Standards for Sleep Laboratory

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Health Policies and Standards Department

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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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INTRODUCTION

The Health Regulation Sector (HRS) plays a key role in regulating the health sector. HRS is mandated by the Dubai Health Authority (DHA) Law No. (6) of the year (2018) with its amendments pertaining to 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 Sleep Laboratory aims to fulfill the following overarching Dubai Health Sector Strategy 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.

EXECUTIVE SUMMARY

The purpose of this document is to assure the provision of the highest levels of safety and quality in Sleep laboratories 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 Sleep laboratories. The standards include the registration and licensure procedure requirements as well as the licensure of health facilities and professionals. The standards of Sleep laboratories provide clear insight into the facility design, service criteria and the minimum requirements that should be met.

The standard focuses on the following:

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

DEFINITIONS

Actigraphy is a non-invasive method of monitoring and recording movement, primarily used to assess sleep patterns and wakefulness, often in the diagnosis and management of sleep disorders.

Belligerent means inclined or eager to fight; hostile or aggressive.

Circadian rhythm is an internal, biological process that regulates the sleep-wake cycle and repeats roughly every 24 hours. It us influenced by external factors like light and darkness in the environment, helping the body align physiological activities, such as sleep, metabolism, and hormone production, with day and night cycles, this rhythm plays a crucial role in maintain overall health and well-being by syncing bodily functions with environmental changes

CPAP titration is a procedure performed during a sleep study to determine the optimal level of continuous positive airway pressure (CPAP) needed to treat sleep apnea. During the titration, a patient wears a CPAP mask while sleeping, and the pressure is gradually adjusted to maintain an open airway, eliminating apneas, hypopneas, and snoring. The goal is to find the lowest pressure that effectively prevents airway obstruction, ensuring restful and uninterrupted sleep. This process is essential for customizing CPAP therapy for individual patients.

Healthcare professional is a healthcare personal working in healthcare facilities and required to be licensed as per the applicable laws in United Arab Emirates.

Hypersomnia is a sleep disorder characterized by excessive daytime sleepiness despite adequate or prolonged night-time sleep. Individuals with hypersomnia experience difficulty staying awake during the day, leading to an overwhelming need for naps or unintended sleep episodes. This

condition can interfere with daily functioning and is often associated with underlying medical, neurological, or sleep disorders such as sleep apnea, narcolepsy, or circadian rhythm disturbances. Proper diagnosis and treatment are essential for managing the symptoms and improving quality of life.

Insomnia is a condition in which one has trouble falling or staying asleep. Some people with insomnia may fall asleep easily but wake up too soon. Other people may have the opposite problem, or they have trouble with both falling asleep and staying asleep. The result is poor-quality sleep that does not leave one feeling refreshed when you wake up.

Licensure is issuing a license to operate a health facility to an individual, government, corporation, partnership, limited liability company, or other form of business operation that is legally responsible for the facility's operation.

Multiple sleep latency test is a diagnostic tool used to evaluate excessive daytime sleepiness and help rule out conditions like narcolepsy. The test measures the time it takes for a person to fall asleep (sleep latency) during a series of 20-minute nap opportunities scheduled throughout the day. During each nap, brain activity is monitored using EEG to detect the onset of sleep and, specifically, Sleep Onset Rapid Eye Movement (SOREM), which is a hallmark feature of narcolepsy. The MSLT is crucial for assessing the severity and nature of daytime sleepiness.

Maintenance of wakefulness test is a test to measure the ability to stay awake for a defined period, (generally a 40-minute protocol is used), with the first epoch of sleep as the definition of sleep onset.

Parasomnia refers to abnormal behaviors or experiences that occur during sleep or the transitions between different stages of sleep. These behaviors can include actions such as sleepwalking, night terrors, sleep talking, or other unusual activities that disrupt normal sleep. Parasomnias are typically categorized based on whether they occur during rapid eye movement (REM) sleep, non-REM sleep, or during transitions between sleep and wakefulness.

Patient is any individual who receives medical attention, care or treatment by any healthcare professional or admitted in a health facility.

Polysomnography (PSG) Means monitoring of several parameters that may include EEG, EOG, ECG, EMG, oxygenation, ventilation, air flow and respiratory effort over few hours in the main sleep period. Polysomnography is used to diagnose sleep disorders.

Sleep apnea is an involuntary cessation of breathing that occurs while the patient is asleep. There are three types of sleep apnea: obstructive, central, and mixed.

Sleep disorders are medical conditions that affect the quality, timing, and duration of sleep, leading to difficulties in falling asleep, staying asleep, waking up too early, or experiencing excessive sleepiness during the day. These disorders can also include abnormal behaviors during sleep or inappropriate sleep timing. Common examples of sleep disorders include insomnia, sleep apnea, parasomnias, and restless legs syndrome (RLS). Sleep disorders can significantly impact on overall health, mood, and daily functioning if left untreated.

Sleep Medicine is a medical specialty or subspecialty devoted to the diagnosis and therapy of sleep disturbances and disorders.

ABBREVIATIONS

AED	:	Automated Electronic Defibrillator
BLS	:	Basic Life Support
BiPAP	:	Bilevel Positive Airway Pressure
CO_2	:	Carbon-di-oxide
CPAP	:	Continuous Positive Airway Pressure
DHA	:	Dubai Health Authority
EEG	:	Electroencephalogram
EOG	:	Electrooculogram
ECG	:	Electrocardiogram
EMG	:	Electromyography
HRS	:	Health Regulation Sector
MSLT	:	Multiple Sleep Latency Test
MWT	:	Maintenance of Wakefulness Test
O_2	:	Oxygen
PALS	:	Pediatric Advanced Life Support
PAP	:	Positive Airway Pressure
PQR	:	Unified Healthcare Professional Qualification
PSG	:	Polysomnogram
REM	:	Rapid Eye Movement
SME	:	Subject Matter Expert

1. BACKGROUND

A sleep laboratory conducts attended sleep studies like polysomnogram (PSG), multiple sleep latency test (MSLT) and maintenance of wakefulness test (MWT) which are tests that electronically transmits and records specific physical activities. The recordings become data that is analyzed by a physician trained in sleep medicine to determine if the patient has any sleep disorders.

Electrodes are placed on the patient's scalp, face, chin, chest, limbs and finger. These sensors record brain activity, eye movements, breathing pattern, heart rate and rhythm, blood pressure and the amount of oxygen (O_2) in the blood. After acquiring the consent from the patient or the patient's guardian, the technician visually monitors and video records patients during sleep therapy for any abnormal activities.

Sleep laboratories can be provided in:

- Hospital
- Home Healthcare Service
- Outpatient follow up services
    - With one (1) of the following departments:

    a) Neurology

    b) Otolaryngology

    c) Paediatric Pulmonology

    d) Paediatric Sleep Medicine

    e) Pulmonology

f) Sleep Medicine

g) High quality sub-specialty supervision in paediatrics sleep testing.

Note: Refer to the professional requirements of this document for further information

2. SCOPE

2.1. Sleep Laboratory services in DHA licensed health facilities.

3. PURPOSE

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

4. APPLICABILITY

4.1. DHA licensed healthcare professionals and health facilities providing Sleep Laboratory services.

5. STANDARD ONE: REGISTRATION AND LICENSURE PROCEDURES

5.1. All health facilities providing Sleep Laboratory services shall adhere to the United Arab Emirates (UAE) Laws and Dubai regulations.

5.2. Health facilities aiming to provide Sleep Laboratory services shall comply with the DHA licensure and administrative procedures available on the DHA website https://www.dha.gov.ae.

5.3. Licensed health facilities opting to add Sleep Laboratory services shall inform Health Regulation Sector (HRS) and submit an application to HRS to obtain permission to provide the required service.

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

5.4.1. Patient acceptance criteria

5.4.2. Patient assessment and admission

5.4.3. Patient education and Informed consent

5.4.4. Patient health record

5.4.5. Infection control measures and hazardous waste management

5.4.6. Incident reporting

5.4.7. Patient privacy

5.4.8. Medication management

5.4.9. Emergency action plan

5.4.10. Patient discharge/transfer.

5.4.11. Lost and found Policy.

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

5.5.1. Transfer of critical/complicated cases when required

5.5.2. Patient discharge

5.5.3. Clinical laboratory services

5.5.4. Equipment maintenance services

5.5.5. Laundry services

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

5.5.7. Housekeeping services.

5.6. Schematic design drawings in AutoCAD format showing the proposed floor layout with measurement of the rooms and labelled providing the Sleep laboratory service.

5.7. A detailed business plan/ list of equipment, etc.

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

5.9. 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.

5.10. 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.

5.11. Upon completion of the facility setup requirements, the applicant should submit an online request for final inspection, upon which HRS should conduct an onsite pre-operational assessment. To obtain the DHA license, the applicant must meet the following:

5.11.1. Appoint a Medical Director (for new facility).

5.11.2. Employ licensed healthcare professionals to satisfy the functional program of the sleep laboratory.

5.12. Install and operate equipment required for provision of the proposed services in accordance with manufacturer specifications.

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

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

6.2. The health facility should install and operate equipment required for provision of the proposed services in accordance to the manufacturer's specifications.

6.3. The health facility shall ensure easy access to the health facility and treatment areas for all patient groups.

6.4. The health facility design shall provide assurance of patients and staff safety.

6.5. The health facility shall have appropriate equipment and trained healthcare professionals to manage critical and emergency cases.

6.6. The sleep laboratory shall have a patient preparation room, sleep therapy room(s) and control room(s).

6.6.1. Patient preparation area shall be defined by the facility and can be in the same area as the patient testing room.

6.7. Preparation of patient could be done in the sleep therapy room, but ideally, it should be done in a separate room with adequate ventilation and storage space for supplies.

6.7.1. Provide a sink to clean and disinfect electrodes and other monitors, if applicable.

6.7.2. The sink area can be in the dirty utility room and the facility shall clearly specify the cleaning processes if disposable equipment is not used.

6.8. The size of the sleep therapy room shall be not less than nine (9) square meters to accommodate emergency personnel access with a minimum of 0.60 meters of available clear space on three (3) sides of the bed.

6.9. All sleep therapy rooms shall be single occupancy, private and comfortable. However, for paediatric patients, space should be made available for a parent or caregiver to stay as well.

6.9.1. The floor to ceiling walls shall be made of hard material.

6.9.2. Provide a privacy door for every sleep therapy room that opens inwards and directly to a corridor or common use area such that the patient can access the sleep therapy room without passing through other sleep therapy rooms.

6.9.3. The sleep therapy rooms shall be in a quite area and low traffic section of the health facility.

6.9.4. The room should be preferably sunlight free to create a time free environment.

6.9.5. The sleep therapy rooms shall not have any obstructions in delivering emergency care.

6.9.6. The sleep therapy room shall have a bed with a mattress not smaller than a standard hospital bed.

6.9.7. The sleep therapy rooms shall have easy access to toilets. The ratio of sleep therapy rooms to toilets shall be 1:1.

6.9.8. In case the health facility provides treatment for handicapped patients, it shall have a sleep therapy room and toilet to accommodate these patients.

6.9.9. Live audio-video monitoring and recording with a two-way communication system.

6.9.10. The health facility shall maintain equipment for delivery of positive airway pressure (PAP) therapy for sleep apnea, which is remotely controlled through the sleep monitoring system.

6.9.11. The dimension of the control room shall not be less than 3.7 square meters.

6.9.12. It shall be located away from traffic area, to protect the privacy of patients during the test.

6.9.13. The control room shall be located close to the testing rooms for technologists to be able to come in for equipment adjustments and/or emergencies.

6.9.14. Additional escort bed shall be available for paediatric patients and other patients who might need the presence of a caregiver.

6.10. There shall be a two-way communication system between the sleep therapy room and the control room.

6.11. The control room shall host the polygraphic equipment capable of recording and storing physiological parameters using sensors and recommended or alternative derivations.

6.12. Phone numbers of important contacts should be visibly posted near the workstation, which shall include the number of the sleep laboratory service in-charge.

6.13. The administrative areas and consultation rooms shall be separate from the sleep therapy rooms and must meet the DHA regulation criteria that can be found on the website www.dha.gov.ae.

7. **STANDARD THREE:** HEALTHCARE PROFESSIONALS REQUIREMENTS

7.1. The facility should employ and license sufficient healthcare professionals to meet the functional program of the twenty-four (24) hour service with special attention to security during the night. The number of sleep therapy rooms in the facility generally dictates the staffing requirements.

7.2. A sleep laboratory, service in-charge should be a consultant/ specialist Physician in one of the categories as mentioned below, with certified training and experience in sleep medicine or holding an equivalent qualification to overlook the entire functioning of the sleep laboratory service provided.

7.3. All physicians should hold speciality or sub-speciality degree in Sleep Medicine and be licensed in this field.

7.3.1. Refer to DHA PQR for more information.

7.4. The physician in-charge should be:

7.4.1. Responsible for the quality of sleep therapy including the proper operation and calibration of the equipment.

7.4.2. Responsible for the training of all staff providing care.

7.5. Be present in the health facility on a regular basis.

7.5.1. Accessible for consultation and notification in the event of an emergency.

7.6. Paediatric sleep medicine physicians should be employed to diagnose, treat and manage paediatric patients with sleep disorders. They should not manage adult patients with sleep disorders unless they are American Board Sleep Medicine Specialists. Any restriction to practice is considered based on individual doctor's training and experience.

7.7. American board Sleep Medicine Specialist can assess and treat both adult and paediatric patients.

7.8. The sleep facility should employ appropriately trained and licensed polysomnographic technologist or sleep technologist.

7.9. The polysomnographic technologist or sleep technologist should document ongoing evaluation and management of every patient with sleep disorder.

7.10. The polysomnographic technologist should be responsible for close monitoring of the patient and should have sufficient training to recognize potential emergencies such as life-threatening conditions like cardiac arrhythmias.

7.11. The polysomnographic technologist should monitor for signals by the patient that they may be in distress. This can be verbal as well as behavioral.

7.12. The patient to technologist ratio should be 2:1 under most circumstances for attended polysomnography.

7.13. For infants, young children and older children/ adults with special needs the ratio of patient to technologist is 1:1.

7.14. The polysomnographic technologist should maintain a valid Basic Life Support (BLS) certification.

7.15. The polysomnographic technologist treating paediatric patients should maintain a valid Paediatric Advanced Life Support (PALS) certification.

8. **STANDARD FOUR:** HEALTH RECORDS

8.1. All sleep laboratories should maintain appropriate health records for patient evaluated by the facility and also for referred patients by other health facilities.

8.2. Health records should document patient interaction, including initial evaluation, sleep therapy (if any), diagnosis, treatment, CPAP and/or BIPAP' assessment and follow-up.

8.3. The health record should include written indication that the physician has reviewed and approved the proposed evaluation.

8.4. Every evaluation should be signed and stamped by the physician in case of paper-based health records and signed off in case of electronic health records.

9. **STANDARD FIVE:** PATIENT SAFETY

9.1. The safety of patients is the responsibility of the entire sleep laboratory team from the physician to the technologist directly monitoring the patient.

9.2. To provide comprehensive care the health facility may have a multidisciplinary medical advisory committee including a pulmonologist, pediatric pulmonologist, neurologist, psychiatrist, otolaryngologist, internal medicine, dentist and psychologist.

9.3. The majority of patients seen in the sleep laboratory take medications for various medical reasons. The facility should maintain patient own medication policy to reinforce this.

9.4. Sleep laboratory Quality Assurance program indicators should include quality measures for assessment and management of common sleep disorders:

9.4.1. Process measure 1 – Assessment of OSA (Obstructive Sleep Apnea) signs, symptoms, and risk factors.

9.4.2. Outcome measure 1- improvement in signs or symptoms of OSA.

9.4.3. Process Measure 2 -Assessment of Sleep Satisfaction/Quality.

9.4.4. Outcome Measure 2- Improve Sleep Satisfaction or Quality.

9.4.5. The sleep laboratory should be equipped with emergency equipment like:

a. Emergency cart with defibrillator or Automated Electronic Defibrillator (AED).

b. Oral airways with different sizes based on specialities.

c. Oxygen cylinder.

d. Nebulizer.

e. Suction machine with suction tubes.

f. Oxygen masks.

9.4.1. Crash cart trolley shall be fully equipped with emergency equipment.

9.5. Infection control should be a standard practice with effective hand sanitization and equipment disinfection practices to prevent the transmission of germs.

9.6. Hand sanitation should be performed before and after contact with each patient.

9.7. Provide hand rub stations at convenient locations throughout the sleep laboratory.

9.8. Arrangements should be in place for washing and disinfecting bed linens. Used bed linens, should be handled in a manner that prevents contamination to the laboratory staff and other patients.

9.9. The facility should maintain fire extinguishers. There should be trained staff to respond to fire events. Orientation on the fire safety measures should be included in new staff induction program.

9.10. There should be evacuation maps posted to indicate current locations marked with "You are here" to provide information regarding escape routes and fire exits.

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