subarachnoid Hemorrhage). They lack the same level of neuro-intervention and/or neurosurgical intervention as a CSC; however, it has a stroke unit compliant with international specifications for stroke units.
2.40	Quality Assurance (QA)	A cyclical process involving assessment leading to improvement, it is designed to objectively and systematically monitor and evaluate healthcare systems and services offered to stakeholders in accordance with pre-established standards and to resolve identified problems and pursue opportunities for improving services, leading to stakeholder's satisfaction. Quality Assurance (QA) is a part of quality management system that includes quality controls and is focused on providing confidence that the quality requirements of healthcare systems will be fulfilled.
2.41	Quality Performance Indicator (QPI)	Key data element used to capture quality and performance metrics for Quality Assurance and Performance Improvement Programs
2.42	Sheikh Khalifa Stroke Institute (SKSI)	Two centers focused on the full spectrum of stroke detection, treatment, and recovery, including diagnosis and treatment informed by the latest scientific research and discovery, and utilizing multidisciplinary teams to lead global efforts to improve outcomes for stroke patients
2.43	Subarachnoid Hemorrhage (SAH)	A form of stroke resulting from bleeding in the central nervous system that occurs under the arachnoid later of tissue
2.44	Special Program Pathways (SPP)	Components of the healthcare system required to manage time-critical healthcare emergencies and that require specific training, equipment, and availability. Systems to manage these must be patient-centered, highly reliable, always available 24/7, and optimized for each patient. SPPs often have internationally recognized accreditation/ certification/ verification organizations that develop and update treatment requirements and data registry sets that allow for performance benchmarking and that drive quality and process improvement.
2.45	Task Force (TF) for Special Program Pathways	A group of technical healthcare experts and program managers organized under the CEPAR and including internal DoH regulatory authorities and external stakeholders representing EMS, healthcare providers trained in the healthcare subspecialty of the SPP. The TF develops and updates policies and standards, reviews performance, and advises DoH on critical and relevant issues
2.46	Telehealth	The use of technology to enable a medical encounter between two parties for consultation, evaluation, treatment, transfer and any form of clinical care not described
2.47	Thrombolysis in Cerebral Infarction (TICI)	The use of thrombolytic agents to dissolve blood clots in the vessels of the brain causing obstruction of blood flow and stroke
2.48	Tiering	The process that sets and determines the discrete levels of specialized care capability and capacity within a specific type of hospital program. Tiering levels drive decision-making for such things as optimal destination hospital for specialized

		care and likely transfer of care.
2.49	Typing	The specific illness or injury requiring specialized care and equipment for effective and timely treatment. SPP Pathways are organized around those specialized care requirements. For example, Trauma, Burn, STEMI, Stroke, ECMO, Pediatrics, Maternity/ Labor, CBRNE, MCI define the type of Pathway, Program, Service, and System.
2.50	Unified Medical Operations Command Center (UMOC)	DoH operations center run by CEPAR that monitors, facilitates, and optimizes healthcare emergencies in Abu Dhabi.

3. Standard Requirements and Specifications

Stroke Management is a time-critical health emergency captured as Special Program Pathways (SPP) in DoH Health Emergency Management (HEM). The Abu Dhabi Stroke Management System facilitates managing patients along their healthcare journey in a high reliability operational system. Regulators shall implement systems and regulate programs in accordance with these program requirements established through regulation informed by international standards and best practices provided by objective, third-party accreditation/ certification/ verification requirements. The following actions shall be taken:

3.1 Healthcare Facilities:

- 3.1.1. Meet the requirements as set out by DoH in this standard to qualify as a Licensed Acute Stroke Center.
- 3.1.2. Ensure each Licensed Acute Stroke Center has its own operational guidelines, policies and procedures.
- 3.1.3. Utilize JAWDA KPI and the AHA GWTG Registry.
- 3.1.4. All Licensed Acute Stroke Centers shall ensure equal access to all patients based on medical needs. The Acute Stroke Centers must:
 - 3.1.4.1 Provide clinical services in accordance with the requirements of this Standard, and all relevant DoH Standards and Procedures.
 - 3.1.4.2 Ensure and provide evidence that their practices reflect updated international best practices to the relevant regulatory body.
 - 3.1.4.3 Report and submit e-Claims data in accordance with Chapter VI, DoH Healthcare Regulator Manual Version 1.0 on Data Management and as set out in the DoH Data Standards and Procedures (<https://www.DoH.gov.ae/en/Shafafiya/dictionary>).
 - 3.1.4.4 Document and monitor quality and safety of clinical care and outcomes of surgical and non-surgical intervention performed on patients, and make these available to DoH for auditing, as and when requested to do so.
 - 3.1.4.5 Provide records of Jawda and other relevant indicators as specified in Appendix I to DoH inspectors.
 - 3.1.4.6 Follow the clinical and regulatory requirements of this Standard irrespective of provision of Licensed Stroke Center services to patients who opt not to use health insurance coverage (pre-authorization for coverage and health insurance does not apply in this case).
- 3.1.5. Licensed healthcare facilities seeking to be typed and tiered within the Abu Dhabi Stroke Management System shall seek certification by an objective, third party organization recognized internationally for stroke management quality and performance improvement such as the American Heart/ Stroke Association (AHA/ ASA).
 - 3.1.5.1 All facilities shall use the AHA "Get With The Guidelines (GWTG)" as the common registry for Stroke Management.
 - 3.1.5.1.1 The DoH Stroke Task Force shall establish appropriate Unified Medical Operations

Command Center (UMOC) central management access rights to the consolidated Stroke Program GWTG Registry for performance tracking use by the Stroke Task Force and Stroke COE Council.

3.1.5.2 Facilities shall ensure the availability of the following infrastructural and diagnostic requirements:

	SRC	PSC	CSC
Infrastructure			
Internal and external stroke registry reported to the national database	☒	☒	☒
Electronic medical record system	☒	☒	☒
Stroke Clinic*	☐	☒	☒
Professional education / Training program (section 9 for more details)	☒	☒	☒
Stroke Unit (appendix 2 for detailed requirements)	☐	☒	☒
Operating room staffed 24/7 with backup capability to treat concurrent/simultaneous patients with acute stroke symptoms	☐	☒	☒
Rehabilitation services with coordination of post-acute care	☐	☒	☒
Community education	☐	☒	☒
Neuro intensive Care Unit 24/7 (with neurovascular expertise) and/or Neuro critical Care Unit	☐	☐	☒
Neuro endovascular service coverage 24/7	☐	☐	☒
Research program (section 10 for more details)	☐	☐	☒
Telemedicine / Tele radiology	If necessary	If necessary	If necessary
Diagnostic Requirements:			
Computed Tomography (CT) 24/7	☒	☒	☒
Magnetic Resonance Imaging (MRI) with diffusion 24/7	☐	☒	☒
Lab work - blood tests (results and analysis) within 45 min of patient arrival	☒	☒	☒
Multi-channel physiological monitoring (including cardiac rate, respiratory rate, and blood pressure)	☒	☒	☒
Electrocardiogram (ECG)	☒	☒	☒
CT Angiography (CTA) 24/7	☐	☒	☒
MR Angiography (MRA)/ MR Venogram 24/7	☐	☒	☒
Multimodal CT or MR perfusion imaging 24/7	☐	☒	☒
Transthoracic echocardiography	☐	☒	☒
Digital cerebral angiography 24/7 (catheter angiography)	☐	☐	☒
Extra cranial neurovascular ultrasonography	☐	☐	☒
Transesophageal echocardiography	☐	☐	☒
Neuro-surgical and neuro-interventional therapies	☐	☐	☒
Intra-arterial (IA) reperfusion therapy	☐	☐	☒
Transcranial and carotid doppler	☐	☐	☒

* Stroke Clinic provides initial assessment, case management, and treatment (when deemed necessary and possible) to outpatients (e.g. transient ischemic attack)

3.3 Healthcare Professionals and Other Requirements: The table below delineates the staffing requirements for the tiered Stroke Management Programs.

	SRC	PSC	CSC
Workforce			
Stroke Program Director (or deputy/designee). The program director needs to have stroke training and or certification in stroke.	☒	☒	☒
Stroke trained ER physician with at least 2-4 hours annual Stroke focused	☒	☒	☒

CME (determined by each stroke center and approved by DoH Licensing Dept)			
Vascular neurologist or neurologist with stroke interest 24/7	☐	☒	☒
Clinical educator	☒	☒	☒
Stroke coordinator (partial FTE for SRC)	☒	☒	☒
Data entry and quality improvement team	☒	☒	☒
Physiotherapist	☐	☒	☒
Rehabilitation specialist	☐	☒	☒
Occupational therapist	☐	☒	☒
Speech therapist	☐	☒	☒
Clinical neuropsychologist	☐	☒	☒
Dietitian	☐	☒	☒
Critical nurse specialist	☐	☒	☒
neurocritical care medicine 24/7	☐	☒	☒
Neurosurgeon 24/7 (vascular and cranial)	☐	☐	☒
Neuroradiologist 24/7	☐	☐	☒
Neuroendovascular physician(s) 24/7 (with minimum 2 years of fellowship training at a Tier 1 country)	☐	☐	☒

3.2 Treatments:

- 3.2.1. Licensed Acute Stroke Center services provided in authorized healthcare facilities must fulfill the following requirements:
- 3.2.2. Provide a range of integrated acute Stroke surgical and non-surgical services and interventions, based on the Stroke center level, to support the safe and effective care of patients seeking treatment. These include but are not limited to:

	SRC	PSC	CSC
Treatments			
Intravenous tissue plasminogen activator (IV-tPA) administration (i.e. IV-tPA Thrombolysis)	☒	☒	☒
Advanced Diagnostics (e.g. advanced imaging (CTA, MRI/MRA, perfusion scan, cerebral vascular reserve), dysphagia screen)	☐	☒	☒
Mechanical thrombectomy for stroke patients with emergent large vessel occlusion (ELVO)	☐	☐	☒
Rehabilitation therapy (physical, occupational, speech therapy)	☐	☒	☒
Full spectrum of neuro endovascular therapy including as a minimum: aneurysm coiling, aneurysm flow diversion, intracranial and extracranial stenting, mechanical thrombectomy, cerebral vasospasm treatment, AVM and fistula embolization	☐	☐	☒
Neurosurgical services including aneurysm clipping, hematoma evacuation, cerebrospinal fluid (CSF) diversion/ ventriculostomy placement, arteriovenous malformation (AVM) resection, decompressive hemi craniectomy, sub occipital craniectomy, and carotid endarterectomy (available within 2 hours when deemed to be clinically necessary)	☐	☐	☒
Neurocritical care (Neuro ICU) monitoring and management of elevated ICP, Vasospasm, etc	☐	☐	☒
Respiratory therapy	☐	☐	☒

3.3 Time parameters:

- 3.3.1. Time metrics must be gathered and maintained in a database (and shared with DoH as requested) as a commitment to quality improvement. Stroke Centers should have regular meetings to review these metrics and put in place quality improvement measures.

Parameter	CSC	PSC / SRC
Door to emergency doctor at bedside	Within 10 min	Within 10 min
Door to stroke-trained professional at bedside	Within 15 min	Within 15 min
Door to CT or MRI	Within 20 min	Within 25 min
Door to CT or MRI read	Within 35 min	Within 45 min
Door to IV TPA	Less than 45 min in 50% of eligible cases	Less than 60 min in 50% of eligible cases
Door to groin time	Less than 90 min in 50% of eligible cases	NA
Door to CSC Teleconsultation	n/a	Within 25 min
Door to Interfacility Transfer to CSC Departure Time if not thrombolytic therapy	n/a	Within 60 min
Door to Interfacility Transfer to CSC if thrombolytic therapy	n/a	Within 90 min

- 3.3.2. Have available and maintain all equipment, support, interventional needs and supplies necessary for treatment and patient care, according to DoH regulatory requirements and standards and as per updated international best practices.
- 3.3.3. The healthcare facility must deliver culturally and socially relevant patient education and information regarding the treatment and care (pre- and post-operation) in accordance with updated international best practices, and consistent with the DoH Patient Charter and relevant DoH policies. Plan of care is individualized and interdisciplinary with patient participation; patient informed consent must be sought and documented in accordance with Medical Liability law and legal requirements for consent.

3.4 Services:

- 3.4.1. Healthcare facilities providing pharmacological, surgical, and non-surgical interventions for acute stroke care are required to ensure the following service and management system requirements.
- 3.4.2. Facilities provide seamless care in partnership with other facilities, including primary care and hospitals, as required for holistic patient care; and provide emergency services without any interruption.
- 3.4.3. Depending on its corresponding level of care, a Licensed Acute Stroke Center shall be required to maintain volumes of:

	SRC	PSC	CSC
Requirement			
Stroke patients per year	N/A	50-300	300
Minimum subarachnoid hemorrhage (SAH) from a ruptured cerebral aneurysm	N/A	N/A	15
Minimum endovascular coiling or microsurgical clipping per year	N/A	N/A	15
Minimum IV thrombolytic cases per year	N/A	10	25
Minimum mechanical thrombectomies per year	N/A	N/A	10

- 3.4.4. Based on the aforementioned levels of Stroke Centers, facilities must be able to deliver the treatments, procedures and services needed to stabilize and manage Stroke patients without service availability gaps.
- 3.4.5. Timely transfer of patients to a higher level of care should be ensured when necessary (i.e. between SRCs, PSCs, and CSCs). As per the local context, urban classification and best practices, referral and rerouting plans will be developed and published as part of the Stroke SPP pathway.
- 3.4.6. PSCs and CSCs shall accept all referred patients within the Emirate of Abu Dhabi that are deemed to require acute Stroke intervention/care.
- 3.4.7. SRCs and PSCs in remote areas should leverage telemedicine and tele radiology to perform assessments and provide treatment to patients with symptoms of acute Stroke. Tele radiology services must be available 24/7 and Stroke criteria must be interpreted within 20 Mins of completion.

3.5 Education:

- 3.5.1. Core Stroke Team members at PSC and CSC (neurologist, neurosurgeon, Neuro Intensivist) shall participate in at least 8 hours of Stroke Category 1 Continuing Education (CE) specific training/ education per year.
 - 3.5.1.1 At least half of the credit applied toward the CE must be within the physician's specialty or area of practice.
 - 3.5.1.2 ER Physicians should participate in at least 4-8 hours Category 1 CE every 2 years.
- 3.5.2. Non-core team members (anesthesiologist, rehabilitation specialists, others) must demonstrate 2 hours of training / education per year.
- 3.5.3. All emergency department (ED) practitioners shall be educated on acute stroke care protocols.
- 3.5.4. All staff should be prepared to discuss their stroke education on a yearly basis with a regulatory committee that includes physicians within neuro-interventional and endovascular specialty with fellowship training from a Tier 1 country or interventional radiologist with thrombectomy experience.
- 3.5.5. Acute PSC/ CSC must sponsor or participate in at least 2 educational events per year for the public/ community and 2 educational conferences per year for other physicians both internally or externally.

3.6 Clinical Research - Applicable to PSC/CSC's:

- 3.6.1. To protect the rights, safety, and welfare of human subjects involved in medical and/or scientific research in the Emirate of Abu Dhabi, a Licensed CSC must conduct all research in alignment with the DoH Standard on Human Subjects Research.
- 3.6.2. Participation in patient-centered research shall be approved by the appropriate Institutional Review Board (IRB).
- 3.6.3. Research must be done under facility and / or university supervision or by an adjunct faculty in an academic institution.

3.7 Data Management

- 3.7.1. Data Collection- Licensed Acute Stroke Centers shall submit clinical outcomes and specified registry data elements to a national database in alignment with DoH standard.
- 3.7.2. The Clinical Program shall define staff responsible for collecting data and maintaining the database.
- 3.7.3. Defined data management staff should participate in continuing education annually.

3.8 Payment Mechanism:

- 3.8.1. Payment will follow current reimbursement methodologies as per current Claims & Adjudication rules, with future consideration to reflect all additional compensation under relevant adjustors.

3.9 Interfacility Transfer of Stroke Patients:

- 3.9.1. Development of an Emirate-wide tiering system for stroke management in Abu Dhabi includes three (3) levels of capability of hospital care to balance the maintenance and sustainment costs of expensive resources with accessibility to and availability of timely health care resources. The development of designated levels of care and inter-facility transfer guidelines will maximize quality of care, ensure patient safety, and promote effective and efficient use of health care resources.
- 3.9.2. With few exceptions, all stroke cases should be referred to and managed in a Comprehensive Stroke Center.
- 3.9.3. Primary Stroke Centers will be used for intermediate management, repatriation, and regional coverage, to provide more advanced care in more remote regions as appropriate. The determination of appropriate care shall be determined in consultation with the regional CSC.
- 3.9.4. Acute Stroke Ready Centers shall provide initial management of cases and rapid transfer (Door to Departure KPI <60 min) to the appropriate regional, higher-tier stroke center.
- 3.9.5. The Stroke TF and Stroke COE Council shall advise on an optimized hub-and-spoke model for regional coverage of CSC's across Abu Dhabi; on the distribution and tiering of hospitals; on the integration of timely transport and transfer of patients to CSCs; on alternate treatment options when time and/or distance factor into the treatment timelines; and on processes of the UMOC used to facilitate these.
- 3.9.6. Both the Stroke TF and Stroke COE Council should consult the expertise of SKSI on a volunteer basis to assist with the above actions.

3.10 Timely Transfer of Patients to a Comprehensive Stroke Center:

- 3.10.1. Because of the potential for rapid clinical deterioration, patients who present with severe disease or who have the high likelihood of clinical deterioration should be considered for timely transfer to a CSC. The transfer process should be initiated as early as possible in the patient's course-- "time is brain". The following conditions or diagnoses warrant immediate consultation for transfer to a Comprehensive Stroke Center
- 3.10.2. **Non-traumatic/ spontaneous Subarachnoid Hemorrhage**
- 3.10.3. **Intracerebral Hemorrhage**
 - 3.10.3.1 Hemispherical/Supratentorial bleed or lesion: (> 30 ml or > 3 cm)
 - 3.10.3.2 Cerebellar hemorrhage
 - 3.10.3.3 Brain Stem hemorrhage
 - 3.10.3.4 Intraventricular hemorrhage
 - 3.10.3.5 Suspected underlying lesion by imaging (e.g. CTA reveals a possible AVM)
- 3.10.4. **s/p IV t-PA with Concerns:**
 - 3.10.4.1 Potential for malignant cerebral edema
 - 3.10.4.2 Potential need or benefit from intra-arterial recanalization interventions
 - 3.10.4.3 Perceived higher risk for symptomatic intracranial hemorrhage (e.g. difficult to control hypertension, malignant hypertension)
 - 3.10.4.4 Allergic reaction to IV t- PA (after stabilization)
- 3.10.5. **Consideration for Hemicraniectomy**
 - 3.10.5.1 Age dependent (considered especially for age less than 60)
 - 3.10.5.2 Baseline Modified Rankin of 0 or 1 or baseline independent in activities of daily living (ADL's)
 - 3.10.5.3 Potential for malignant cerebral edema (e.g. high NIH stroke scale)
- 3.10.6. **Consideration for Endovascular Mechanical Thrombectomy (Interventional Neuroradiology).**
 - 3.10.6.1 Consultation with the appropriate CSC facility shall be initiated as soon as possible

- 3.10.6.2 Thrombectomy of M1, intracranial ICA and Basilar artery occlusions are proven therapies recommended by AHA guidelines in carefully selected patients where head and neck CT or MR imaging demonstrates a large artery occlusion AND
- 3.10.6.3 Less than 4.5 hours from time of onset (time last known to be at neurologic baseline)
- 3.10.6.4 NIH stroke score equal to or greater than 6 (or equivalent); ASPECTS score greater than or equal to 6 (or equivalent); and functionally independent at baseline.
- 3.10.6.5 Greater than 4.5 hours up to 20 hours from time of onset (time last known to be at neurologic baseline) and can be received in the tertiary facility by 22 hours of LKW.
- 3.10.6.6 ASPECTS score equal to or greater than 6 or core measurements < 30 ml from CT Perfusion or MRI:
 - 3.10.6.6.1 NIH stroke score greater than or equal to 6: and or disabling stroke symptoms
 - 3.10.6.6.2 Functionally independent at baseline
 - 3.10.6.6.3 Other large artery occlusion patients should be considered based on the above criteria with low threshold for expert consultation:
 - Middle Cerebral Artery branches M2 or M3
 - Posterior Cerebral Artery (PCA)
 - Anterior Cerebral Artery (ACA)
- 3.10.7. **Special Circumstances**
 - 3.10.7.1 Pregnancy associated stroke
 - 3.10.7.2 Pediatric stroke (under age 18)
 - 3.10.7.3 Any circumstance for which there is a perceived need for higher level of care
 - 3.10.7.4 Young adult with ischemic stroke
 - 3.10.7.5 Large cerebellar infarct and anticipation for surgical decompression
 - 3.10.7.6 History of Sickle Cell Anemia
 - 3.10.7.7 People of Determination with pre-existing deficits or special needs
- 3.10.8. There is a goal time of 60 minutes from arrival of the patient at the SRC to departure to the CSC.
- 3.10.9. There is a goal time of 90 min from acceptance of the patient for transfer by the CSC to arrival at the CSC.
- 3.11 **Primary Stroke Centers:**
 - 3.11.1. Circumstances to consider keeping patient at a Primary Stroke Center
 - 3.11.1.1 Intracerebral Hemorrhage
 - 3.11.1.2 Small volume (less than 30 ml or < 3cm)
 - 3.11.1.3 No cerebellar / brain stem involvement
 - 3.11.1.4 No intraventricular hemorrhage
 - 3.11.1.5 An alert patient
 - 3.11.1.6 No suspicion of an underlying lesion such as AVM / Aneurysm
 - 3.11.2. Patients not meeting circumstances as identified in a Comprehensive Center
 - 3.11.3. s/p IV t-PA without special concerns
 - 3.11.4. Unruptured and Asymptomatic Cerebral Aneurysm (consider outpatient clinic referral)
 - 3.11.5. Discussion of goals of care is recommended when making decisions to transfer to a Comprehensive Stroke Center
 - 3.11.5.1 Situations in which further interventions might be considered futile
 - 3.11.5.2 Patients with advanced co-morbid disease
 - 3.11.5.3 Patients with poor baseline level of independent function
 - 3.11.5.4 Patients identified as DNR
- 3.12 **Acute Stroke Ready Center**
 - 3.12.1. Transfer all Stroke patients to higher level of care.

3.13 Non-Stroke Centers:

- 3.13.1. Transport all stroke patients to higher level of care

3.14 Stabilization and Preparation for Transport:

- 3.14.1. Upon identification of a patient who may require transfer, immediately contact the potential receiving PSC or CSC based on the above criteria. Regional coverage for all acute Stroke Centers shall be maintained by the UMOC. Consultation and coordination should be facilitated through the UMOC.
- 3.14.2. Once transfer is recommended, the consulting facility will reply to the sending facility, within 15 minutes, whether or not a bed will be available for transfer. If a bed is not available, the consulting facility will advise the sending facility to contact an alternative Comprehensive Stroke Center.
- 3.14.3. The transferring physician is responsible for contacting the accepting hospital and securing an accepting physician at the receiving facility. This should be facilitated by the UMOC.
- 3.14.4. The accepting physician will determine the transfer location e.g. directly to the unit, Interventional Radiology Lab, or the Emergency Department.

3.15 Arranging for Transfer/ Transportation:

- 3.15.1. When determining the mode of transport, the following factors shall be considered:
 - 3.15.1.1 Proper consultation, transfer agreement, and acceptance to the appropriate treatment center.
 - 3.15.1.2 A complex stroke patient who might benefit from emergent neurosurgical or interventional neuroradiology treatment should have the transfer completed within 60-90 minutes of acceptance of patient at the Comprehensive Stroke Center.
 - 3.15.1.3 Transfer times for all other cases will be determined by the receiving center based on the patient's diagnosis and clinical status
 - 3.15.1.4 The sending facility should inform the patient and family that the patient is being transferred for consideration for advanced treatment; however, upon arrival at the Comprehensive Stroke Center the patient will be re-evaluated. The appropriateness of advanced treatment and need for critical care transport services will be determined by the receiving center after re-evaluation.
 - 3.15.1.4.1 Advanced treatment includes enrollment in a clinical trial as appropriate.
 - 3.15.1.4.2 Weather/ground conditions that might inhibit air transport.
 - 3.15.1.4.3 What are the transport times for ground versus air transport from the referring institution.
 - 3.15.1.5 The transferring hospital physician should make an assessment as to whether the patient requires intubation for safe transport to the higher level of care. Should a patient's clinical status change (for better or worse) prior to departure from the hospital, it is imperative that the transferring physician inform the receiving physician of the change in clinical status. All reasonable efforts will be made to obtain a reliable cell phone number for the patient and for responsible family members.
 - 3.15.1.6 The transportation decision should be made by the receiving physician in collaboration with the referring physician based on clinical judgment, with careful consideration given to the above questions.

3.16 Transport Patient with the following completed:

- 3.16.1.1 Copy of Medical Record including treatment rendered.
- 3.16.1.2 Signed consent to transfer patient to receiving facility.
- 3.16.1.3 Documentation of medications given; and
- 3.16.1.4 X-ray, neuroimaging and laboratory results. Include a CD with any relevant imaging.
- 3.16.1.5 Timeline documenting door-in to door-out from the transferring facility
- 3.16.1.6 Do not delay transport while awaiting result.

4. Key stakeholder Roles and Responsibilities

4.1. DoH Sectors shall ensure the following:

- 4.1.1. Requirements set out are met through its regulatory powers and, where necessary, establish appropriate regulatory and performance measures to address current and future health system needs for maintaining and improving the Stroke Management System and Programs through the following actions:
- 4.1.2. Participation in Stroke Task Force and Center of Excellence Council activities.
- 4.1.3. Management of licenses for Stroke Management Facilities in accordance with regulations, accreditation/ certification requirements, and performance metrics.
- 4.1.4. Auditing of healthcare facility Stroke Management Programs on a regular basis for compliance
- 4.1.5. Establishment of a robust data driven process for proper typing and tiering of the Stroke Management System.
- 4.1.6. Implementation of JAWDA key performance indicators (KPI's) and other relevant performance measures to monitor their performance quarterly.
- 4.1.7. Appropriate cost modeling and reimbursement to ensure proper alignment with regulations and certification requirements to meet internationally recognized standards and best practices that are affordable, efficacious, and available.

4.2. The ADPHC shall ensure HEM and SPP systems and program maintenance and sustainment; support to the Stroke Task Force; integration of Stroke Management System operations through the Unified Medical Operations Command Center (UMOC); provide regulatory oversight of HEM and SPP Programs including on-line and off-line medical direction of pre-hospital and specialized care, rehabilitation, and community support activities.

4.3. Task Forces shall be established and supported by ADPHC as per SPP program and standard requirements. They shall ensure the following:

- 4.3.1. Healthcare facilities are typed and tiered in accordance with their licensed capability and accreditation to provide necessary services to manage acute stroke cases through a system network.
- 4.3.2. Tiering shall include Acute Stroke Ready Centers (ASRC), Primary Stroke Centers (PSC), and Comprehensive Stroke Centers (CSC), designated as the Abu Dhabi Acute Stroke Management System, and the network operations coordinated through UMOC.
- 4.3.3. UMOC support requirements for the Stroke Management Pathway System and Programs are developed and maintained including UMOC operational reports, Stroke Management SPP activation protocols, telemedicine and consulting protocols and systems, transfer and transport processes.
- 4.3.4. The integration with Rehabilitation Services for this SPP System and Stroke Survivor Services.
- 4.3.5. Quality Assurance and Performance Improvement Programs at the facility, and system level. This shall include registry data abstraction and data analysis for all stroke related key QA and PIP indicators.

4.4. UMOC shall provide the following:

- 4.4.1. Reports directed by the appropriate SPP Task Force for daily, weekly, monthly Stroke System performance, sentinel events including significant performance breaches, case management outcomes of interest.
- 4.4.2. Facilitation of Off-line and On-line Medical Direction as per the Medical Direction System standards and protocols.
- 4.4.3. Get With the Guidelines (GWTG) Central Registry Data Management support.

4.5. Prehospital Emergency Medical Services (EMS) and Interfacility Transfer (IFT) Ambulance Transport

- 4.5.1. Emergency Medical Service (EMS) shall transport Stroke patients in a timely manner to the closest appropriate facility as per the latest DoH published EMS Stroke protocol and in coordination with the DoH UMOC Medical Direction.
- 4.5.2. EMS shall preform BE FAST (or similar/ equivalent) stroke screening scale and a stroke severity scale in the field.
- 4.5.3. Using a hub and spoke model, hyperacute Stroke emergencies in Abu Dhabi city region and Al Ain city region shall be directly transferred to the closest designated Comprehensive Stroke center unless otherwise directed by medical direction.
- 4.5.4. Hyperacute Stroke emergencies at Al Dhafra region shall be directly transferred to the closest Stroke ready Emergency department if less than 30 minutes driving time. If Driving time exceeds the 30 minutes, then transfer the patient to the closest Emergency department.
- 4.5.5. Quality metrics of Emergency medical services response, assessment and outcome of stroke emergencies shall be regularly collected for quality improvement and compliance. Quality metrics shall be submitted by all relevant organizations in order to audit performance and improve patient care.

4.6. Healthcare facilities shall comply with the requirements of the UMOC (24/7) via the appropriate established protocol to ensure the following:

- 4.6.1. Stroke Ready and Primary Stroke Centers shall have Tele-stroke capability with their CSC to decide the acute management and transfer destination of stroke patients.
- 4.6.2. All facilities shall have risk assessments for stroke patient transfer to determine the appropriate level of care needed during transport.
- 4.6.3. Stroke ready and Primary Stroke health centers shall have an effective plan in place to carry out an emergent interfacility transfer (IFT) to the appropriate CSC via the Critical Care Transport System (CCTS) for patients with large vessel occlusion or if higher level of care is required.

- 4.6.4. Non-stroke ready health centers shall have an effective plan in place to carry out an emergent interfacility transfer (IFT) to closest designated Comprehensive Stroke Center via the Critical Care Transport System (CCTS) for patients with hyperacute stroke emergency.
- 4.6.5. Emergent Interfacility transfer of Hyperacute Stroke with large vessel occlusion requiring urgent mechanical thrombectomy in remote regions shall be directly transferred to the closest appropriate CSC. Transfer may need to be by air medical evacuation "helicopter" when time/ distance or isolation from the CSC is a factor. This is especially important for the hospital at Delma Island. Ground transport ambulance is an alternate method if rapid air medical evacuation is not available, preferable, or appropriate.
- 4.6.6. Quality metrics of interhospital transfer (IFT) response, assessment and outcome of stroke emergencies shall be regularly collected for quality improvement and compliance.
- 4.6.7. Teleconsultation shall be available 24/7 coordinated through the DoH Unified Medical Operations Center.
- 4.6.8. Any unstable patients must be considered for CCTS regardless.
- 4.7. Healthcare Professionals shall ensure maintenance of licensing, skills, experience, and knowledge.
- 4.8. Health Insurers shall ensure adequate coverage and payment services for necessary healthcare.

5. Monitoring and Evaluation

Monitoring of the Key Performance Measures of Stroke I Centers will be done through various data systems including JAWDA, Muashir, American Heart Association "Get with the Guidelines Registry" certification standards, and operational monitoring and reports developed through the UMOC.

6. Enforcement and Sanctions

DoH may impose sanctions in relation to any breach of requirements under this standard in accordance with the disciplinary regulation of the healthcare sector

7. Relevant Reference Documents

No.	Reference Date	Reference Name	Relation Explanation / Coding / Publication Links
1	Dec 2023	Executive Council Resolution No. (235) of 2023, Regarding Additional Powers for the Department of Health	Authorities for DoH regarding regulatory oversight of ambulance services for Abu Dhabi. https://www.abudhabi.gov.ae/-/media/sites/adgov/gazettes/2023/en/11th-edition-english-2023.ashx
2	2011	Decree No. 2 of 2011: In Respect of the Establishment of the National Emergency, Crisis and Disasters Management Authority (NCEMA)	Establishment of CEPAR, As Amended by Federal Decree-Law No. (6) of 2013 And Federal Decree-Law No. (8) of 2015 Federal Law No. 2 of 2011 - NCEMA (2).pdf.aspx
3	June 2024	Policy for Health Emergency Management (HEM) in Abu Dhabi	Establishes governance for to ensure support and commitment for robust healthcare emergency and disaster preparedness and response in Abu Dhabi, https://www.DoH.gov.ae/-/media/3FAA333EC7BA41429AC8987979B08500.ashx
4	May 2024	DoH Special Program Pathway (SPP) Standard in Abu Dhabi	Establishes and updates programs for type-specific healthcare systems that treat time-critical healthcare emergencies, https://www.DoH.gov.ae/-/media/830FA18BF12749FC9203D92A8DBCCFCF.ashx

5	12 Jan 2024	Medical Direction System Standard	Authorities and requirements for medical directors overseeing EMS and patient transport systems, on-line and off-line medical direction, Special Program Pathways, and support to SPP Task Forces. https://www.DoH.gov.ae/-/media/DBDCA02AE4AB443685BBEB941175C9D8.ashx
6	19 Dec 2023	Abu Dhabi Ambulance and EMS Standard	Authorities for patient transport services in Abu Dhabi. https://www.DoH.gov.ae/en/resources/standards
7	05 Sep 2024	DoH Standard for Critical Care Transport Services (CCTS) in Abu Dhabi	Authorities for advanced critical care ambulance services on various platforms in Abu Dhabi, https://www.DoH.gov.ae/en/resources/standards
8	Feb 2024	EMS Clinical Protocols	Response protocols for EMS and Ambulance Services in Abu Dhabi. https://www.DoH.gov.ae/-/media/CECB13E1AC3C4401B3DA00B01139E94C.ashx
9	Sep 2020	DoH Standard on Telemedicine	Authorities for telemedicine in Abu Dhabi. https://www.DoH.gov.ae/en/resources/standards
10	18 Dec 2023	Standard on Reporting Medical Errors & Suspected Quality Problems Related to Medicinal Products and Dietary	Authorities and requirements for reporting medical errors in the Abu Dhabi healthcare system. https://www.DoH.gov.ae/en/resources/standards
11	30 July 2018	DoH Standard for Clinical Complaints Management in Healthcare Facilities	Authorities and requirements for addressing complaints in the provision of care. https://www.DoH.gov.ae/en/resources/standards
12	16 Sep 2020	DoH Standard on Patient Healthcare Data Privacy	Authorities and requirements for handling patient data in the Abu Dhabi healthcare system. https://www.DoH.gov.ae/en/resources/standards
13	2022	DoH Standard for Centers of Excellence	https://www.DoH.gov.ae/en/resources/standards
14	-	JAWDA Quarterly Guidelines for Stroke (STK) Service Care Providers	https://www.doh.gov.ae/-/media/Feature/Muashir/Jawda/Jawda-Quarterly-Submission-Guidelines/Stroke-Guidance-Lastupdate_April2021.ashx
15	2024	STEMI and Stroke, American Heart Association International Certification	https://www.heart.org/en/professional/quality-improvement/healthcare-certification/stroke-certification
16	2024	The Joint Commission Comprehensive Stroke Center	https://www.jointcommission.org/what-we-offer/certification/certifications-by-setting/hospital-certifications/stroke-certification/advanced-stroke/comprehensive-stroke-center/

17	2018	Bureau of Neurointerventional Surgery, Vol 10, Issue 11, Standards of practice in acute ischemic stroke intervention	https://jnls.bmj.com/content/10/11/1121#T1
18	-	American Stroke Association PSC Certification: What really happens -	https://www.heart.org/idc/groups/heart-public/@wcm/@gra/documents/downloadable/ucm_493156.pdf
19	Oct 2018	Asian-Australian Federation of Interventional and Therapeutic Neuroradiology (AAFITN)	https://aafitn.com/ https://www.anzsnr.org.au https://www.asnr.org https://www.cnsf.org/csnr/about-csnr https://www.esmint.eu https://eso-stroke.org/ https://www.jnet-ejournal.org/en/ https://www.sfnr.net/ https://www.silan.org/en/ https://old.snisonline.org/ https://www.svin.org/i4a/pages/index.cfm?pageid=1 https://www.world-stroke.org https://www.wfitn.org https://pubmed.ncbi.nlm.nih.gov/30154252/
20	Feb 2013	Canadian Interventional Radiology Association; Cardiovascular and Interventional Radiological Society of Europe; Society for Cardiovascular Angiography and Interventions; Society of Interventional Radiology; Society of Neuro Interventional Surgery; European Society of Minimally Invasive Neurological	https://pubmed.ncbi.nlm.nih.gov/23696968/
21	-	American Heart/stroke Association	https://www.heart.org/en/professional/quality-improvement
22	-	AHA Journals	https://www.ahajournals.org/doi/10.1161/STR.0000000000000356
23	October 2023	Stroke Guidelines	Abu Dhabi Stroke Guidelines for Inter-Facility Transfer https://www.doh.gov.ae/-/media/CECB13E1AC3C4401B3DA00B01139E94C.ashx

24	-	Sheikh Khalifa Stroke Institute	https://www.hopkinsmedicine.org/neurology-neurosurgery/specialty-areas/khalifa-stroke-institute#:~:text=Created%20through%20a%20generous%20philanthropic%20gift%20from%20the
25	2024	CARF Accreditation and Certification	https://carf.org/locertification/ https://carf.org/accreditation/

8. Appendices

8.1 Appendix I – Performance Indicators

JAWDA Indicator	SRC	PSC	CSC
Time to intravenous thrombolytic therapy (door-to-needle time) of ≤60 min	☒	☒	☒
Stroke education	☒	☒	☒
Symptomatic intracranial hemorrhage after IV thrombolysis	☒	☒	☒
Discharged on Antithrombotic Therapy	☒	☒	☒
Venous thromboembolism (VTE) prophylaxis	☒	☒	☒
Admission to the Stroke or Neuro Intensive Care Unit within 3 hours of arrival at hospital	☐	☒	☒
Antithrombotic therapy by end of hospital day two	☐	☒	☒
Assessed for rehabilitation	☐	☒	☒
All cause 30-day unplanned hospital readmissions after ischemic stroke	☐	☒	☒
Stroke level disability assessment on discharge	☐	☒	☒
Rate of death occurring within 30 days of stroke diagnosis	☐	☒	☒
Performance Measures applicable only to CSC:			
CSTK-01: National Institutes of Health Stroke Scale (NIHSS) Score Performed for Ischemic Stroke Patients	☐	☐	☒
CSTK-02: Modified Rankin Score (mRS at 90 days)	☐	☐	☒
CSTK-03: Severity Measurement Performed for SAH and ICH Patients (Overall Rate)	☐	☐	☒
CSTK-04: Procoagulant Reversal Agent Invitation for Intracerebral Hemorrhage (ICH)	☐	☐	☒
CSTK-05: Nimodipine Treatment Administered in aneurysmal SAH	☐	☐	☒
CSTK-06: Median Time to Revascularization for medical thrombectomy	☐	☐	☒
CSTK-07: Thrombolysis in Cerebral Infarction (TICI Post-Treatment Reperfusion Grade)	☐	☐	☒
CSTK-08: Timelines of Reperfusion: Arrival Time to TICI 2B or Higher	☐	☐	☒
CSTK-09: Timelines of Reperfusion: Skin Puncture to TICI 2B or Higher	☐	☐	☒
STK-: Anticoagulation Therapy for Atrial Fibrillation / Flutter	☐	☒	☒
Performance Measures applicable only to SRC:			
ASR-OP-1: Thrombolytic Therapy: Drip and Ship	☒	☐	☐
ASR-OP-2: Door to Transfer to Another Hospital	☒	☐	☐

8.2 Appendix II - Stroke Unit Requirements

Stroke Unit: A dedicated, geographically clearly defined area or ward (minimum of 4 beds) in a hospital, where acute stroke patients are admitted and cared for by a multi-professional team (medical, nursing, and therapy staff) who have specialist knowledge, training, and skills in stroke care with well-defined individual tasks, regular interaction with other disciplines, and stroke leadership. This team shall coordinate stroke care through regular (weekly) multi-professional meetings

Hardware	Basic Monitoring	Specialized Monitoring
• Dedicated ward • Minimum of 10 beds • Oxygen supply and equipment for suction	• ECG • Oxygen saturation • Noninvasive blood pressure measurement • Respiration • Body temperature	• Transcranial Doppler ultrasonography (TCD)/Carotid duplex (CDU) • EEG • Defibrillator • 24 Hours Holter Monitor • Ambulatory blood pressure measurement