



The Royal Australasian  
College of Physicians

# Sleep Medicine

## Advanced Training Curriculum

*Adult Medicine Division*





The Royal Australasian  
College of Physicians

# Physician Readiness for Expert Practice (PREP) Training Program

## Sleep Medicine Advanced Training Curriculum

TO BE USED IN CONJUNCTION WITH:

**Basic Training Curriculum – Adult Internal Medicine**  
**Professional Qualities Curriculum**



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The process was managed by the Curriculum Development Unit within the College's Education Deanery, who designed this document, drafted content material, organised and facilitated writing workshops, developed resource materials, and formatted the final document.

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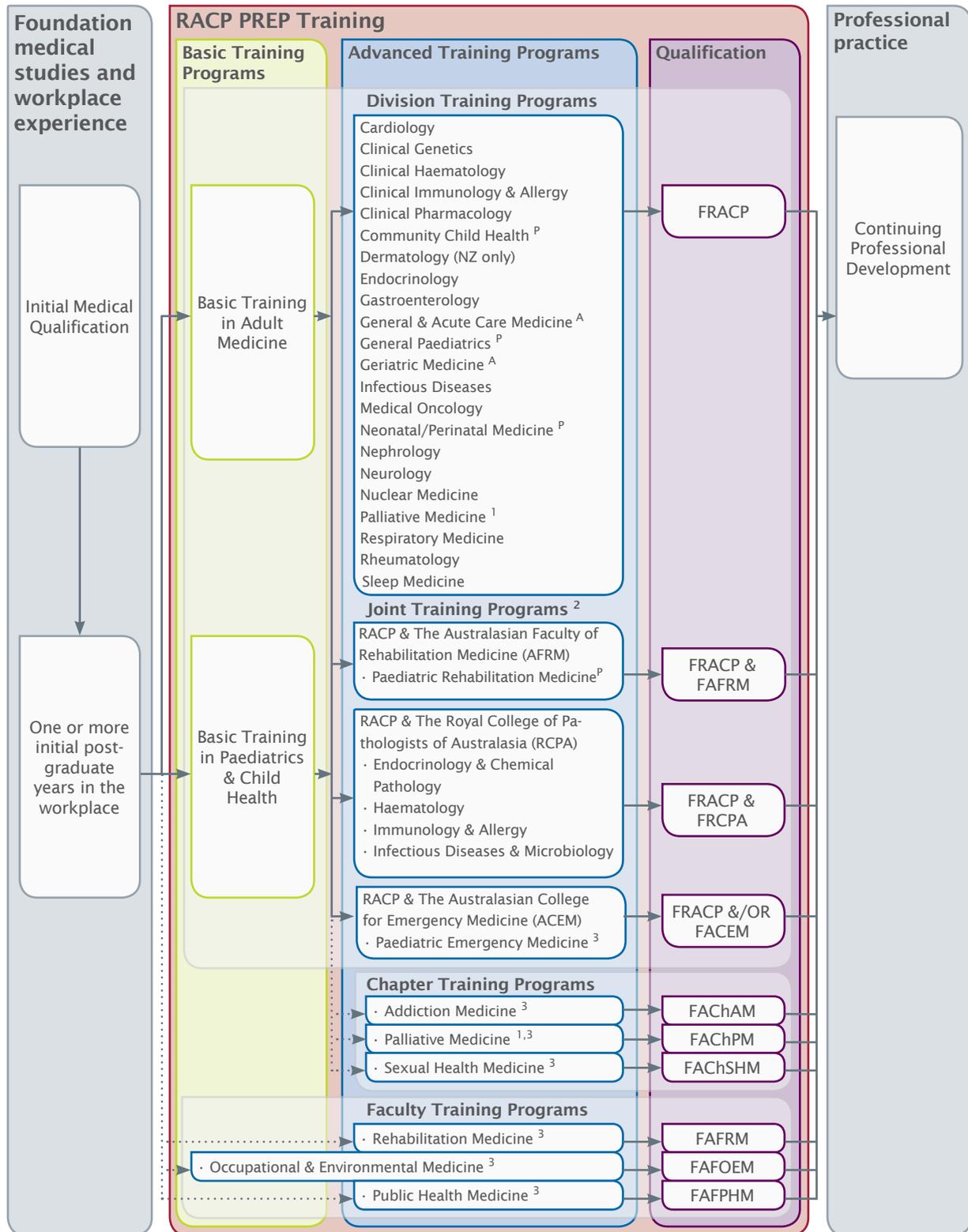
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Please note: No Domains, Themes or Learning Objectives have been updated for this edition; design changes ONLY.

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## RACP FELLOWSHIP TRAINING PATHWAYS AND THE CONTINUUM OF LEARNING



<sup>P</sup> Trainees must complete Basic Training in Paediatrics & Child Health to enter this program.

<sup>A</sup> Trainees must complete Basic Training in Adult Medicine to enter this program.

<sup>1</sup> Trainees who have entered Advanced Training in Palliative Medicine via a RACP Basic Training Program will be awarded FRACP upon completion and may subsequently be awarded FACHPM. Trainees who have NOT entered Advanced Training in Palliative Medicine via a RACP Basic Training Program will only be awarded FACHPM upon completion.

<sup>2</sup> The Child & Adolescent Psychiatry Joint Training Program with the Royal Australian and New Zealand College of Psychiatrists (RANZCP) is currently under review by the RACP and RANZCP and closed to new entrants at present.

<sup>3</sup> Alternative entry requirements exist for these training programs; please see the corresponding PREP Program Requirements Handbook for further information.

NB1: This diagram only depicts training programs that lead to Fellowship. Please see the RACP website for additional RACP training programs.

NB2: For further information on any of the above listed training programs, please see the corresponding PREP Program Requirements Handbook.

## OVERVIEW OF THE SPECIALTY

Sleep is a ubiquitous phenomenon in all animal species, sleep involves recurring partial disengagement from the surrounding environment, reduced sensory input, and generally decreased energy expenditure. In mammals, existence occurs in three states – wakefulness, non-rapid eye movement (NREM) sleep, and rapid eye movement (REM) sleep. Each of these states has its own distinct neuroanatomic, neurophysiologic, and neuropharmacologic mechanisms and behavioural features.

During the past fifty years, much has been learnt about the nature of sleep, the determinants of sleepiness and alertness, and sleep disorders. The discovery of human electroencephalography (EEG) and other advances in neurobiological measurement together with development of novel techniques in non-invasive investigation of cardio-respiratory function has greatly facilitated the pursuit of scientific research in sleep; and underpinned the clinical field of sleep medicine. In the past three decades, converging knowledge in the neurosciences, cardio-respiratory, metabolic physiology, and clinical epidemiological studies have established the speciality of sleep medicine. It is now well established that sleep disorders are common and may have great impact on normal human function.

Recent estimates suggest that over one-third of the community experience either chronic or intermittent sleep-related problems. Difficulties with sleep occur in both genders, all races, all socioeconomic groups, and such difficulties tend to increase with age. Untreated sleep disorders have a profound impact nationally in terms of reduced quality of life (QoL), lower productivity in school and workplace, increased morbidity and mortality, and decreased public safety due to accidents associated with excessive sleepiness. The USA estimates that their national cost of sleepiness and sleep disorders in 1990 amounted to \$15.9 billion direct costs and \$150 billion in indirect costs.

The International Classification of Sleep Disorders (ICSD) lists nearly one hundred known sleep disorders – underscoring the enormous advances made in the field of sleep medicine. In practice, most clinical sleep complaints are due to a relatively small percentage of these disorders. Disorders such as obstructive sleep apnoea (OSA) are more prevalent than asthma in adults. There is increasing awareness of the health consequences of sleep apnoea in adults; including higher rates of hypertension and vascular disease, impaired neurobehavioural functioning, and reduced QoL. Insomnia is endemic in modern society and typically is secondary to a range of psychological or medical disorders but also commonly manifests in a primary form. It is also well-established that we live in a sleep-deprived society. The increasing complexity of modern life results in allocation of fewer hours of sleep. There is increasing evidence that such restriction of sleep is associated with impaired performance and metabolic consequences. Sleep restriction impairs judgement, reasoning, reaction time, and learning.

Sleep disorders can impact on the management of illness in several specialty areas, including neurology, psychiatry, psychology, respiratory medicine, cardiology, endocrinology, otolaryngology, and internal medicine. However, the advances in scientific knowledge about sleep and the increased awareness of sleep disorders have led to evolution of the new speciality of sleep medicine. This has been recognised by new training programs in the field in North America, Europe, Australia, New Zealand, and Japan.

The advent of sleep medicine as a specialty is similar to other non-organ based medical specialties, such as clinical genetics and palliative care. Such non-organ based specialties develop when either a substantive new body of knowledge has arisen, such as clinical genetics, or recognition of cross-disciplinary care enhances patient wellbeing, e.g. palliative care. In some ways, sleep medicine, involves both these features. Sleep research has provided new information on a range of sleep disorders that are not 'owned' by any pre-existing specialty. Compartmentalisation of sleep disorders into organ based specialties can present problems in diagnosing complaints, such as sleepiness or abnormal movement during sleep, as differential diagnoses can cross organ based areas of competency.

The curriculum for sleep medicine provides a foundation for the development of competency in the diagnosis and management of individuals with sleep disorders. It involves components of knowledge from a range of existing medical disciplines as well as integrating new advances in sleep research. By providing such a basis for training, it advances the aims of improving patient care by ensuring healthy sleep.

This new discipline has a unique unifying effect for it is based not on a specific organ system but a distinct state of normal human existence – a state previously perhaps taken for granted.

Sleep medicine has come of age.

## Key features of the speciality and its practice

Sleep Medicine is a new non-organ based, cross-disciplinary specialty. It is underpinned by a substantial and rapidly expanding scientific knowledge base. The maintenance of health across the ages is critically dependant on obtaining adequate sleep. Acute and chronic sleep deprivation is associated with a range of adverse neurobehavioural, endocrine, and cardiovascular outcomes. Numerous specific sleep disorders have been identified which disrupt normal sleep and lead to disorders of respiration, cardiovascular or neural function. In addition, many major medical disorders, e.g. cardiac failure, renal failure, stroke, Parkinson's disease and parkinsonian syndrome, neuromuscular disease, multiple sclerosis, are known to adversely impact on sleep. Disturbed sleep or sleep-related gas exchange may correspondingly cause further decline in organ failure and QoL.

Effective treatments are available for most sleep disorders but they rely on the accurate identification of the disorder and health professionals who are skilled in their application.

Thus, sleep medicine physicians play a central role in delivery of health care to patients with primary and secondary sleep disorders.

### The Sleep Medicine Physician:

- understands the role of sleep in health and disease – particularly how growth/development and aging influence sleep and prevalence of sleep disorders
- understands the effects of sleep disorders on health and daily functioning
- has the skills to appropriately investigate and manage common sleep disorders.

### Current strengths and challenges of the specialty

- There is increasing awareness among specialty areas of medicine of the impact of sleep disorders, especially sleep disordered breathing, on non-sleep diseases, e.g. heart failure and diabetes mellitus.
- The prevalence of obesity is currently on the rise in Australia and New Zealand. A parallel increase in the prevalence of sleep disordered breathing in children and adults is anticipated.
- Sleep deprivation is endemic in western societies – health implications include mood disturbance, accidents/injury, increased insulin resistance, and neuroendocrine disturbance.
- There is increasing interest by industry and governmental regulatory authorities in the impact of sleep deprivation, e.g. resulting from shift work, fatigue and sleep disorders on workplace and road safety.
- There is increasing recognition of the interrelationship between sleep disorders and mental illness.
- There is increasing public awareness of the importance of sleep and sleep disorders.

## Strengths and weaknesses of current training process

### Weaknesses

- There are too few training posts in Australia and New Zealand that can provide broad exposure to and quality training in, the whole range of sleep disorders, particularly non-respiratory sleep disorders.
- Access to training posts is very restricted for non-respiratory trainees.

### Strengths

- Recognition by RACP that sleep medicine training requires dedicated time and curriculum.
- Site accreditation for sleep medicine training posts is undertaken by the Specialty Training Committee in Respiratory and Sleep Medicine.
- Dedicated training posts are available in Australia.

## **Societal, economic and political issues**

- The '24 hour' society has increased health problems associated with chronic sleep deprivation.
- As people increase their control of their immediate environment, they seek to control all aspects of their lives. This leads to the unrealistic expectation that sleep onset, maintenance, and wake time can be switched on and off like a television.
- There is a high prevalence of sleep disorders, much of which remains undiagnosed. The resultant effect is a serious public health problem in terms of accidents, lost productivity, cardiovascular disease, and reduced QoL.
- There are insufficient resources for diagnosis and management. This includes inadequate numbers of health professionals with specific training in sleep medicine.
- There is a need to develop more efficient ways to diagnose and manage sleep disorders.
- Pressure is exerted on the medical profession by pharmaceutical and sleep disorder device companies to implement diagnostic pathways and treatments that in many instances do not have solid evidence supporting effectiveness or cost effectiveness.
- In this environment there is the potential for increased volume but reduced quality of service delivery, e.g. cost-cutting using poorly validated diagnostic, or therapeutic agents.
- There is the need for a much greater level of funding for high quality clinical trials to establish the effectiveness and cost effectiveness of new devices, therapies and management pathways and to properly inform clinical practice.
- There are specific challenges in providing sleep services to regional and rural Australia and New Zealand.

## **Evolving developments and future directions of the speciality including technological advancements:**

- increasing use of computer technology and automated approaches to diagnosis/management of sleep disorders is likely to continue to strongly influence the development of sleep medicine
- simpler alternatives to full in-laboratory diagnostic polysomnography (PSG) will likely become routine for some types of patients in the future. The accuracy and most appropriate, cost-effective application of many of these devices is still to be established
- greater involvement of other health professionals, such as GPs and practice nurses, in the recognition and management of sleep disorders will likely occur. The education and training of these health professionals will require the input of sleep medicine specialists
- simple methods for monitoring vigilance/wakefulness are becoming available yet may not be adequately assessed for reliability
- biomarkers, e.g. serum cytokines, and orexin, for detecting sleepiness and sleep disorders will likely find their way into routine clinical practice as will new pharmaceuticals and biological modifying agents, e.g. to decrease daytime sleepiness, treat insomnia, or shift circadian phase.

## CURRICULUM OVERVIEW

### **Sleep Medicine – Advanced Training Curriculum**

This curriculum outlines the broad concepts, related learning objectives and the associated theoretical knowledge, clinical skills, attitudes and behaviours required and commonly used by adult sleep medicine physicians within Australia and New Zealand.

The purpose of Advanced Training is for trainees to build on the cognitive and practical skills acquired during Basic Training. At the completion of the Sleep Medicine Advanced Training Program, trainees should be competent to provide at consultant level, unsupervised comprehensive medical care in adult sleep medicine.

Attaining competency in all aspects of this curriculum is expected to take at least two years of core training in sleep medicine. Candidates may wish to undertake dual training in respiratory medicine, neurology or another subspeciality in addition to sleep medicine training. Training in respiratory medicine and neurology may equip trainees to accomplish the requirements of the sleep curriculum more expeditiously than other internal medicine training backgrounds.

It is expected that all teaching, learning and assessment associated with the Sleep Medicine Advanced Training Curriculum will be undertaken within the context of the physician's everyday clinical practice and will accommodate discipline-specific contexts and practices. As such, it will need to be implemented within the reality of current workplace and workforce issues and the needs of health service provision.

There may be learning objectives that overlap with or could easily relate to other domains; however, to avoid repetition, these have been assigned to only one area. It is anticipated that within the teaching/learning environment, the progression of each objective would be explored.

Note: The curricula should always be read in conjunction with the relevant College Training Handbook available on the College website.

### **Professional Qualities Curriculum**

The Professional Qualities Curriculum (PQC) outlines the range of concepts and specific learning objectives required by, and used by, all physicians, regardless of their specialty or area of expertise. It spans both the Basic and Advanced Training programs and is also used as a key component of the CPD program.

Together with the various Basic and Advanced Training Curricula, the PQC integrates and fully encompasses the diagnostic, clinical, and educative-based aspects of the physician's/paediatrician's daily practice.

Each of the concepts and objectives within the PQC will be taught, learnt, and assessed within the context of everyday clinical practice. Thus it is important that they be aligned with, and fully integrated into, the learning objectives within this curriculum.

## EXPECTED OUTCOMES AT THE COMPLETION OF TRAINING

Graduates from this training program will be equipped to function effectively within the current and emerging professional, medical, and societal contexts. At the completion of the Advanced Training Program in Sleep Medicine, as defined by this curriculum, it is expected that a new Fellow will have developed the clinical skills and have acquired the theoretical knowledge for competent sleep medicine practice. It is expected that a new Fellow will be able to:

- investigate and manage patients presenting with common sleep symptoms and problems
- identify less common sleep problems
- apply and interpret diagnostic investigations commonly used in the management of sleep disorders
- recognise the indications, benefits, risks and clinical processes of interventions used in the management of common sleep disorders and be proficient in performing these procedures
- diagnose and manage a range of sleep disorders as detailed in the curriculum
- demonstrate a compassionate, caring attitude to patients and their families and possess skills in communication, especially in regard to conveying bad news and in conflict resolution
- behave in a professional and ethical manner
- work with other health professionals and within a team where appropriate.

## CURRICULUM THEMES AND LEARNING OBJECTIVES

**Each of the curriculum documents have been developed using a common format, thereby ensuring a degree of consistency and approach across the spectrum of training.**

### Themes

The themes identify and link more specific aspects of learning into logical or related groups.

### Learning Objectives

The learning objectives outline the specific requirements of learning. They provide a focus for identifying and detailing the required knowledge, skills, and attitudes. They also provide a context for specifying assessment standards and criteria as well as providing a context for identifying a range of teaching and learning strategies.

## LEARNING OBJECTIVES TABLES

Theme 1	Sleep Physiology
	By the end of the training program the trainee will be able to explain the pathophysiology of normal and abnormal sleep
Learning Objectives	
1.1	Explain the features of sleep and circadian neurophysiology
1.2	Explain the physiology of sleep and breathing
1.3	Explain the anatomy and physiology of the upper airway

<b>Theme 2</b>	<b>Sleep Presentations</b> By the end of the training program the trainee will be able to diagnose and formulate a basic management plan for all sleep presentations
<b>Learning Objectives</b>	
<b>2.1</b>	Evaluate history and examination information to produce a differential diagnosis and formulate a management plan
<b>2.2</b>	Evaluate the relative contributions of sleep breathing vs. other sleep disorders to the patient's symptoms
<b>2.3</b>	Assess patients who present with complaints of sleep disorders
<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders
<b>Learning Objectives</b>	
<b>3.1</b>	Explain the pathophysiology, epidemiology, and public health implications of sleep disordered breathing (SDB) and its management
<b>3.2</b>	Evaluate and manage patients who present with OSA
<b>3.3</b>	Evaluate and manage patients who present with central sleep apnoea and sleep hypoventilation syndromes
<b>3.4</b>	Explain the indications, benefits, risks, and clinical processes of oxygen therapy
<b>3.5</b>	Evaluate and manage patients who present with complaints of insomnia
<b>3.6</b>	Evaluate and manage patients who present with complaints of abnormal sleep movements, behaviours, and experiences
<b>3.7</b>	Evaluate and manage patients who present with symptoms suggestive of disturbances of circadian rhythm
<b>3.8</b>	Evaluate patients who present with sleep symptoms suggestive of psychiatric disorders
<b>3.9</b>	Evaluate patients with excessive daytime sleepiness (EDS) and assess and treat the daytime consequences of sleep disorders
<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations
<b>Learning Objectives</b>	
<b>4.1</b>	Explain the principles of measurement parameters
<b>4.2</b>	Monitor patients with sleep disorders
<b>4.3</b>	Evaluate the indications for sleep investigations

<b>4.4</b>	Interpret raw data from PSG
<b>4.5</b>	Interpret and formulate an appropriate sleep investigation report
<b>4.6</b>	Interpret and formulate an appropriate report for limited channel sleep studies (Types 2-4)
<b>4.7</b>	Interpret and formulate a report on tests of sleep propensity
<b>4.8</b>	Explain the indications for and interpretation of sleep diaries
<b>4.9</b>	Explain the indications for and interpretation of actigraphy
<b>4.10</b>	Apply appropriate diagnostic procedures and interpret results related to measurement of respiratory function
<b>4.11</b>	Explain the indications for and interpretation of relevant radiological tests
<b>Theme 5</b>	<b>Clinical Leadership and Research</b> By the end of the training program the trainee will be able to demonstrate clinical leadership and undertake research in sleep medicine
<b>Learning Objectives</b>	
<b>5.1</b>	Demonstrate clinical leadership in a sleep laboratory
<b>5.2</b>	Identify and apply the methods used in clinical and/or basic research in sleep medicine
<b>5.3</b>	Plan and execute a clinical sleep research project

Theme 1	<b>Sleep Physiology</b> By the end of the training program the trainee will be able to explain the pathophysiology of normal and abnormal sleep	
Learning Objective 1.1	Explain the features of sleep and circadian neurophysiology	
Knowledge	Skills	
<ul style="list-style-type: none"> <li>• describe the circadian, ultradian, and homeostatic processes that underpin sleep</li> <li>• explain the concept of sleep stages, the fundamental distinctions between REM and NREM, and what function sleep stages might serve</li> <li>• describe the current theories regarding the neuroanatomical, neurobiological and neurophysiological basis for sleep and wakefulness and for REM vs. NREM sleep</li> <li>• summarise current knowledge concerning the molecular and neural basis of the circadian system</li> <li>• describe the anatomy and physiology of the circadian system</li> <li>• describe normal sleep architecture: including the current classification of sleep stages, normal arousal patterns, and normal sleep movements</li> <li>• explain how sleep structure and sleep architecture changes with age</li> <li>• identify the neuroanatomical and neurophysiological basis for arousal from sleep</li> <li>• describe the ontogeny of sleep and of breathing irregularities in sleep</li> <li>• explain how key cultural, social, and physical environmental factors impact on sleep</li> <li>• explain the effects of sleep deprivation in terms of health and daytime functioning</li> <li>• identify the interactions between sleep and wakefulness and the sensory nervous system, perception and cognition, the cardiovascular system, temperature regulation, and the endocrine system</li> <li>• describe how NREM and REM sleep and sleep arousal influence respiratory, cardiovascular, endocrine, and gastrointestinal physiology</li> <li>• describe how NREM and REM sleep and sleep arousal influence the autonomic nervous system</li> </ul>	<ul style="list-style-type: none"> <li>• apply knowledge of normal sleep to interpret sleep complaints</li> <li>• analyse and interpret PSG recordings to discern normal and abnormal patterns</li> <li>• recognise normal and abnormal circadian rhythms</li> <li>• teach patients, their families, health professionals and the public about the nature, and importance of normal sleep.</li> </ul>	

<b>Theme 1</b>	<b>Sleep Physiology</b> By the end of the training program the trainee will be able to explain the pathophysiology of normal and abnormal sleep	
<b>Learning Objective 1.1</b>	Explain the features of sleep and circadian neurophysiology	
	<ul style="list-style-type: none"> <li>describe how circulating hormones and inflammatory cytokines impact on sleep-wake patterns, and how pregnancy and menopause influence sleep</li> <li>explain how the circadian and homeostatic systems impact on sleep-wake cycles and the propensity to daytime sleepiness</li> <li>describe the psychophysiology of the drowsy state.</li> </ul>	

<b>Theme 1</b>	<b>Sleep Physiology</b> By the end of the training program the trainee will be able to explain the pathophysiology of normal and abnormal sleep	
<b>Learning Objective 1.2</b>	Explain the physiology of sleep and breathing	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe control of breathing during sleep with particular reference to: <ul style="list-style-type: none"> <li>the effect of sleep on respiratory neurons</li> <li>neuroanatomical and neurophysiologic basis of control of breathing</li> <li>central and peripheral chemoreceptors, and hypoxic and hypercapnic ventilatory responses</li> <li>peripheral and central afferents and inputs</li> <li>the central pattern generator as the basis for respiratory control</li> </ul> </li> <li>explain the mechanics of breathing in an adult</li> <li>recognise the changes in breathing that occur with sleep, and compare these in REM vs. NREM sleep</li> <li>recognise the effect of sleep on breathing in respiratory diseases and neuromuscular diseases.</li> </ul>	<ul style="list-style-type: none"> <li>recognise normal and abnormal breathing patterns during REM and NREM sleep.</li> </ul>	

<b>Theme 1</b>	<b>Sleep Physiology</b> By the end of the training program the trainee will be able to explain the pathophysiology of normal and abnormal sleep	
<b>Learning Objective 1.3</b>	Explain the anatomy and physiology of the upper airway	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the structure and functions of the upper airway</li> <li>describe the role of upper airway muscles in the control of breathing both asleep and awake</li> <li>explain the effects of craniofacial structure, obesity, upper airway muscle function, and ventilatory control on upper airway patency</li> <li>explain the concept that the pharyngeal airway is a collapsible tube</li> <li>describe the dynamic behaviour of the pharynx during breathing, both awake and asleep, and the concept of critical pressure</li> <li>explain the effect of nasal resistance on pharyngeal collapsibility.</li> </ul>	<ul style="list-style-type: none"> <li>determine the most appropriate investigations of upper airway structure and function.</li> </ul>	

<b>Theme 2</b>	<b>Sleep Presentations</b> By the end of the training program the trainee will be able to diagnose and formulate a basic management plan for all sleep presentations	
<b>Learning Objective 2.1</b>	Evaluate history and examination information to produce a differential diagnosis and formulate a management plan	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>explain the daytime symptoms and consequences of sleep disorders</li> <li>explain the night time symptoms and consequences of sleep disorders</li> <li>identify the physical signs that may be associated with different sleep disorders.</li> </ul>	<ul style="list-style-type: none"> <li>take a thorough sleep history from the patient, bed partner, and other relevant persons</li> <li>perform the relevant neurological, airway/respiratory, and general physical examinations</li> <li>weight and synthesise history and examination information to produce provisional and differential diagnosis and formulate and undertake management plan.</li> </ul>	

<b>Theme 2</b>	<b>Sleep Presentations</b> By the end of the training program the trainee will be able to diagnose and formulate a basic management plan for all sleep presentations	
<b>Learning Objective 2.2</b>	Evaluate the relative contributions of sleep breathing vs. other sleep disorders to the patient's symptoms	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>• identify the clinical features and differential diagnosis of sleep breathing disorders</li> <li>• explain how sleep disorders, such as sleep apnoea and restless legs syndrome (RLS) and circadian factors, may produce symptoms of insomnia</li> <li>• describe the interaction, overlap, and interrelationship of psychiatric disorders with sleep disorders</li> <li>• recognise the contents of the ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>• assess a patient and recognise typical and atypical features of sleep disordered breathing</li> <li>• recognise when the patient's symptoms are not consistent with a sleep breathing disorder</li> <li>• use and interpret ICSD.</li> </ul>	

<b>Theme 2</b>	<b>Sleep Presentations</b> By the end of the training program the trainee will be able to diagnose and formulate a basic management plan for all sleep presentations	
<b>Learning Objective 2.3</b>	Assess patients who present with complaints of sleep disorders	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>• explain the common causes of hypersomnia, including behavioural and environmental factors, medication use, and primary sleep disorders</li> <li>• explain the multiple causes of insomnia</li> <li>• describe how drug and alcohol use and other medical, and psychiatric illness may produce symptoms of insomnia</li> <li>• explain the principles of pharmacological management of sleep disorders</li> <li>• recognise the clinical features of RLS and periodic limb movement disorder (PLMD)</li> <li>• recognise the spectrum of parasomnias and the basic features of confusional arousals, sleepwalking, sleep terrors, and REM sleep behaviour disorder</li> <li>• describe differential diagnoses of parasomnias, including nocturnal frontal lobe epilepsy and psychiatric disorders</li> </ul>	<ul style="list-style-type: none"> <li>• assess severity of daytime consequences of sleep disorders</li> <li>• recognise features which may suggest parasomnia or seizure</li> <li>• deliver comprehensive sleep education to patients</li> <li>• explain factors that promote and disrupt good sleep</li> <li>• recognise when referral to another specialist is indicated.</li> </ul>	

<b>Theme 2</b>	<b>Sleep Presentations</b> By the end of the training program the trainee will be able to diagnose and formulate a basic management plan for all sleep presentations	
<b>Learning Objective 2.3</b>	Assess patients who present with complaints of sleep disorders	
	<ul style="list-style-type: none"> <li>describe the clinical features of delayed and advanced sleep phase syndrome and the clinical features of circadian rhythm disorders associated with jet lag and shift work</li> <li>identify the factors that inhibit or promote sleep, and apply these to discussion of modification of sleep schedules</li> <li>explain the concept of good sleep hygiene.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
<b>Learning Objective 3.1</b>	Explain the pathophysiology, epidemiology and public health implications of sleep disorder breathing (SDB), and its management	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the pathophysiology of SDB including the different theories of causation of both central and OSA, and sleep hypoventilation syndromes</li> <li>describe the epidemiology of SDB. Explain the effects of age, gender, obesity, and race on prevalence of SDB and recognise lesser known associations</li> <li>describe the public health implications of SDB including impact on: <ul style="list-style-type: none"> <li>cardiovascular morbidity and mortality</li> <li>metabolic syndrome, diabetes, obesity, and other co-morbid medical conditions</li> <li>driving, work performance, and emotional/psychological health</li> </ul> </li> <li>describe the association of excessive sleepiness and other daytime symptoms with SDB syndromes</li> <li>identify Australian and New Zealand 'Fitness to Drive' guidelines and local driver licensing requirements</li> <li>explain the occupational and lifestyle implications of SDB.</li> </ul>	<ul style="list-style-type: none"> <li>evaluate the role played by common contributors to SDB in a clinical context</li> <li>explain the public health implications of the high prevalence of SDB in a local context (hospital/local community) and on a national/international scale</li> <li>assess and advise patients with SDB regarding fitness to drive.</li> </ul>	

Theme 3	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
Learning Objective 3.2	Evaluate and manage patients who present with OSA	
Knowledge	Skills	
<ul style="list-style-type: none"> <li>• identify clinical features of OSA and the differential diagnoses of OSA symptoms</li> <li>• explain the relative strengths and weaknesses of full PSG vs. limited sleep study systems for diagnosing and managing OSA</li> <li>• explain the central role of continuous positive airway pressure (CPAP) in treating OSA including side-effects, factors affecting compliance and strategies for improving compliance with treatment</li> <li>• recognise the benefits, disadvantages, and evidence base for the other treatment options for OSA</li> <li>• recognise the role of other disciplines in the management of OSA.</li> </ul>	<ul style="list-style-type: none"> <li>• take a history and examination to elicit the common and less common clinical features of OSA</li> <li>• interpret findings from PSG and limited channel studies to determine the presence and severity of SDB</li> <li>• explain treatment options for OSA including CPAP, oral appliances, and surgery</li> <li>• explain CPAP to patients</li> <li>• initiate and manage CPAP, including:               <ul style="list-style-type: none"> <li>• selection and application of nasal and full face masks</li> <li>• adjustment of device settings</li> <li>• trouble shooting treatment problems</li> <li>• use of chin straps</li> <li>• use of humidification in circuits</li> </ul> </li> <li>• manage CPAP side-effects</li> <li>• apply strategies to improve CPAP compliance</li> <li>• evaluate clinical investigations and circumstances to formulate an individual treatment strategy</li> <li>• plan referrals to assist in the management of patients with OSA.</li> </ul>	

Theme 3	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
Learning Objective 3.3	Evaluate and manage patients who present with central sleep apnoea and sleep hypoventilation syndromes	
Knowledge	Skills	
<ul style="list-style-type: none"> <li>• describe the causes and pathophysiology of the various central sleep apnoea and sleep hypoventilation syndromes</li> <li>• identify:               <ul style="list-style-type: none"> <li>• at risk patient groups</li> <li>• associated clinical features</li> <li>• treatment options and their limitations</li> </ul> </li> <li>• describe the clinical diagnosis and management of OSA complicated by respiratory failure and/or right heart failure, e.g. where SDB overlaps with other diseases such as gross obesity or chronic obstructive pulmonary disease (COPD)</li> <li>• describe the role of sleep-related hypoventilation in acute and chronic hypercapnic respiratory failure, including neuromuscular/chest wall disease, reduced central drive, and diseases that chronically increase respiratory load, e.g. COPD</li> <li>• describe the role of sleep studies in diagnosis with particular reference to techniques used for assessing relative contributions from upper airway obstruction vs. 'pump' failure, and monitoring hypoventilation with transcutaneous CO<sub>2</sub></li> <li>• describe the indications for non-invasive vs. invasive ventilation for respiratory failure</li> <li>• describe the use of non-invasive positive pressure ventilation (nIPPV) in managing respiratory failure</li> <li>• describe the role of PSG and limited sleep studies in optimising non-invasive ventilator settings, patient-machine synchrony, and triggering and mask interface</li> <li>• describe the role of tracheostomy in airway management</li> <li>• recognise the role of community, rehabilitation, and palliative care services in the management of patients with chronic respiratory failure.</li> </ul>	<ul style="list-style-type: none"> <li>• select and interpret appropriate respiratory function tests and radiology investigations</li> <li>• assess the role of central sleep apnoea in causing symptoms, affecting prognosis, and formulate treatment options</li> <li>• assess the contribution of SDB to respiratory failure, with particular reference to nocturnal hypoventilation</li> <li>• distinguish between different causes of hypoventilation syndromes</li> <li>• manage nIPPV and other treatments for SDB complicated by hypercapnic respiratory failure, and/or heart failure</li> <li>• initiate and manage non-invasive ventilatory support, including:               <ul style="list-style-type: none"> <li>• selection and application of masks</li> <li>• adjustment of device settings</li> <li>• monitoring patient progress</li> <li>• trouble-shooting treatment problems</li> <li>• use of humidification circuits in nIPPV</li> </ul> </li> <li>• interpret PSG study data, including oximetry and TcCO<sub>2</sub></li> <li>• interpret PSG findings in patients on ventilatory support and make recommendations about treatment settings</li> <li>• manage basic tracheostomy care and refer for specialist assistance when indicated</li> <li>• assist with the management of weaning from a ventilator with nIPPV</li> <li>• manage the transition from in-hospital to home care applying knowledge of available support services and home care teams.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
<b>Learning Objective 3.4</b>	Explain the indications, benefits, risks, and clinical processes of oxygen therapy	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>• describe the physiology of ventilatory drive and gas exchange</li> <li>• recognise the indications and guidelines for use of oxygen therapy related to sleep breathing disorders</li> <li>• describe the assessment process for oxygen therapy</li> <li>• explain delivery systems and use of oxygen therapy in CPAP and nIPPV</li> <li>• describe the potential adverse effects of oxygen therapy.</li> </ul>	<ul style="list-style-type: none"> <li>• measure oxygen saturation and arterial oxygen tension</li> <li>• apply oxygen delivery systems, such as nasal prongs and masks etc</li> <li>• prescribe oxygen therapy.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
<b>Learning Objective 3.5</b>	Evaluate and manage patients who present with complaints of insomnia	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the different types of insomnia and their clinical features, e.g. psychophysiological insomnia, acute insomnia, irregular sleep schedules, insomnia associated with drug and alcohol use</li> <li>describe how other medical and psychiatric illness may produce symptoms of insomnia</li> <li>describe how other sleep disorders, such as sleep apnoea and RLS, may produce symptoms of insomnia</li> <li>describe how circadian factors, such as shift work, advanced and delayed sleep, may produce apparent insomnia symptoms</li> <li>recognise indications and limitations of assessment tools for insomnia, including actigraphy and PSG</li> <li>describe the theory underlying management strategies for insomnia</li> <li>identify the relevant sections in ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>take a comprehensive sleep history from the patient, bed partner, and other relevant persons</li> <li>perform the relevant neurological, airway/respiratory, and general physical examinations</li> <li>weight and synthesise history and examination information to produce a provisional and differential diagnosis and formulate and undertake a management plan</li> <li>explain the implementation of treatment strategies for insomnia, including sleep education and behavioural measures, such as stimulus control, bedtime restriction, cognitive behavioural therapy, and relaxation therapies</li> <li>explain and manage drug misuse and withdrawal</li> <li>prescribe pharmacological treatment for insomnia</li> <li>evaluate clinical circumstances, behavioural therapies and pharmacological treatments to formulate an individual treatment strategy</li> <li>recognise when referral to another specialist is indicated, particularly specialist psychologists</li> <li>use and interpret ICSD.</li> </ul>	

Theme 3	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
Learning Objective 3.6	Evaluate and manage patients who present with complaints of abnormal sleep movements, behaviours, and experiences	
Knowledge	Skills	
<ul style="list-style-type: none"> <li>• describe the clinical features and differential diagnosis of RLS and PLMD</li> <li>• describe the clinical features for NREM arousal disorders and their variants, e.g. confusional arousals, sleepwalking, and sleep terrors</li> <li>• describe the different features of nightmares and sleep terrors</li> <li>• describe clinical features of REM sleep behaviour disorder and its variants</li> <li>• identify the other parasomnias, see ICSD</li> <li>• recognise rhythmic movement disorder, sleep talking, hypnic jerks, and bruxism</li> <li>• identify seizure types found in sleep</li> <li>• describe the clinical features of nocturnal frontal lobe epilepsy</li> <li>• identify the relevant sections in ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>• take a comprehensive sleep history from the patient, bed partner, and other relevant persons</li> <li>• perform the relevant neurological, airway/ respiratory, and general physical examinations</li> <li>• weight and synthesise history and examination information to produce provisional and differential diagnosis and formulate and undertake management plan</li> <li>• apply an investigation plan for suspected RLS/ PLMD</li> <li>• interpret and report on typical PSG findings in NREM arousal disorders, REM sleep behaviour disorder, PLMD, and seizure disorders</li> <li>• explain role of video PSG and home video for diagnosis</li> <li>• prescribe and supervise drug management of RLS/ PLMD</li> <li>• explain non-pharmacological and pharmacological measures for management of NREM parasomnias and REM sleep behaviour disorder</li> <li>• recognise when referral to another specialist is indicated</li> <li>• use and interpret ICSD.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
<b>Learning Objective 3.7</b>	Evaluate and manage patients who present with symptoms suggestive of disturbances of circadian rhythm	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe normal sleep and circadian physiology</li> <li>describe the clinical features, evaluation and management of delayed and advanced sleep phase syndrome</li> <li>describe the clinical features, evaluation, and management associated with jet lag and shift work related circadian rhythm disorders</li> <li>identify the relevant sections in ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>take a comprehensive sleep history from the patient, bed partner, and other relevant persons</li> <li>interpret subjective and objective measures of circadian rhythm</li> <li>explain strategies for rapid adjustment to new schedules or time zones</li> <li>explain the management of altered sleep phase, e.g. light therapy, bedtime scheduling, and melatonin administration</li> <li>prescribe and give advice about use of pharmacotherapy, in particular melatonin and melatonin agonists</li> <li>use and interpret ICSD.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
<b>Learning Objective 3.8</b>	Evaluate patients who present with sleep symptoms suggestive of psychiatric disorders	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the clinical features of psychiatric disorders that may present with sleep related symptoms</li> <li>describe the clinical features and evaluation of anxiety disorders, mood disorders, and schizophrenia that are relevant to sleep disorders</li> <li>identify psychiatric disorders with sleep movements, behaviours, and experiences as symptoms</li> <li>identify pharmacological therapies for psychiatric disorders and their impact on sleep</li> <li>identify the relevant sections in ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>take a comprehensive sleep history from the patient, bed partner, and other relevant persons</li> <li>undertake relevant psychiatric history and evaluation</li> <li>deliver comprehensive sleep education and explain behavioural measures</li> <li>recognise when referral to another specialist is indicated</li> <li>explain the effects of pharmacotherapy on sleep</li> <li>use and interpret ICSD.</li> </ul>	

Theme 3	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders	
Learning Objective 3.9	Evaluate patients with excessive daytime sleepiness (EDS) and assess and treat the daytime consequences of sleep disorders	
Knowledge	Skills	
<ul style="list-style-type: none"> <li>• describe the normal neurobiology and neuropharmacology of sleep-wake regulation</li> <li>• describe the daytime neurocognitive consequences of abnormalities of sleep/wake regulation</li> <li>• explain how disease states and medication use can affect sleep-wake regulation and EDS</li> <li>• identify the important behavioural factors that influence subjective and objective sleepiness and neurocognitive function, e.g. chronic sleep restriction</li> <li>• recognise models of sleep deprivation and sleep disruption and the effects on daytime function</li> <li>• describe the indications for and the interpretation of common tests used in the evaluation of EDS and daytime consequences of sleep disorders</li> <li>• describe the limitations of current available tests for assessment of EDS and daytime consequences of sleep disorders, and identify current research developments</li> <li>• explain the behavioural and pharmacological strategies to manage EDS and the daytime consequences of sleep disorders</li> <li>• describe the occupational and lifestyle implications of EDS and other sleep disorders</li> <li>• describe the impact of sleep disorders on QoL and behaviour</li> <li>• explain the difference between fatigue and sleepiness/drowsiness</li> <li>• explain the impact of drowsiness/sleepiness on road safety</li> <li>• describe the common causes of persistent EDS in patients with treated OSA</li> <li>• recognise the primary hypersomnias of central origin that are associated with EDS, including narcolepsy and idiopathic central nervous system hypersomnolence</li> <li>• describe the genetics, presentation, and treatment of narcolepsy</li> </ul>	<ul style="list-style-type: none"> <li>• perform a thorough history, examination, and sleep specific assessment</li> <li>• synthesise patient symptoms and signs into a comprehensive differential diagnosis and plan further investigation if needed</li> <li>• interpret results of investigations with regard to EDS and daytime consequences of sleep disorders in the clinical context of the patient</li> <li>• explain behavioural strategies to reduce the symptoms of EDS and the daytime consequences of sleep disorders, e.g. sleep education and schedule modification</li> <li>• prescribe pharmacotherapy to reduce symptoms of EDS and daytime consequences of sleep disorders</li> <li>• explain occupational and lifestyle implications of EDS and daytime consequences of sleep disorders</li> <li>• assess and advise patients with EDS regarding fitness to drive.</li> </ul>	

<b>Theme 3</b>	<b>Sleep Disorders</b> By the end of the training program the trainee will be able to investigate, diagnose, and manage the broad range of sleep disorders
<b>Learning Objective 3.9</b>	Evaluate patients with excessive daytime sleepiness (EDS) and assess and treat the daytime consequences of sleep disorders
<ul style="list-style-type: none"> <li>describe other medical conditions that are associated with EDS</li> <li>recognise the actions of centrally acting pharmacological agents and their interactions with sleep.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations
<b>Learning Objective 4.1</b>	Explain the principles of measurement parameters
<b>Knowledge</b>	<b>Skills</b>
<ul style="list-style-type: none"> <li>identify commonly used measurements in PSG, and limited channel sleep studies</li> <li>describe the measurements used in the staging of sleep</li> <li>describe the different methods used to measure respiration during sleep</li> <li>recognise the sensitivity of the different measurements of respiration</li> <li>describe additional measurements used in conjunction with positive airway pressure studies</li> <li>describe the principles of continuous oximetry and measurements of CO<sub>2</sub> in sleep</li> <li>explain how periodic limb movements (PLMs) are measured</li> <li>describe other non-routine measurement methods, including diaphragmatic electromyography and oesophageal pressure monitoring</li> <li>describe the influence of other disease processes on common measurement parameters, notably obesity, respiratory muscle weakness, COPD, and stroke.</li> </ul>	<ul style="list-style-type: none"> <li>explain procedures of sleep investigations to patients</li> <li>explain the limitations of the common parameters used in sleep investigations</li> <li>interpret measurements across the range of sleep studies and determine adequacy of recording techniques</li> <li>determine the measurements indicated for further evaluation in the event of a non-diagnostic sleep study.</li> </ul>

<b>Theme 4</b>		<b>Sleep Measurement and Investigations</b>	
		By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.2</b>		Monitor patients with sleep disorders	
<b>Knowledge</b>		<b>Skills</b>	
<ul style="list-style-type: none"> <li>• explain and operate sleep monitoring equipment and describe recording features</li> <li>• identify the hardware and software of the computerised equipment used in a sleep service</li> <li>• explain and operate the sensor devices used to measure physiological variables as part of sleep studies</li> <li>• describe the technical and digital specifications used for routine PSG sleep recording</li> <li>• describe the rules for PSG display and display manipulation</li> <li>• explain the digital analysis techniques used in computerised PSG systems</li> <li>• describe the range of tests available to diagnose and manage sleep disorders</li> <li>• describe the rules for scoring sleep, arousals, cardiac events, movements, and respiratory events</li> <li>• describe the rules for scoring a Multiple Sleep Latency Test (MSLT) and Maintenance of Wakefulness Test (MWT)</li> <li>• explain infection control and prevention of cross-infection.</li> </ul>		<ul style="list-style-type: none"> <li>• explain sensors, filters, gain, sampling times (frequencies) and linearity of the equipment used in the sleep laboratory to technical and other staff</li> <li>• apply and locate sensors for monitoring sleep disorders</li> <li>• assess raw data and technical staff scoring</li> <li>• interpret measurements in positive airway pressure treatment studies and determine adequacy of treatment settings</li> <li>• justify interpretations of a MSLT and MWT</li> <li>• interpret video and EEG during a paroxysmal event at night and report differential diagnosis.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.3</b>	Evaluate the indications for sleep investigations	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>• evaluate the mechanisms, including clinical features and specific measurements of common sleep disorders</li> <li>• identify appropriate indications for investigation with Types 1- 4 sleep investigations</li> <li>• explain the indications and limitations for the common limited channel tests, Types 2-4, of sleep disordered breathing</li> <li>• recognise the indications and use of tests for sleep propensity, e.g. MSLT and MWT</li> <li>• describe circumstances when sleep investigations are not indicated</li> <li>• describe the common questionnaire measurements of sleepiness and know the limitations of these measurements</li> <li>• identify what measurements are possible and appropriate for disorders listed in the ICSD</li> <li>• explain that behavioural disorders are less likely to yield PSG abnormalities</li> <li>• describe the effects of medications and lifestyle on sleep wake patterns and how these factors can affect measurements of sleep propensity.</li> </ul>	<ul style="list-style-type: none"> <li>• perform a thorough history and examination</li> <li>• use and interpret appropriate questionnaire measurements for sleepiness and sleep disorders</li> <li>• appraise appropriateness of performing sleep investigations based on clinical features</li> <li>• appraise the level of sleep monitoring required</li> <li>• select appropriate investigations for EDS</li> <li>• evaluate whether the clinical situation necessitates repeat investigations.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.4</b>	Interpret raw data from PSG	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>• describe age appropriate normal sleep stage distribution and proportions</li> <li>• define respiratory events, e.g. apnoeas – obstructive, central and mixed, hypopnoeas, respiratory effort related arousals</li> <li>• define arousals</li> <li>• define PLMs</li> <li>• describe scoring criteria, recognise how different scoring criteria may alter results and therefore interpretation of severity</li> <li>• interpret raw data from sleep studies including the following parameters:               <ul style="list-style-type: none"> <li>• EEG</li> <li>• electro-oculogram</li> <li>• chin electromyography</li> <li>• leg electromyography derivations</li> <li>• airflow parameters</li> <li>• effort parameters</li> <li>• oxygen saturation</li> <li>• body position</li> <li>• airway pressures</li> <li>• measures of CO<sub>2</sub></li> <li>• electrocardiography.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• recognise sleep stages</li> <li>• recognise abnormal sleep EEG patterns</li> <li>• recognise arousals</li> <li>• recognise respiratory events during sleep</li> <li>• recognise hypoventilation during sleep</li> <li>• recognise PLMs</li> <li>• identify abnormalities in sleep architecture, respiration or body movements</li> <li>• determine optimal treatment settings from treatment sleep study parameters</li> <li>• identify pathological hypersomnolence or inability to maintain wakefulness based on tests of hypersomnolence.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.5</b>	Interpret and formulate an appropriate sleep investigation report	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the essential features of a sleep study report used in clinical decision making</li> <li>recognise normative data for: <ul style="list-style-type: none"> <li>sleep architecture</li> <li>sleep disordered breathing</li> <li>oxygenation</li> <li>PLMs during sleep</li> </ul> </li> <li>describe the criteria for defining the severity of sleep disordered breathing</li> <li>recognise the contents of the ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>generate reports for diagnostic and treatment sleep studies</li> <li>interpret results and formulate a management plan.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations	
<b>Learning Objective 4.6</b>	Interpret and formulate a report for limited channel sleep studies (Types 2-4)	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>explain the clinical context in which limited channel sleep studies might be useful, including tests performed in the home</li> <li>describe the range of limited channel sleep studies available</li> <li>describe the essential features of a sleep study report used in clinical decision making.</li> </ul>	<ul style="list-style-type: none"> <li>recognise the limitations and clinical applicability of various types of limited channel sleep studies, including overnight oximetry, cardio-respiratory sleep studies, and limited channel PSG studies</li> <li>interpret data from limited channel sleep studies, including demonstrated ability to: <ul style="list-style-type: none"> <li>review raw data to determine signal quality</li> <li>score sleep and respiratory parameters</li> </ul> </li> <li>generate a report for a limited channel sleep study</li> <li>interpret results and formulate a management plan</li> <li>determine the requirement for further evaluation in the event of an indeterminate limited channel sleep study.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations	
<b>Learning Objective 4.7</b>	Interpret and formulate a report on tests of sleep propensity	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the essential features of reports on tests of sleep propensity used in clinical decision making</li> <li>recognise normative data for: <ul style="list-style-type: none"> <li>sleep architecture</li> <li>tests of sleep propensity</li> </ul> </li> <li>describe the criteria for defining the severity of daytime sleepiness or inability to maintain wakefulness</li> <li>recognise the clinical context in which MSLT and MWT are indicated</li> <li>explain the nature of the above tests including details of how they are carried out</li> <li>explain the impact of MSLT and MWT findings on driving</li> <li>recognise the contents of the ICSD.</li> </ul>	<ul style="list-style-type: none"> <li>determine when a MSLT and MWT might be appropriate</li> <li>explain investigation options and their relative merits and complications</li> <li>generate reports of tests of sleep propensity</li> <li>interpret results and formulate a management plan</li> <li>identify EDS or inability to maintain wakefulness based on tests of sleep propensity.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations	
<b>Learning Objective 4.8</b>	Explain the indications for and interpretation of sleep diaries	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe normal sleep duration, timing, and influence of age</li> <li>describe circadian effects on sleep duration and timing.</li> </ul>	<ul style="list-style-type: none"> <li>recognise the indications for completion of a sleep diary</li> <li>explain the completion of a sleep diary to patients</li> <li>interpret sleep diaries applying knowledge of normal sleep duration and timing according to age</li> <li>use sleep diary information to inform treatment decisions.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, undertake, interpret, and report sleep investigations	
<b>Learning Objective 4.9</b>	Explain the indications for and interpretation of actigraphy	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe normal sleep duration, timing, and influence of age</li> <li>describe circadian effects on sleep duration and timing.</li> </ul>	<ul style="list-style-type: none"> <li>recognise the indications for actigraphy in the clinical context</li> <li>explain carrying out actigraphy to patients</li> <li>interpret actigraphy results applying knowledge of normal sleep duration and timing</li> <li>use actigraphy information to inform treatment decisions.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.10</b>	Apply appropriate diagnostic procedures and interpret results related to measurement of respiratory function	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the physiology related to respiratory function tests used in the assessment of sleep breathing disorders including: <ul style="list-style-type: none"> <li>spirometry</li> <li>lung volumes</li> <li>gas transfer</li> <li>tests of respiratory muscle strength</li> <li>arterial blood gases</li> <li>oximetry</li> </ul> </li> <li>identify reference standards for respiratory function tests</li> <li>describe the technical aspects of each test including limitations, especially operator-dependant issues</li> <li>explain infection control and prevention of cross-infection.</li> </ul>	<ul style="list-style-type: none"> <li>select and interpret appropriate respiratory function tests to investigate sleep breathing disorders</li> <li>interpret respiratory function tests in clinical settings</li> <li>perform spirometry</li> <li>use oximetry in the acute and chronic management of patients with sleep breathing disorders.</li> </ul>	

<b>Theme 4</b>	<b>Sleep Measurement and Investigations</b> By the end of the training program the trainee will be able to initiate, interpret, and report sleep investigations	
<b>Learning Objective 4.11</b>	Explain the indications for and interpretation of relevant radiological tests	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the indications for chest x-rays, cephalometry and brain CT and MRI scans</li> <li>recognise the principles and clinical use of cephalometry.</li> </ul>	<ul style="list-style-type: none"> <li>select and interpret appropriate radiological investigations</li> <li>interpret chest x-rays</li> <li>interpret the clinical implications of cerebral CT and MRI scans.</li> </ul>	

<b>Theme 5</b>	<b>Clinical Leadership and Research</b> By the end of the training program the trainee will be able to demonstrate clinical leadership and undertake research in sleep medicine	
<b>Learning Objective 5.1</b>	Demonstrate clinical leadership in a sleep laboratory	
<b>Knowledge</b>	<b>Skills</b>	
<ul style="list-style-type: none"> <li>describe the components of a quality assurance program for a sleep laboratory</li> <li>identify how to implement an outcomes based sleep service review program</li> <li>identify the skills required to provide clinical leadership to a sleep laboratory.</li> </ul>	<ul style="list-style-type: none"> <li>determine the requirement for further evaluation in the event of a normal diagnostic sleep study</li> <li>implement quality assurance programs for a sleep laboratory</li> <li>devise strategies to solve issues regarding scoring of raw data, calibration of equipment, and storage of raw and reported data</li> <li>develop protocols for the sleep laboratory</li> <li>implement an evidence based outcome analysis for the sleep laboratory</li> <li>demonstrate leadership skills to facilitate efficient running of a sleep laboratory.</li> </ul>	

<b>Theme 5</b>	<b>Clinical Leadership and Research</b> By the end of the training program the trainee will be able to demonstrate clinical leadership and undertake research in sleep medicine	
<b>Learning Objective 5.2</b>	Identify and apply the methods used in clinical and/or basic research in sleep medicine	
<b>Knowledge</b>		<b>Skills</b>
<ul style="list-style-type: none"> <li>• identify methods used in clinical and/or basic research in sleep medicine</li> <li>• identify components involved in conducting clinical and/or basic research, including study design, data analysis, and interpretation of research</li> <li>• describe the strengths and weaknesses of the various tools used in sleep research</li> <li>• identify the major journals which publish sleep related research.</li> </ul>		<ul style="list-style-type: none"> <li>• apply research methods, using the various tools employed in sleep research</li> <li>• critically evaluate sleep research and literature</li> <li>• appraise relevance of sleep research to clinical practice.</li> </ul>

<b>Theme 5</b>	<b>Clinical Leadership and Research</b> By the end of the training program the trainee will be able to demonstrate clinical leadership and undertake research in sleep medicine	
<b>Learning Objective 5.3</b>	Plan and execute a clinical sleep research project	
<b>Knowledge</b>		<b>Skills</b>
<ul style="list-style-type: none"> <li>• identify the types of study design</li> <li>• describe the ethical implications of sleep research and requirements to submit research projects for ethical approval</li> <li>• describe statistical analysis methods, including issues related to sample size and statistical power</li> <li>• describe measurement techniques</li> <li>• describe the methods of literature review</li> <li>• describe the requirements for publication of research projects.</li> </ul>		<ul style="list-style-type: none"> <li>• formulate a hypothesis</li> <li>• design a basic research protocol</li> <li>• critically evaluate published research studies</li> <li>• collect and analyse research data</li> <li>• construct and write an abstract containing data from a research study</li> <li>• present a research project to an audience in oral or poster format.</li> </ul>

