



King George's Medical University, UP, Lucknow

POST DOCTORAL FELLOWSHIP (PDF) IN SLEEP MEDICINE



Department of Pulmonary & Critical Care Medicine

Second Floor, Shatabdi Phase-2,
King George's Medical University, UP, Lucknow-226003
Email- drvedprakash.07@gmail.com/pccmkgmu@gmail.com

Dr. Ved Prakash
Head of Department
Department of Pulmonary & Critical Care Medicine
King George's Medical University, U.P. Lucknow

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Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
King George's Medical University, U.P. Lucknow

CURRICULUM FOR POST DOCTORAL FELLOWSHIP (PDF) COURSE
IN SLEEP MEDICINE

ONE YEAR (TWO SEMESTERS) COURSE

1. GOALS, OBJECTIVES AND COMPETENCIES:

Goals

1. The goal of Post Doctoral Certificate Course in Sleep Medicine course is to produce a competent Sleep Physician who has in-depth knowledge in a *specific category* of Sleep Disorders.
2. Recognizes the needs of patients having *specific category of* Sleep Disorders and carries out professional obligations in keeping with principles of discipline, prevailing guidelines and professional ethics.
3. Has acquired the competencies pertaining to *specific area* of Sleep Medicine (including knowledge, clinical skills and soft skills) that are required to practice in the community and at all levels of health care system.
4. Is aware of the contemporary advances and developments in medical sciences as related to *specific area* of Sleep Medicine.
5. Is able to apply principles of research methodology and evidence based medicine to *specific area* of clinical practice.
6. Has acquired skills in teaching and training of medical and paramedical professionals.
7. Is able to follow the principles of team approach in various capacities- as a member and as a leader.

Objectives

1. Able to recognize, diagnose and manage cases that belong a *specific category* of sleep disorders.
2. Identify situations calling for urgent or early intervention and refer at the optimum time to the appropriate centers / specialties, if required.
3. Perform various procedures related to a *specific area of* Sleep Medicine (e.g.: Polysomnography, Actigraphy, Cognitive Behavior Therapy, Sleep EEG, as applicable).
4. Should be able to read and interpret the PSG Graph independently.
5. Should be able to prescribe correct CPAP and BIPAP therapy and other drugs as needed.
6. Should know about troubleshooting of machine.
7. Provide adequate follow-up care to all patients belonging to a *specific category* of sleep disorders.
8. Plan and advice measures for the prevention and rehabilitation of patients belonging to a *specific category* of sleep disorders.
9. Counsel and guide (in a structured manner) patients and their caregivers regarding needs and implications of a *specific category* of sleep disorders.
10. Able to discharge effectively the supervised clinical care to the patients and comply with the standard operating protocols of the department and institute.

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11. Discharge effectively medico-legal and ethical responsibilities and practice his specialty ethically.
12. Effectively and coherently communicate with patients, care-givers, fellow professionals and scientific community as a member of multidisciplinary team.
13. Organize and participate in relief measures during situations of mass disasters leading to a *specific category* of sleep disorders
14. Should be effectively able to transfer conceptual and skills based knowledge related to the subject to the undergraduates, postgraduates and members of medical fraternity
15. Plan and perform clinical and medical audits
16. Demonstrate sufficient understanding of basic sciences related to the specialty
17. Demonstrate competence in basic concepts of research methodology and evidence- based medicine so as to interpret scientific data, conduct research and guide others
18. Able to represent department in various academic forum through presentations (paper/ poster/symposium) and research publications

COMPETENCIES:

Theoretical knowledge:

1. Comprehensively understands the concepts of a *specific category* of sleep disorders related to etiopathogenesis, symptomatology, diagnostic methods, investigations, management and prognostications.
2. Comprehensively understands a *specific category* sleep disorders from the perspectives of behavioral sciences, neuroscience, epidemiology, and genetics.
3. Has adequate knowledge of other medical disorders including Psychiatric, Neurological, Pulmonary, Medical, Otorhinolaryngological, and Dental from the perspectives of Sleep Medicine.
4. Able to coherently comprehend data gathered from laboratory investigations

Clinical Skills:

1. Gathering essential and accurate information about the patient.
2. Providing transfer of care that ensures seamless transitions.
3. Building up rapport and therapeutic alliance.
4. Interviewing patients/families about particulars of the medical condition for which they seek care, with specific attention to medical, behavioral, psychosocial and environmental correlates of disease.
5. Performing complete and accurate physical examinations.
6. Making informed diagnostic and therapeutic decisions.
7. Developing and carrying out management plans.
8. Advising and performing all medical procedures.
9. Providing effective health maintenance and anticipatory guidance.
10. Providing long term continuous care to the patients and caregivers.
11. Performing, scoring and interpreting data from relevant investigations viz., Home Sleep Testing, In Lab Attended Polysomnography, Actigraphy and Sleep Diary, as applicable
12. Performing manual titration of PAP devices, *if applicable*.
13. Performing various diagnostic methods using polysomnography.
14. Using information technology to optimize patient care.

Leadership Quality:

1. Able to lead the team consisting of colleagues, younger colleagues, paramedical staff, other mental health professionals and members from other medical disciplines in various settings
2. Able to effectively and coherently communicate with community, leaders, administrators and members of health care team using principles of evidence based medicine
3. Able to effectively participate and lead the team in various health care programs of national and international importance
4. Able to effectively organize and conduct scientific meetings and awareness programs

Administrative and managerial skills:

1. Able to manage and improve the routine work in the outpatient, in-patient settings of the department
2. Able to manage and maintain smooth flow of work in community, primary and secondary care setting settings to ensure optimal diagnosis and care to the patients.

1. REQUIREMENTS/TRAINING PLAN FOR PDF COURSE.

1. **Eligibility:-** Candidates for admission shall be required to have any one of the following qualifications.

- a) DM(Pulmonary Medicine/Pulmonary & Critical Care Medicine/Pulmonary, Critical Care & Sleep Medicine), MD/DNB in Respiratory Medicine/ Pulmonary Medicine/TB & Chest diseases/TB & Respiratory diseases/ General Medicine/ Internal Medicine/ Medicine/ Pediatrics degree recognized by the NMC/MCI.
- b) He/she having qualified for the postgraduate degree of any university recognized by the Medical Council of India or any other University recognized as equivalent there to by the Medical Council of India and obtained permanent registration from any of the state Medical Council NMC/MCI.

2. **Duration of the course:** One Year

3. ORGANIZATION OF TEACHING AND TRAINING

The course will be conducted in collaboration with the Department of Neurology, Department of Otorhinolaryngology, Department of Prosthodontics and Department of Psychiatry, KGMU, UP, Lucknow.

Learning in postgraduate degree course shall essentially be autonomous and self-directed. However, to stimulate the learning process and guiding the student, various academic activities shall be periodically conducted in the department.

A. Methods for the transfer of knowledge:

- a. Clinical Case Presentation: One per week.
- b. Seminar: One per week.
- c. Journal Club: One per week.
- d. Teaching Rounds- Two per week.
- e. Institutional level CME As per institute's schedule.
- f. Inter departmental clinical meets One per Quarter.
- g. An effort shall be made to develop integrated teaching with other department as decided by the Head of the Department.


Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
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- h. Faculty Lecture- Intra/Inter departmental-~~one~~ per month.
- i. Any other academic activities as decided by the Head of the Department.
- j. Activities outside institute: PDCC candidates are encouraged to attend conferences and workshops outside institute.
- k. Webinars/ Virtual knowledge network/ Podcasts/ Telemedicine broadcasted from and to other institutes of importance.
- l. Candidate has to work as Senior Resident in the department and will participate in In patient/out patient/emergency duties and other responsibilities as assigned by the department.

B. Methods of imparting clinical skills, conversion of theory in practice and documentation:

Skills related to use of various diagnostic and therapeutic procedures in Sleep Medicine will be imparted by:

OPD Teaching: PDF candidates are posted in the OPD and they are expected to work up and present the case to the consultant to develop competencies.

IPD teaching: PDF candidates are posted in the indoor ward on rotation basis. They work up the admitted cases in detail under the supervision.

Demonstration / Hands on Training: PDF candidates will be given hands on training in various procedures related to a *specific area* of Sleep Medicine practice, as applicable. It includes:

- a. Use of sleep diary and actigraphy data to assess sleep
- b. Recording and analysis of Polysomnography data during diagnostic study
 - i. Adults
 - ii. Pediatric
- c. Recording and analysis of Polysomnography data during diagnostic study with extended EEG montage
 - i. Adults
 - ii. Pediatric
- d. Conduction and analysis of data from Home Sleep Testing
- e. Manual titration of PAP device (CPAP, Bi-Level PAP)
- f. Conduction and interpretation of following tests using PSG:
 - i. Multiple Sleep Latency Test
 - ii. Maintenance of Wakefulness Test
 - iii. Suggested Immobilization Test
- g. Cognitive Behavior Therapy for Insomnia A log book shall be maintained for all the procedures.


Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
George's Medical University, U.P. Lucknow

4. SYLLABUS FOR PDF (Sleep Medicine)

Semester wise division of topics:

Considering the examination process as mentioned in section 6, syllabus is divided in two semesters. At the end of each semester, examination will be held from the syllabus mentioned for respective semester.

1. **Syllabus common for all semesters:**

2. **Review Articles/ Meta-analysis published in following journals during the semester**

- I. Sleep
- II. Sleep Medicine
- III. Journal of Clinical Sleep Medicine
- IV. Sleep and Breath
- V. North American Clinics of Sleep Medicine
- VI. Sleep and Vigilance
- VII. Journal of Sleep Research
- VIII. Sleep and Biological Rhythms

3. **Semester wise division of syllabus:**

Syllabus include following topics and their extensions. PDF is encouraged to read relevant literature from the reading material suggested in the Reading list

First Semester:

Instrumentation and Methodology:-

1. Polysomnography and Beyond
2. Sleep Stage Scoring
3. Central Nervous System Arousals & Cyclic Alternating Patterns
4. Neurologic Monitoring Techniques
5. Monitoring Techniques for Evaluating Suspected Sleep-Related Breathing Disorders
6. Home Sleep Testing
7. Cardiopulmonary Coupling Sleep Spectrograms
8. Pulse Wave Analysis During Sleep
9. Recording and Scoring Sleep-Related Movements
10. Evaluating Sleepiness
11. Chronobiologic Monitoring Techniques
12. Actigraphy

Normal Sleep and Its Variance

1. History of Sleep Physiology and Medicine
2. Normal Human Sleep: An Overview
3. Normal Aging
4. Daytime Sleepiness and Alertness
5. Sleep Deprivation
6. Genetics of Normal Human Sleep

Sleep Mechanisms and Phylogeny

1. Neural Control of Sleep in Mammals
2. Rapid Eye Movement Sleep
3. Novel Techniques for identifying Sleep Mechanisms and Disorders.
4. Sleep in Animals: A State of Adaptive Inactivity


Dr. Ved Parkash
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Physiology in Sleep

1. Relevance of Sleep Physiology for Sleep Medicine Clinicians
2. What Brain Imaging Reveals about Sleep Generation and Maintenance?
3. Cardiovascular Physiology and Coupling with Respiration: Central and Autonomic Regulation
4. Cardiovascular Physiology: Autonomic Control in Health and in Sleep Disorders
5. Respiratory Physiology: Central Neural Control of Respiratory Neurons and Motoneurons during Sleep
6. Respiratory Physiology: Understanding the Control of Ventilation
7. Physiology of Upper and Lower Airways
8. Respiratory Physiology: Sleep at High Altitudes
9. Sleep and Host Defense
10. Endocrine Physiology in Relation to Sleep and Sleep Disturbances
11. Thermoregulation in Sleep and Hibernation
12. Memory Processing in Relation to Sleep
13. Sensory and Motor Processing During Sleep and Wakefulness
14. Opiate Action on Sleep and Breathing
15. Pathophysiology of Sleep-wake Disturbances After Traumatic Brain Injury.

Chronobiology

1. Introduction: Master Circadian Clock and Master Circadian Rhythm
2. Anatomy of the Mammalian Circadian System
3. Physiology of the Mammalian Circadian System
4. Human Circadian Timing System and Sleep-Wake Regulation
5. Sleep Homeostasis and Models of Sleep Regulation
6. Circadian Rhythms in Sleepiness, Alertness, and Performance
7. Central and Peripheral Circadian Clocks
8. Circadian Dysregulation and Mental and Physical Health
9. Circadian Disorders of the Sleep-Wake Cycle

Pharmacology

1. Hypnotic Medications: Mechanisms of Action and Pharmacologic Effects
2. Clinical Pharmacology of Other Drugs Used as Hypnotics
3. Wake-Promoting Medications: Basic Mechanisms and Pharmacology
4. Wake-Promoting Medications: Efficacy and Adverse Effects
5. Drugs That Disturb Sleep and Wakefulness
6. Effects of Hypnotic Drugs on Driving Performance

Impact, Presentation, and Diagnosis

1. Approach to the Patient with Disordered Sleep
2. Cardinal Manifestations of Sleep Disorders
3. Physical Examination in Sleep Medicine
4. Use of Clinical Tools and Tests in Sleep Medicine
5. Classification of Sleep Disorders
6. Epidemiology of Sleep Medicine
7. Sleep Medicine, Public Policy, and Public Health
8. Sleep and Athletic Performance


Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
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Second Semester, as applicable to the candidate.

Sleep Breathing Disorders

1. Sleep Related Breathing Disorders: Classification
2. Sleep Breathing Disorders: Clinical Overview
3. Central Sleep Apnea: Definitions, and Pathophysiology, Genetics, and Epidemiology
4. Central Sleep Apnea: Diagnosis and Management
5. Anatomy and Physiology of Upper Airway Obstruction
6. Snoring and Pathologic Upper Airway Resistance Syndromes
7. Obstructive Sleep Apnea: Phenotypes and Genetics
8. Obstructive Sleep Apnea: Clinical Features, Evaluation, and Principles of Management
9. Positive Airway Pressure Treatment for Obstructive Sleep Apnea
10. Medical and Device Treatment for Obstructive Sleep Apnea: Alternative, Adjunctive, and Complementary Therapies
11. Obstructive Sleep Apnea and the Central Nervous System: Neural Adaptive Processes, Cognition and Performance
12. Obstructive Sleep Apnea and Metabolic Disorders
13. Overlap Syndromes of Sleep and Breathing Disorders
14. Obesity Hypoventilation Syndrome
15. Obstructive Sleep Apnea, Obesity, and Bariatric Surgery
16. Sleep and Breathing at High Altitude

Insomnia

1. Insomnia: Recent Developments and Future Directions
2. Insomnia: Epidemiology and Risk Factors
3. Etiology and Pathophysiology of Insomnia
4. Insomnia Diagnosis Assessment, and Evaluation
5. Insomnia and Health
6. Cognitive Behavioral Therapies for Insomnia I: Approaches and Efficacy
7. Psychological and Behavioral Treatments for Insomnia II: Implementation and Specific Population
8. Pharmacologic Treatment of Insomnia: Benzodiazepine Receptor Agonists
9. Pharmacologic Treatment of Insomnia: Other Medication

Disorders of Hypersomnolence

1. Narcolepsy: Genetic, Immunology, and Pathophysiology
2. Narcolepsy: Diagnosis and Management
3. Idiopathic Hypersomnia
4. Insufficient Sleep Syndrome
5. Kleine-Levin Syndrome

Sleep Related Movement Disorders:

1. Restless Legs Syndrome and Periodic Limb Movements During Sleep
2. Sleep Bruxism: Definition, Prevalence, Classification, Aetiology, and Consequences
3. Sleep Bruxism: Diagnostic Considerations
4. Other Sleep Related Movement Disorders


Dr. Veer Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
King George's Medical University, U.P. Lucknow

Parasomnia

1. Parasomnias: Overview and Approach
2. Non-Rapid Eye Movement Parasomnias: Clinical Spectrum, Diagnostic Features, and Management
3. Rapid Eye Movement Sleep Parasomnias
4. Nightmares and Dream Disturbances
5. Other Parasomnias
6. Sleep-Related Movement Disorders and Their Unique Motor Manifestations

5. LOG BOOK

1. PDF candidate shall maintain a record log book of the work carried out by them during the period of training.
2. The log book has to be maintained as recommended by the department, checked, and assessed periodically and signed by the senior resident weekly and consultant fortnightly and, checked and signed by the HOD at the end of every month.
3. Scanned copy of the log book will be kept in the departmental record for future purposes.

6. POSTER/RESEARCH PRESENTATION AND PUBLICATION:

During the training period PDF candidate has:

1. To present at least one poster presentation in a National conference.
2. To read at least one paper in a National conference.
3. To submit at least one research paper, which should be published/accepted for publication/sent for publication during the period of his postgraduate studies in National/ international indexed journal.
4. Data should have been collected during the training period

7. SCHEME OF ASSESSMENT:

Examination:

Formative Assessment:

Formative assessment includes various formal and informal assessment procedure by which evaluation of student's learning, comprehension, and academic progress is done by the teachers/faculty to improve student attainment. Formative assessment test (FAT) is called as "Formative" as it informs the in process teaching and learning modifications. FAT is an integral part of the effective teaching. The goal of the FAT is to collect information which can be used to improve the student learning process. Formative assessment is essentially positive in intent, directed towards promoting learning; it is therefore part of teaching. Validity and usefulness are paramount in formative assessment and should take precedence over concerns for reliability. The assessment scheme consists of three parts which has to be essentially completed by the candidates.

The scheme including:-

Part I:- Conduction of theory examination

Part II:- Feedback session on the theory performance

Part III:- Work place based clinical assessment

Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
All India Institute of Medical Sciences, U.P. Lucknow

Scheme of Formative assessment

PART – I CONDUCT OF THEORY EXAMINATION

Candidate has to appear for

Theory Exam and it will be held for One day.

PART – II

FEEDBACK SESSION ON THE THEORY EXAMINATION

Candidate has to appear for his/her Theory Exam

Assessment workshop

PART – III WORK PLACE BASED

CLINICAL ASSESSMENT

After Theory Examination,

Candidate has to appear for Clinical Assessment.

The performance of the resident during the training period should be monitored throughout the course and duly recorded in the books as evidence of the ability and daily work of the student.

1. Personal Attributes:

Behavior and Emotional Stability: Dependable, disciplined, dedicated, stable in emergency situation, shows positive approach.

Motivation and Initiative: Takes responsibility, innovation, enterprising, does not shirk duties or leave any work pending.

Honesty and Integrity : Truthful, admits mistakes, does not cook up information, has ethical conduct, exhibits good moral values, loyal to the institution.

Interpersonal Skills and leadership Quality: has compassionate attitude towards patients and attendants, gets on well with colleagues and paramedical staff, is respectful to senior, has good communication skills.

2. Clinical Work :

Availability: Punctual, available continuously on duty, responds promptly on calls and takes proper permission for leave.

Diligence: Dedicated, hardworking, does not shirk duties, leave no work pending, does not sit idle, competent in clinical case work up and management.

Academic ability: Intelligent, shows sound knowledge and skills, participates adequately in academic activities, and performs well in oral presentation and departmental tests.

Clinical Performance: Proficient in clinical presentations and case discussion during rounds and OPD work up. Preparing Documents of the case history/examination and progress notes in the file (daily notes, round discussion, investigations and management) Skill of performing bed side procedures and handling emergencies.

Academic Activity: Performance during presentation at Journal club/Seminar/Case discussion /Stat meeting and other academic sessions. Proficiency in skills as mention job responsibilities.

FINAL EXAMINATION:

The summative assessment of competence will be done in the form of fellowship exit Examination leading to the awards of the degree of Post Doctoral Fellowship in Sleep Medicine. The fellowship Exit Examination is a two-stage examination comprising the theory and practical part.


Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
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Theory examination:

1. The Theory Examination comprises of one paper with maximum marks of 100.
2. There are 10 short notes of 10 marks each in the theory paper.
3. Maximum time permitted is 3 hours.

Practical Examination:

1. Maximum marks : 300
2. Comprises of Clinical Examination and viva

The candidate has to score a minimum of 50% marks in aggregate i.e. 200 out of total 400 marks (Theory & Practical) with at least 50 % marks in theory examination to qualify in the fellowship Exit Exam.

The theory and Practical of Fellowship Exit Examination shall be conducted at the same examination center of the concerned specialty.

Declaration of Fellowship Exit Result:

1. Fellowship Exit Examination is a qualifying examination.
2. Results of fellowship Exit Examination (theory & practical) are declared as PASS/FAIL.
3. PDF degree is awarded to a trainee in the convocation of KGMU.

Eligibility Criteria to appear for the PDF Examination:**

1.Attendance :

The candidate must have attendance as per rules laid down by the academic council.

2.Learning of skills:

- i. At least 50 PSG scored independently with 80% agreement with Expert scoring
- ii. Out of 50 PSGs, 25 should be titration studies done independently to the level of Good to Optimal level, *as applicable*
- iii. Conducting and Reporting at least 5 cases of MSLT/MWT, as applicable
- iv. Conducting and Reporting at least 5 cases of Suggested Immobilization Test, as applicable
- v. At least 15 cases of Cognitive Behavior Therapy for insomnia completed and recorded, as applicable

3.Poster, Paper, Research Presentation and Publication:

- i. To present one poster presentation National/International Conference.
- ii. To read one paper at a National/International conference.
- iii. To submit at least one research papers, which should be published/accepted for publication/sent for publication during the period of his postgraduate studies in National/international indexed journal.
- iv. Data should have been collected during the training period.

4.Semester Examinations:

- i.The candidate must secure at least an average of 50% marks semester examination separately in theory as well as practical.
- ii.In the pre-professional examination, the candidate must secure at least 50% marks separately in theory as well as practical.

5. Formative assessment:

- The candidate must secure at least 50% marks in the formative assessment.

6. Recommendation from the Department

Department will provide in writing a certificate of good standing of the candidate for being eligible to appear in the professional examination


Dr. Ved Parkash
Head of Department
Department of Pulmonary & Critical Care Medicine
King George's Medical University, U.P. Lucknow

Suggested Reading List*

1. International Classification of Sleep Disorders. 3rd ed., Darien, IL : American Academy of Sleep Medicine; 2014.
2. Principles and Practice of Sleep Medicine. Meir Kryger, Thomas Roth, William Dement. (Eds) 6th Edition. Elsevier; 2017; Chicago
3. Principles and Practice of Pediatric Sleep Medicine. Stephen Sheldon, Richard Ferber, Meir Kryger David Goza. (Eds) 2 Edition. Elsevier; 2014; Chicago
4. Berry R, Albertario C, Harding S, for the American Academy of Sleep Medicine. The AASM Manual for the Scoring of Sleep and Associated Events: Rules, Terminology and Technical Specifications. Darien, IL: 2018
5. Gupta R, Pandi-Perumal SR, BaHammam A. Clinical Atlas of Polysomnography. Apple Academic Press. 1st Ed. New Jersey, USA. 2018
6. Chakroverty S, Thomas RJ. Atlas of Sleep Medicine. Elsevier. 2nd Ed. Philadelphia, PA. 2014
7. Edinger JD, Carney CE., Treatments that work. Overcoming insomnia: A cognitive-behavioral therapy approach. therapist guide. Oxford University Press. 2nd Ed. 2015

Guidelines:

1. Guidelines from World Sleep Society
2. Guidelines from American Academy of Sleep Medicine
3. Guidelines from European Sleep Society

Journals:

1. Sleep
2. Sleep Medicine
3. Journal of Clinical Sleep Medicine
4. Sleep and Breath
5. North American Clinics of Sleep Medicine
6. Sleep and Vigilance
7. Journal of Sleep Research
8. Sleep and Biological Rhythms

**Suggested reading list may be modified from time to time. Please use the latest edition of the book available in the market.*

***May be modified and finalized as per university rules.*


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Head of Department
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