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Standards for Acute Stroke Centers

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Health Policies and Standards Department

Health Regulation Sector (2023)

INTRODUCTION

Health Regulation Sector (HRS) forms an integral part of Dubai Health Authority (DHA) and is mandated by DHA Law No. (14) of the year (2021) amending some clauses of law No. (6) of 2018 pertaining to the Dubai Health Authority (DHA), to undertake several functions including but not limited to:

- Developing regulation, policy, standards, guidelines to improve quality and patient safety and promote the growth and development of the health sector;
- Licensure and inspection of health facilities as well as healthcare professionals and ensuring compliance to best practice;
- Managing patient complaints and assuring patient and physician rights are upheld;
- Governing the use of narcotics, controlled and semi-controlled medications;
- Strengthening health tourism and assuring ongoing growth; and
- Assuring management of health informatics, e-health and promoting innovation.

The Standards for Acute Stroke Centers aims to fulfil the following overarching DHA Strategic Priorities (2022-2026):

- Pioneering Human-centered health system to promote trust, safety, quality and care for patients and their families.
- Make Dubai a lighthouse for healthcare governance, integration and regulation.
- Pioneering prevention efforts against non-communicable diseases.
- Foster healthcare education, research and innovation.

- Strengthening the economic contribution of the health sector, including health tourism to support Dubai economy.

ACKNOWLEDGMENT

The Health Policy and Standards Department (HPSD) developed this Standard in collaboration with Subject Matter Experts and would like to acknowledge and thank these health professionals for their dedication toward improving quality and safety of healthcare services in the Emirate of Dubai.

Health Regulation Sector

Dubai Health Authority

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EXECUTIVE SUMMARY

The purpose of this document is to assure the provision of the highest levels of safety and quality in Acute Stroke services at all times. The standards have been developed to align with the evolving healthcare needs and international best practice. The standards include several aspects required to provide effective, efficient, safe and high-quality Acute stroke services. The standards include the registration and licensure procedure requirements as well as the licensure of health facilities and professionals. The standards of Acute Stroke services provide clear insight into the difference acute stroke classifications and the minimum requirements that should be met.

The standard focuses on the following:

- The health care professional requirements and permitted services for Acute Stroke services.
- The health facility design requirements for Acute Stroke services aligned with the DHA Health facility guidelines.
- The policies, procedures, protocols and clinical governance that should be in place for the provision of Acute Stroke services.

DEFINITIONS

Acute Stroke Unit: is a dedicated area in the stroke centre or hospital that admits the vast majority of stroke patients under continuous telemetry recording for at least 48 hours post admission. Acute Stroke unit is staffed by stroke trained healthcare professionals.

Stroke Clinic: is an outpatient specialist clinic that provides initial assessment, case management and treatment of stroke patients.

Stroke Code Team: A team consisting of a physician and nurse with sufficient acute stroke management knowledge should be available 24 hours a day and should assess an acute stroke patient within 15 minutes of arrival in an emergency room and within the hospital.

Stroke Rehabilitation is an active process beginning during acute hospitalization, progressing for those with residual impairments to a systematic program of rehabilitation services, and continuing after the individual returns to the community.

ABBREVIATIONS

ASC : Acute Stroke Center

CT : Computed Tomography

CTA : Computed Tomography Angiography

ECG : Electrocardiogram

EU : Emergency Unit

ELVO : Emergent Large Vessel Occlusion

MRA : Magnetic Resonance Angiography

MRI : Magnetic Resonance Imaging

NIHSS : National Institute of Health Stroke Scale

TPA : Tissue Plasminogen Activator

1. BACKGROUND

Acute stroke services are specialized medical services designed to rapidly diagnose and treat patients who are experiencing a stroke, a serious medical condition characterized by a sudden disruption of blood flow to the brain. Acute stroke services play a critical role in providing time-sensitive care to minimize brain damage and improve patient outcomes. The concept of acute stroke services has evolved over the years with advancements in medical knowledge and technology. In the past, stroke care was limited to general medical and emergency services, and the treatment options were limited. However, with the development of specialized acute stroke centers and advancements in imaging techniques, acute stroke services have become more specialized and focused on providing rapid and effective care.

Today, acute stroke services typically include a multidisciplinary team of healthcare professionals, including neurologists, neurosurgeons, radiologists, nurses, and rehabilitation specialists. These teams work collaboratively to provide a range of services, including rapid assessment and diagnosis, administration of clot-busting medications like tissue plasminogen activator (tPA), and in some cases, endovascular procedures to remove clots from blood vessels in the brain.

Acute stroke services also emphasize the importance of post-stroke care, including rehabilitation services aimed at helping patients recover their functional abilities and improve their quality of life. Additionally, acute stroke services often include stroke education and prevention programs to raise awareness about stroke risk factors and promote healthy lifestyles to prevent future strokes. Many stroke centers are certified by recognized stroke

care organizations, such as the Joint Commission or the American Heart Association, to ensure that they meet specific standards of care.

2. SCOPE

2.1. Acute Stroke Centre services in DHA licensed hospitals**.**

3. PURPOSE

3.1. To assure provision of the highest levels of safety and quality in Acute Stroke Centre services in Dubai Health Authority (DHA) licensed health facilities.

4. APPLICABILITY

4.1. DHA licensed healthcare professionals and health facilities providing Acute Stroke Centre services.

5. STANDARD ONE: REGISTRATION AND LICENSURE PROCEDURES

5.1. All Acute stroke centers shall adhere to the United Arab Emirates (UAE) Laws and Dubai regulations.

5.2. All Acute stroke centers shall comply with the DHA licensure and administrative procedures available on the DHA website https://www.dha.gov.ae.

5.3. Health facilities providing Acute stroke centres services shall inform Health Regulation Sector (HRS) and apply to HRS to obtain permission to provide the required service.

5.4. Hospitals providing Acute stroke centres services must maintain an international accreditation such as and not limited to:

5.4.1. JCI clinical care program for stroke.

5.4.2. American Heart Association (AHA).

5.5. The health facility should develop the following policies and procedure; but not limited to:

5.5.1. Stroke code policy

5.5.2. Patient acceptance criteria

5.5.3. Patient assessment and admission

5.5.4. Patient education and Informed consent

5.5.5. Patient health record.

5.5.6. Infection control measures and hazardous waste management.

5.5.7. Incident reporting.

5.5.8. Patient privacy.

5.5.9. Medication management.

5.5.10. Emergency action plan.

5.5.11. Patient discharge/transfer.

5.5.12. Guidelines for stroke services based on evidence-based practices, including the Early Management of Patients with Acute Ischemic Stroke and Management of Intracerebral Haemorrhage.

5.5.13. Stroke Clinical Care Pathways.

5.6. The health facility shall provide documented evidence of the following:

5.6.1. Transfer of critical/complicated cases when required

5.6.2. Patient discharge and follow up plan.

5.6.3. Clinical laboratory services

5.6.4. Equipment maintenance services

5.6.5. Laundry services

5.6.6. Medical waste management as per Dubai Municipality (DM) requirements

5.6.7. Housekeeping services.

5.7. The health facility shall have IT, Technology and Health Records services which includes and not limited to:

5.7.1. Electronic health records and patient information systems.

5.7.2. Access to electronic forms and requests for investigations, pharmacy, catering, and supplies.

5.7.3. Integration with NABIDH System.

5.7.4. Picture archiving communications systems (PACS) should be in place for access to patient imaging results.

5.7.5. Wireless network requirements for ease of communication.

5.7.6. Telehealth technology and support services where applicable (for patient follow up and monitoring).

5.8. Clinical Governance:

5.8.1. Acute stroke service Lead should represent and discuss cases in the following facility committees:

a. Quality improvement committee.

b. Infection control committee.

c. Code blue committee.

d. Mortality and Morbidity committee.

5.9. As per the Executive Regulations Law No. (11) of the year 2013 concerning Health Insurance in Dubai and related administrative decision; patients presenting with acute stroke symptoms must be granted immediate emergency care regardless of the facilities network of health insurance providers.

5.9.1. Receiving facility can submit a claim to the insurance provider to cover the cost of providing emergency services even if they are outside of the insurance network.

5.10. The health facility shall maintain charter of patients' rights and responsibilities posted at the entrance of the premise in two languages (Arabic and English).

5.11. The health facility shall have in place a written plan for monitoring equipment for electrical and mechanical safety, with monthly visual inspections for apparent defects.

5.12. The health facility shall ensure it has in place adequate lighting and utilities, including temperature controls, water taps, medical gases, sinks and drains, lighting, electrical outlets and communications.

6. **STANDARD TWO:** HEALTH FACILITY REQUIREMENTS

6.1. Acute Stroke Centres shall only be performed in Licensed Hospitals.

6.2. The health facility should meet the health facility requirement as per the DHA Health Facility Guidelines (HFG).

6.3. The health facility providing Acute stroke services shall ensure the following:

6.3.1. To install and operate equipment required for provision of the proposed services in accordance to the manufacturer's specifications.

6.3.2. To provide easy access to the health facility and treatment areas for all patient groups.

6.3.3. To provide assurance of patients and staff safety.

6.3.4. To have appropriate equipment and trained healthcare professionals to manage acute stroke cases.

6.3.5. To maintain a registry if stroke patients which includes but not limited to Admission and Clinical outcomes.

6.3.6. This registry should be readily available for the DHA inspection team to ensure quality parameters are met.

7. **STANDARD THREE:** ACUTE STROKE CENTRE REQUIREMENTS

7.1. The scope of an acute stroke center (ASC) is to provide a high-quality level of acute stroke care by offering neurological, cerebrovascular, neuroradiology and neurocritical, neuro-intervention and neurosurgical interventions.

7.2. ASCs shall be open 24/7.

7.3. ASCs must have a timely protocol to receive and manage acute stroke patients from other facilities. Refer to (Appendix 1).

7.4. ASCs are led by a Full-time licensed consultant neurologist.

7.5. ASCs shall have the following minimum healthcare providers:

7.5.1. Stroke Physician(s) specialist that are in the field of:

a. Neurology
b. Physical Medicine and Rehabilitation
c. Internal Medicine
d. Cardiology
e. Clinical Pharmacology & Therapeutics
f. Geriatric Medicine

7.5.2. Clinical Educator or stroke Coordinator

a. Coordinates, guides and assures patients follow stroke protocols from the time of arrival to the time of discharge.
b. Identifies educational needs and implement staff and patient education.

7.5.3. Quality officer/team.

7.5.4. Physiotherapist

7.5.5. Rehabilitation Specialist

7.5.6. Occupational therapist

7.5.7. Speech therapist

7.5.8. Clinical Neuropsychologist

7.5.9. Dietician

7.5.10. Critical nurse Specialist

7.5.11. Neurocritical care medicine available 24/7.

7.5.12. Neurosurgeon available 24/7

7.5.13. Neuroradiologist available 24/7

7.5.14. Neuroendovascular physician available 24/7 (with a minimum of 2 years fellowship training in a Tier 1 health facility)

7.5.15. Cardiologist

7.6. ASCs shall have the following services:

7.6.1. Stroke clinic

7.6.2. Telemedicine services (optional)

7.6.3. Stroke unit

7.6.4. Operating theatre available 24/7 with backup capabilities.

7.6.5. Rehabilitation services with coordination of post-acute stroke care.

7.6.6. Community Education.

7.6.7. Neurointensive care unit 24/7 with neurovascular expertise.

7.6.8. Neuroendovascular service coverage 24/7.

7.6.9. Research program which adheres to the requirements of Medical Education and Research Department (MERD) in DHA.

7.7. ASCs shall have the following diagnostic services available 24/7:

7.7.1. Computed Tomography (CT) available within 20 minutes of arrival.

7.7.2. Magnetic Resonance Imaging (MRI) with diffusion.

7.7.3. In-house laboratory services with results available within 45 minutes of arrival.

7.7.4. Cardiac monitoring.

7.7.5. Electrocardiogram (ECG)

7.7.6. CT Angiography (CTA)

7.7.7. MR Angiography (MRA)/MR venogram

7.7.8. Multimodal CT or MR perfusion imaging.

7.7.9. Transthoracic echocardiography.

7.7.10. Digital Cerebral Angiography.

7.7.11. Extracranial Neurovascular Ultrasonography.

7.7.12. Transesophageal Echocardiology.

7.7.13. Neurosurgical and neurointerventional therapies

7.7.14. Intra-arterial reperfusion therapy.

7.7.15. Transcranial and carotid doppler.

7.8. ASCs should provide the following treatments/management:

7.8.1. Intravenous tissue plasminogen activator (IV-tPA).

7.8.2. Advanced Imaging (CTA, MRI/MRA, perfusion scan, cerebral vascular reserve).

7.8.3. Other emergency medications should be available as per DHA Emergency Medication policy.

7.8.4. Rehabilitation Therapy such as and not limited to the following:

a. Physical therapy.

b. Occupational therapy.

c. Speech and language therapy.

7.8.5. Mechanical thrombectomy for stroke patients with large vessel occlusion (ELVO).

7.8.6. Respiratory Therapy.

7.8.7. Neurocritical care.

7.8.8. Neurosurgical services available within two (2) hours

7.8.9. Neuroendovascular therapy

8. **STANDARD FOUR:** EDUCATION AND RESEARCH

8.1. All Stroke team members should be trained in using the National Institute of Health Stroke Scale (NIHSS) for all acute ischemic stroke patients.

8.1.1. Members of the stroke code team should receive at least four (4) hours of stroke training every year.

8.2. All Physicians in the stroke team must participate in Continuous Medical Education of eight (8) hours specific for stroke training per year.

8.3. All other healthcare professionals must demonstrate two (2) hours of training and education per year.

8.4. All staff must be involved in a regular teaching committee on stroke education and updates.

8.5. All staff should be involved in Community education of stroke symptoms to patients and the community and how to activate the stroke pathway such as calling the ambulance service.

8.6. A written Stroke protocol must be available to standardize acute stroke management in the emergency department.

8.6.1. Stroke Protocol should be revised yearly.

8.6.2. Stroke protocol should include and not limited to:

a. Management of acute ischemic stroke, intracerebral haemorrhage and subarachnoid haemorrhage.

b. Stabilization of stroke patients,

c. Decisions on the use of IV r-tPA, AND

d. Safe transfer protocols.

8.7. Acute Stroke Centres involved in medical research must conduct all their research in alignment with DHA Medical Education and Research Department requirements.

9. **STANDARD FIVE:** TELE-STROKE

9.1. Tele-stroke involves a physician consultation on stroke via telehealth. This includes:

9.1.1. Synchronous videoconferencing with access to picture archiving system (PACS) is standard practice.

9.1.2. Asynchronous consultation.

9.2. ASC healthcare providers may be able to provide consultations to healthcare providers in other facilities with respect to diagnosis, acute management and transfer decisions.

9.3. The use or tele-stroke and decision for IV r-tPA for selected acute ischemic stroke patients must be standardized and be part of the protocol.

9.4. Health facilities with acute stroke services providing tele-stroke services must adhere to all the requirement in the DHA Standards for Telehealth Services.

10. STANDARD SIX: POST STROKE CARE

10.1. Stroke patients who were assessed by the stroke unit multidisciplinary team and identified to be suitable for early discharge should continue their rehabilitation at outpatient, at day care or receive community rehabilitation at home.

10.2. Health care providers should establish rehabilitation services at inpatient, outpatient and community settings for stroke patients after discharge from strokes units in their areas.

10.3. Stroke patients and their carers should be well informed about their rehabilitation plan after discharge from the stroke units.

10.4. Rehabilitation centers should be provided in an environment in which rehabilitation care is well coordinated and can be provided as:

10.4.1. Inpatient rehabilitation

10.4.2. Outpatient rehabilitation

10.5. Rehabilitation should be delivered by skilled multidisciplinary team with expertise in complex physical, cognitive and neurobehavioral impairments.

10.6. Physiotherapy outpatients services may be considered as part of the multidisciplinary stroke services.

10.7. Stroke patient should receive a comprehensive assessment to determine:

10.7.1. Pre-stroke functional abilities.

10.7.2. Level of physical impairment.

10.7.3. Impairment of cognition, swallowing, communication, vision and perception, selfcare and continence status.

10.7.4. Symptoms related to depression, pain, spasticity, fatigue etc.

10.7.5. Spasticity levels, activity limitations and participation restrictions.

10.7.6. Social, occupational and environmental factors.

10.8. All stroke patients who are medically stable and identified to benefit from rehabilitation should be referred to an inpatient or outpatient rehabilitation facility immediately after the assessment by the stroke team or inpatient rehabilitation program.

10.9. Rehabilitation multidisciplinary team may include the following disciplines:

10.9.1. Physician in Physical Medicine and Rehabilitation.

10.9.2. Rehabilitation nurses.

10.9.3. Physiotherapists.

10.9.4. Occupational therapists.

10.9.5. Speech and language therapists.

10.9.6. Clinical psychologists.

10.9.7. Social workers.

10.9.8. Health educators.

10.9.9. Respiratory therapist

10.9.10. Dietician

10.10. The rehabilitation clinics should include range of specialist clinics and therapy which include:

10.10.1. Physical therapy to improve mobility, strengthen muscles and maintain the range of movement.

10.10.2. Occupational therapy to improve independence with self-care, as well as assessment of educational, vocational and driving abilities.

10.10.3. Spasticity clinic for management of muscle spasticity secondary to stroke.

10.10.4. Stroke rehabilitation clinics to address secondary prevention of stroke and manage other symptoms that can develop as a sequel of the stroke.

10.10.5. The need for wheelchairs, equipment and other assistive devices.

10.10.6. Assessment of care support and carers review and training.

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APPENDIX

APPENDIX 1: TIME PARAMETERS

Parameter	Acute Stroke Center (ASC)
Door to Emergency unit	Within 10 min
Door to neurologist/neurosurgeon	Within 15 min
Door to CT/MRI	Within 20 min
Door to CT/MRI read	Within 35 min
Door to IV TPA	Less than 45min in 50% of eligible cases
Door to groin time	Less than 90min in 50% of eligible cases

APPENDIX 2: SUMMARY OF REQUIREMENTS FOR ACUTE STROKE CENTRES

Requirement	Acute Stroke Center (ASC)
Accreditation	✓
Health facility type	Hospital
Operating Hours	24/7
Led by	Full-time licensed consultant neurologist.
Stroke physician	✓[2]
Clinical Educator or Stroke Coordinator	✓
Cardiologist	✓
Quality officer	✓
Physiotherapist	✓
Rehabilitation specialist	✓
Occupational therapist	✓
Speech therapist	✓
Clinical Neuropsychologist	✓
Dietician	✓
Critical nurse specialist	✓
Neurocritical care medicine	✓*
Neurosurgeon	✓*
Neuroradiologist	✓*
Neuroendovascular physician	✓*
Telemedicine services	Optional
Operating theatre	✓*
Stroke Clinic	✓
Training programs	✓
Rehabilitation with post-acute stroke care	✓
Community Education	✓
Neurointensive care unit	✓*
Neuroendovascular service	✓*

Research program	✓
Diagnostic Services*	• CT • MRI • Clinical lab • Cardiac Monitoring • ECG • CTA • MRA/MR • Transthoracic Echocardiography • Digital Cerebral Angiography • Extracranial Neurovascular Ultrasonography • Transoesophageal Echocardiography • Neurosurgical and neurointerventional therapies • Intra-arterial reperfusion therapy • Transcranial and carotid doppler
Type of treatment	(IV-tPA). Advanced Imaging Emergency Medication Rehabilitation Therapy Mechanical thrombectomy Respiratory Therapy Neurocritical care Neurosurgical services Neuroendovascular

*Available 24/7

[1]OR a Neurologist with additional DHA approved training in managing stroke

[2]This includes Neurologist, Physical Medicine and Rehabilitation, Acute Internal Medicine, Cardiologist, Clinical Pharmacology & Therapeutics and Geriatric Medicine.