

المركز الجامعي
لطب وأبحاث النوم
UNIVERSITY SLEEP
DISORDERS CENTER



King Saud University Sleep Medicine Fellowship



**KING SAUD UNIVERSITY
COLLEGE OF MEDICINE
UNIVERSITY SLEEP DISORDERS CENTER
KING KHALID UNIVERSITY HOSPITAL**

Introduction

Sleep medicine is a rapidly growing specialty in the field of medicine that became an essential specialty service in any clinical or academic institute. Over the past 25 years this field has expanded and developed in order to diagnose and treat the increasing numbers of different sleep-related disorders. Many physicians think that sleep disorders means obstructive sleep apnea only, however, the International Classification of Sleep Disorders (ICSD-2005) included more than 84 disorders.¹ As a result, the number of clinical sleep facilities needed to diagnose and treat patients with sleep disorders has increased worldwide and structured training programs have been implemented in developed countries.²⁻⁵

Sleep Medicine is a distinct specialty that requires one year of fellowship training after completing pulmonary, psychiatry, pediatric, otolaryngology or neurology training.²⁻⁵ Specialists in this field are well trained in sleep physiology, respiratory physiology and EEG. Performing sleep studies in the sleep disorders center (SDC) enable the treating doctor to detect many pathological changes during sleep.

The establishment of Sleep Medicine fellowship will help King Saud University (KSU) to continue its regional leading role in both clinical sleep medicine service and sleep medicine research and will expand that role to be a leader in sleep medicine training. This fellowship will be the first of its kind in the Middle East. In a new national survey, we found that sleep medicine service is underdeveloped in Saudi Arabia compared to developed countries (*Appendix I*).⁶

Distinction:

The center is well-prepared to start the fellowship training and to meet the fellowship requirement. **We will brief the distinction and the excellence of the center at different levels:**

- ❖ **Expertise:** The center is run by qualified Sleep Medicine Specialists who have done their training in North America with collaboration and support from other related specialties:
 - **Prof. Ahmed BaHamam:** Prof. of Sleep Medicine
 - **Dr. Muslim Alsaadi** "Associate Prof. of Sleep Medicine.
 - **Dr. Abdulrahman Hajar** Assist Prof. of ENT with interest in Sleep Medicine
 - **Dr. Fahd Alwahhabi:** Assistant Professor of Psychiatry with interest in Sleep Medicine.
 - Collaborator from outside the University:
 - **Dr. Fawzia Bamogadem:** Consultant Neurology, Epilepsy and Sleep Medicine (King Fahd Medical City)
 - **Dr. Adel Alharbi:** Consultant Pediatric Pulmonary and Sleep Medicine (Riyadh Military Hospital)
- ❖ **Clinical Exposure:** All types of sleep studies are conducted in the University Sleep Disorders Center. We see cases from different age groups (newborns to elderly). Additionally, we receive referrals from all over the Kingdom in all kinds of sleep disorders even the rare ones. The waiting list to undergo an overnight sleep study is eight months.
- ❖ **Technicians:** The center has well-trained sleep medicine technicians

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- ❖ **Facility:** Adequate space for four-bedded sleep disorders center, with clinic, control room and discussion room. Other hospital facilities can be used for teaching if needed.
 - ❖ **Equipment:** The center has the state-of-the-art equipment for clinical training and research.
 - ❖ **Research:** Since its establishment in 2002, more than 60 peer reviewed papers have been published and around 60 scientific abstracts have been read in local and international scientific meetings, in addition to invitations to write chapters in scientific books.. A number of those presentations were done by trainees and students in the college of medicine. Medical student who were trained in the center have won the best research award in the Annual Meetings of the Saudi Thoracic Society on the year 2008 and the year 2009.

Objectives:

A. Clinical Science of Sleep Medicine:

1. The Sleep Medicine Fellow will develop thorough knowledge and sound judgment with the diagnosis, treatment and prevention of all sleep disorders
2. The Sleep Medicine Fellow must become competent with the technical skills necessary for the performance and interpretation of the diagnostic and treatment procedures used in sleep medicine.

B. Research Skills of Sleep Medicine:

3. The Sleep Medicine Fellow must become familiar with the different research designs and methodologies and data collections and analyses.
4. The Sleep Medicine Fellow will develop the needed skills to perform good quality clinical and basic science research in Sleep Disorders

C. SDC Management:

5. The Sleep Fellow will learn the administrative skills needed to run and manage a sleep disorders center at the following levels:
 - A. Man power
 - B. Purchasing
 - C. Training
 - D. Patient's relation

Admission Requirements:

The applicant must have completed residency/fellowship training in Saudi Board in one of the following specialties: Pulmonary Medicine, Neurology, Pediatric, Psychiatry, or Otolaryngology. Or holds a certificate in one of the above specialties accredited by the Saudi Commission for Health Specialties.

The applicant must provide the following:

- I- Completed application form (available at Residency Office or click at www.mecksu.org to download)
- II- Updated Curriculum Vitae and certificates
- III- MBBS and Internship (copy)
- IV- Transcript of records (copy)
- V- SLE: Saudi Commission License Exam (copy)
- VI- Certificate of completion of Saudi Board training by the Saudi Commission for Health Specialties.
- VII- Non-Saudi Board certificates should be accredited by the Saudi Commission for Health Specialties
- VIII- A statement of purpose
- IX- Three recommendation letters
- X- ID/Passport (copy)
- XI- Six pictures (passport size) (not applicable for female)
- XII- Letter of no objection from the primary employer (sponsor)
- XIII- The following procedure will be followed:

- Application should be submitted on or before the given deadline. Any incomplete application will not be accepted.
- Candidate's file will be forwarded to the Department Program Director for review.
- Accepted applicant will be informed in writing or by telephone contact to attend the selection exam.
- For fees and other details, Please contact below:

Residency Office Secretaries at tel. # +966-1-467-9226/467-2609/467-1551/1554/
1556/1564 ext 221 or 207 Fax # 481-1853 www.mecksu.org

Degree Requirements:

This is a two-year fellowship program. The first year will be spent in pulmonary medicine training and the second year in the disorders center (one year will be counted for pulmonary fellows who have done two years of pulmonary medicine).

Below are the responsibilities and expectations of the fellow in training:

A. Practical Experience:

- a. Interpret polysomnograms (PSG) at the SDC. This program requires a minimum of 150 PSG interpretations for sleep medicine fellowship completion, although there is ample opportunity for more.
- b. Interpret Multiple Sleep Latency testing (MSLT) at the SDC. (minimum 25 for the fellowship)
- c. Minimum 150 new patients and 150 follow-up patients must be documented in the fellow's log book throughout the sleep fellowship. At least 50 of the new patients must include a diagnosis other than sleep disordered breathing. Evaluation of at least 30 pediatric age patients is also required. Two half-day adult patients' clinics and one every other week clinic at pediatric sleep clinic should give ample exposure to required number of patients. Fellows will also attend respective clinics in other sub-specialty rotations. Overall, there are plenty of patients with a variety of sleep disorders to more than meet the minimum requirements.
- d. Take sleep lab call & attend sleep business meetings
- e. Teach rotating residents & students
- f. It is strongly recommended to write at least one article that is preferably a result of the fellow's sleep research project, which was ongoing throughout the sleep fellowship

- g. Must attend all sleep lecture series and complete required readings

B. Theoretical Knowledge:

a. Physiological basis of sleep

- Physiology of sleep and wakefulness states as a function of age;
- Sleep regulation as a function of age;
- Models of ontogeny and biological function of sleep;
- Electroencephalogram activity during wakefulness and sleep and staging of sleep;
- Usefulness and limitations of different methods for scoring sleep stages;
- Adaptation of bodily functions to sleep:
 - Brain activity
 - Motor control of skeletal muscles
 - Sensation
 - Activity of the autonomic nervous system
 - Heart and circulatory functions
 - Respiratory functions
 - Metabolic activity
 - Hormone secretion
 - Thermoregulation
 - Effects of acute and chronic sleep deprivation
 - Mental processes during non-rapid eye movement and rapid eye movement sleep, at sleep onset and upon awakening, e.g., reflexive activity, classic dreams, lucid dreams, nightmares, hypnagogic, and hypnopompic hallucinations.

b. Chronobiological aspects of sleep

- Circadian rhythm, circadian clock, and its influence on circadian rhythms such as temperature and various physiological functions;
- Chronobiological models of sleep regulation;
- Circadian variation of cognitive performance;
- Variation of tiredness and sleepiness during the day;
- Methods for recording time-dependent variations of sleepiness and alertness;
- Circadian rhythm disorders (diagnosis and management).

c. Diagnostic procedures and assessment of sleep disorders

- ❖ Ability to perform clinical and psychological work-up (interview and examination);
- ❖ adequate knowledge of diagnostic approach to diseases listed in ICSD-2 (Sateia, 2005);
- ❖ Mastering of diagnostic procedures including:
 - PSG
 - Cardiorespiratory polygraphy
 - MSLT and MWT
 - Sleep/wake questionnaires
 - Basic knowledge of other diagnostic tests, e.g., neuropsychological tests.

d. Treatment of sleep disorders

- ❖ Sleep hygiene;
- ❖ influence of medication on sleep;
- ❖ drug therapy for sleep disorders;
- ❖ cognitive behavioral therapy and other psychotherapeutic procedures;
- ❖ nasal CPAP, principles of non-invasive ventilation;
- ❖ surgical procedures;
- ❖ dental appliances;
- ❖ Light therapy.

This program should award the trainee a fellowship certificate upon the successful completion of the training and evaluation.

Program Structure:

The fellowship program will be conducted in the SDC at KKHU (a four-bedded sleep disorders center).

A. **First Year:** This year will be spent in pulmonary medicine training to develop good practical knowledge applied pulmonary physiology, lung mechanics, pulmonary pathology and common respiratory diseases. For trainees who have completed fellowship training in adult or pediatric Pulmonology, the program will be limited to one year only (the second year).

1. Three months of pulmonary consultation
2. Two months of pulmonary inpatients service
3. One month in the Pulmonary Function laboratory
4. One Month in Pulmonary Radiology
5. One month in the intensive care unit
6. Two months of Pediatric Pulmonology
7. Last month: Introduction into the Sleep Disorders Center
8. One month: Vacation
9. During the above, the fellow will attend 1-2 pulmonary clinics per week and the academic activities of the unit to which he/she is assigned.

B. Second Year

This year will be spent mainly in the Sleep Disorders Center attending different clinical activities. However, time will be allotted to emphasize the following points in the specified times:

1. The first six months of sleep medicine training will take place during the 1-year sleep medicine fellowship program as follows.

- **First Month**

- ❖ Orientation
- ❖ Introduction to Polysomnogram interpretation
- ❖ Introduction to the sleep laboratory
- ❖ Introduction to Polysomnogram scoring
- ❖ Sleep focused history and physical
- ❖ Differential Diagnosis of Hypersomnia & Insomnia
- ❖ Sleep Clinics three 1/2 days/week with mentoring

- **Second Month**

Introduction to Sleep Medicine Research

The fellow will spend allotted time with the data manager to learn about:

1. Data collection
2. Data management and cleaning
3. Computer skills needed for data entry (spread sheets)
4. Basics of data analysis and statistics
5. Introduction to manuscript writing

- **Third Month**

Sleep Cardio-Pulmonary Disorders

- ❖ Emphasis during clinical training will be on sleep disorders related to cardio-pulmonary disorders.

- **Fourth Month**

Neuroscience, Clinical Neurology & EEG Interpretation

- ❖ To attend one EEG session per week in the sleep disorders center
- ❖ To attend one neurology clinic per week to be trained on reading EEG for patients with nocturnal epilepsy in King Fahd Medical City

- **Fifth Month**

Otolaryngology, dental appliances, and allergies

- ❖ To attend one ENT clinic weekly

- **Six Month**

Psychiatry, Psychology Clinics

- ❖ To attend one psychiatry clinic weekly
- ❖ To attend one clinic with the psychologist weekly

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2. The first 6 months conclude with an in-service oral, clinical and polysomnographic evaluation. The second 6 months will primarily be spent in Advanced Clinical Sleep Medicine, running a sleep medicine clinic under supervision, and advanced involvement in sleep medicine research.

Evaluation:

To ensure that the fellow acquires adequate knowledge and develops technical skills, the following evaluation procedure will be done:

- The fellow will be evaluated formally by his/her supervising faculty member after each clinical rotation and will meet with the program director to review these evaluations.
- Mid-training in-service oral, clinical and polysomnographic evaluation
- At the end of training in-service written and oral exam will be conducted. The exam will be two parts:
 - Morning: Written exam with case Scenarios to assess basic and clinical knowledge
 - Afternoon: Oral exam to assess polysomnographic interpretation and decision making
- In addition, he/she will regularly evaluate the faculty to ensure that his/her educational needs are being met.

Evaluation will be based on a well structured system adopted by developed examination bodies:^{2,3}

Program Director Ratings of Clinical Competence

Overall Clinical Competence	
Ratings	Fellows
Satisfactory	Full credit
Unsatisfactory	No credit, must repeat year
Moral and Ethical Behavior	
Ratings	Fellows (any year)
Satisfactory	Full credit
Unsatisfactory	Repeat year or, at the Board's discretion, a period of observation will be required

The six required competencies are:

- 1) Patient care (which includes medical interviewing, physical examination and procedural skills).
- 2) Medical knowledge.
- 3) Practice-based learning and improvement.
- 4) Interpersonal and communication skills,
- 5) Professionalism, and
- 6) Systems-based practice.

References:

1. American Academy of Sleep Medicine, *International classification of sleep disorders : Diagnostic and coding manual* 2nd edition ed: Westchester. IL: American Academy of Sleep Medicine, 2005.
2. American Board of Sleep Medicine. (updated 2006; Cited o May 2008). Available from <http://www.absm.org/>
3. American Board of Internal Medicine. (Updated 2008; cited May 2008). Available from <http://www.abim.org/certification/policies/imss/sleep.aspx>
4. Common Program requirements: Sleep medicine. American Academy of Sleep Medicine (ACGME 2004); <http://www.aasmnet.org>.
5. American Academy of Sleep Medicine Accreditation Committee, *Standards for accreditation of a sleep disorders center*. March 2002; revised edition. Rochester ,MN: American Academy of Sleep Medicine, 2002; <http://www.aasmnet.org>.
6. BaHammam A, Aljafn B. *Sleep Medicine Service in Saudi Arabia: A Quantitative Assessment*. Saudi Med J. 2007 Jun;28(6):917-21

Appendix I:

Sleep medicine seems to be underdeveloped in KSA compared to developed countries. Many obstacles face the progress and development of this specialty including inadequate number of trained sleep technicians, and sleep medicine specialists and lack of fund and insurance coverage. A collaborative work involving different institutes, sleep medicine specialists, health care authorities and insurance companies is needed to overcome those defined obstacles. Additionally, local training programs are needed to graduate sleep medicine specialists and sleep technologists.

1. BaHammam A, Aljafn B. *Sleep Medicine Service in Saudi Arabia: A Quantitative Assessment*. Saudi Med J. 2007 Jun;28(6):917-21