NUR IZZIANIE KAMARUDDIN
POLYSOMNOGRAPH TECHNOLOGIST

Sleep Disorders Unit
Singapore General Hospital Pte Ltd

"From my experience, the lack of CPAP education for patients is one of the main factors why they are not able to adapt to CPAP therapy."
-Nur Izzianie Kamaruddin

Personal opinion of a Sleep Technologist

Why did you decide to become a sleep technologist?

Before I joined SGH as a sleep technologist, I had no idea that there is a sleep lab in Singapore and there are people who need help with their sleep issues! After graduation, I stumbled upon a job opening to be part of Sleep Disorder Unit as a sleep technologist. I was curious and researched more on what sleep issues patients faced. I realised how interesting it is and how sleep has an impact on everyone. I am glad I am part of this amazing team. Seeing patients have such a drastic improvements in their quality of life because they are sleeping better makes my job very rewarding.

What is the most challenging aspect of your profession?

In my experience, newly-diagnosed patients are usually not prepared to start on Continuous Positive Airway Pressure (CPAP) therapy. We carry out CPAP counseling to educate patients on the benefits of CPAP therapy. Educating patients is really challenging – It requires a lot of patience and of course, understanding their sleep hygiene, listening to their needs and what comforts them the most.

What is the biggest change in the profession since you began?

I have seen a number of changes in recent years in the advancement of technology used in sleep medicine, which provides better diagnosis and therapy for the patients. There is also an increase in awareness of sleep disorders within the community and the public in Singapore.

What factors do you think affect patient adherence to CPAP?

From my experience, the lack of CPAP education for patients is one of the main factors why they are not able to adapt to CPAP therapy. Our role as sleep technologists is important in educating them on the benefits of CPAP therapy on their health and quality of life. Proper mask interface is essential for patient's comfort, allowing good adherence to the therapy. Support of family members also has an impact on the patient's performance while on CPAP therapy.

What factors tend to influence patients choice of mask?

In my experience, patients need to choose a comfortable mask for them to sleep with each night. A proper mask interface would be of a right size, fit and made of a comfortable material. Some patients are claustrophobic and may choose a simpler mask with less contact on the face. For those who are mouth breathers, a full-face mask would be more appropriate. It is important to allow the patient to try on different types of masks so they can compare and choose the perfect mask for themself.

Sleepmatters

Letters to the Editor:
Our readers are invited to write to the editor by volunteering content that they feel strongly about or feel needs coverage in a publication such as this. Your input is welcome and valued, particularly with case studies and hot topics currently debated in the field, as well as reviews of Asia Pacific congresses and conferences that you might like to share with the audience. Your letters will be featured in future issues of Sleepmatters, allowing an open forum between the experts, increasing the level of engagement amongst the audience.

Email us on sleepmatters@philips.com with your content.

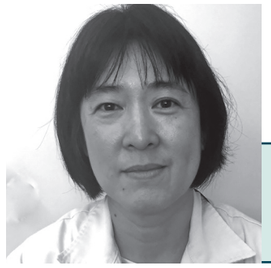
Sleepmatters is suported by

Issue 06 / July 2016

Sleepmatters

ASEAN SLEEP NEWSLETTER NEWS / OPINIONS / INSIGHTS

CONTENT



DR LOH EE CHIN
MB BCH BAO University College Galway, National University of Ireland; Post Graduate Diploma in Sport Medicine; Post Graduate Diploma in Palliative Medicine University of Wales; MRCP (Ireland)

Consultant palliative medicine, University Malaya Medical Center; Senior lecturer, University Malaya
Medical Adviser, Asisi Palliative Care Center; Board member of Malaysia Hospice Council; Medical advisor to MND Malaysia

"Sleep-disordered breathing develops as a result of progression of the disease that causes increased weakness of respiratory muscles especially the diaphragm.[8]"
-Dr. Loh

Interview with Dr. Loh on Sleep disorders in Motor Neuron Disease (MND) patients

What are the different types of Neuromuscular diseases?

The different types of Neuromuscular diseases are:
a) Motor Neuron Disease
b) Peripheral neuron disease
c) Neuromuscular junction disease - like Myasthenia Gravis
d) Inflammatory myopathies - like Guillan Barre Syndrome
e) Muscular dystrophies- Two common disorders are Duchenne and Becker Muscular dystrophy
f) Spinal cord injury
g) Diaphragm injury
h) Scoliosis

What is Motor Neuron Disease (MND)?

Motor Neuron Disease (MND) is a cluster of major degenerative diseases characterised by selective loss of neurons in motor cortex, cranial nerve, and anterior horn cells[3]. The most common MNDs are Amyotrophic Lateral Sclerosis (ALS) in adults and Spinal Muscular Atrophy (SMA) in children.[8]

There are 4 clinical patterns, consisting of upper motor neuron lesion, lower motor neuron lesion, mixed upper and lower motor neuron lesion and bulbar palsy. Although there are different types of MNDs which have different initial presentations, eventually, they will develop respiratory failure which is the main cause of death in MND patients.[1]

The annual incidence is between 1.5 and 2/100 000 and males are more commonly affected than females (1.4:1).[6] The incidence increases with age with a mean age of onset of 63 years. Over 50% of patients die within three years and 90% within five years of the onset of first symptoms. Early respiratory or bulbar symptoms and increasing age are adverse prognostic indicators.[5]

What sleep disorders are prevalent in MND patients?

Respiratory impairment is common in MND and may develop because of respiratory muscle weakness or impaired bulbar function causing aspiration.[5]

Sleep-disordered breathing, including nocturnal hypoventilation, central apneas, and obstructive apneas, is found in 17% to 76% of patients with ALS.[8]

What factors predispose MND patients to develop sleep-disordered breathing (SDB)?

SDB develops as a result of progression of the disease that causes increased weakness of respiratory muscles especially the diaphragm.[8]

What are the signs and symptoms of SDB in MND patients?

During the early stages of hypoventilation, patients usually are asymptomatic or have only minimal symptoms such as fatigue and disturbed sleep. Patients may be anxious and complain of dyspnoea with exertion. As the degree of hypoventilation progresses, patients develop dyspnoea at rest. Some patients may have disturbed sleep, daytime hypersomnolence and fatigue. In advanced disease, sweating at rest is seen in some cases.[4]

At night they may experience nocturia, nocturnal cramps, restless legs, orthopnea, choking, snoring and nightmares. The earliest signs would be tachypnea at rest, tachycardia and reduced chest expansion.

When do we recommend Non-invasive Ventilation (NIV) therapy for MND patients?

The following are indications for nocturnal NIV in MND patients (1 criteria is sufficient[1])

- Sleep oximetry demonstrates oxygen saturation ≤88% for at least 5min

The following are indications for daytime NIV in MND patients[1]

- Patients have increased fatigue that disturbs their daily activities and they develop daytime somnolence
- They develop tachypnea at rest[1] and reduced chest expansion

In my experience, one very important factor in initiating NIV in MND patients is the discussion between the patient and doctor regarding Advance Care Planning (ACP) which includes the use of NIV once the diagnosis is confirmed and announced to the patient and the relatives. In our experience, 50% of MND patients are not keen on any intervention such as NIV or intubation, even if they have developed hypoventilation. One of the challenges in starting NIV in MND patients in our country is getting an appointment for lung fuction test and sleep study to do NIV titration in hospitals, which takes at least 6 months. Also, in our country, home sleep testing providers have limited experience in doing home sleep studies on MND patients.

What are the benefits of early institution of NIV in MND patients?

Early institution of NIV has shown to improve survival and quality of life (QOL) in ALS patients.[2]

In our experience, the commonest feedback from MND patients is improved energy levels and better sleep at night. We have patients who start using daytime NIV despite normal PaCO2 as determined by arterial blood gas (ABG) and these 3 patients claim to have improved fatigue by 30 to 50%.

What are the objectives of NIV therapy in MND patients?

The main objective in NIV therapy is to improve fatigue, sleep, and correct oxygen desaturations and hypoventilation.[2]

In our experience, some patients are motivated when they are told that NIV will improve survival. However, to other patients, improved sleep and fatigue are more important, and they are not as keen on improved survival time as they feel that prolonged survival means prolonged suffering.

Please share your initiatives regarding management of MND patients in Malaysia.

Palliative care services started 8 years ago in our hospital. In the beginning, most of the MND patients referred to us had very advanced diseases, usually in their terminal phase or they were intubated and ventilated. The intubated patients would often request for us to extubate them as they did not want to prolong their suffering and burden on the family.

After having discussions with patients and their relatives, we found that one of the issues faced was that patients and family members were not given enough time to understand the disease and how it would progress over time. Nobody educated them regarding what to expect as the disease progressed, and what could be planned in advance in terms of treatment for respiratory problems.

We brought this information to the attention of our team members and neurologists. After becoming aware of this very important pitfall in MND patient management, it was decided that all MND patients will be referred to palliative care services once the diagnosis is confirmed and the neurologist will break the news to patients and their family.

The palliative care team will then follow-up and discuss the advance care plan with patients and their family members, giving them enough time to understand the disease and how it will progress over time. Since we started this approach, we had only 3 out of 70 patients who chose to be ventilated in the last 3 years. Half of these patients were keen to explore use of NIV as a form of treatment when they develop hypoventilation.

MND Malaysia is a non-profit organisation started in 2014. It provides loans of NIV devices to MND patients who cannot afford to buy the equipment. The society works closely with the hospital team, which include Neurologists, Rehabilitation physicians and Palliative medicine.

Currently the services provided to MND patients by the hospital are as follows:

- Combined neuro-palliative care clinic once weekly.
- Combined multidisciplinary clinic i.e. neuro-palliative care rehab clinic once a month.
- Phone helpline service for all MND patients under our hospital care. Patients are given a phone number to call if they have any queries or need any clarification regarding their disease, symptoms or titration of their medication. This service is very important as most family members will call when the patient is very sick. In such times, we can give necessary support through the phone or visit them at home if required. This service has helped us to avoid unnecessary hospital emergency admissions and intubations of MND patients.
- In-patient service for symptom assessment and NIV titration.

References: 1. Bradley MD, Orrell RW, Clarke J, et al. Outcome of ventilator support for acute respiratory failure in motor neuron disease. J Neurol Neurosurg Psychiatry, 2002. 72: 752-756. doi: 10.1136/jnnp.72.6.752. **2.** SChancellor AM, Warlow, CP. Adult onset motor neuron disease: worldwide mortality, incidence and distribution since 1950. J Neurol Neurosurg Psychiatry, 1992. 55(12): p. 1106-15. **3.** Cronin S, Hardiman O, Traynor BJ. Ethnic variation in the incidence of ALS: a systematic review. Neurology, 2007. 68(13): p. 1002-7. **4.** Fayyaz J. Hypoventilation syndrome clinical presentation. Medscape 2015. Retrieved from http://emedicine.medscape.com/article/304381-clinical. **5.** Howard RS, Wiles CM, Loh L. Respiratory complications and their management in motor neuron disease. Brain 1989; 112: 1155-70. **6.** Howard RS and Orrell RW. Management of motor neuron disease. Postgrad Med J, 2002. 78: 736-741. doi: 10.1136/pmj.78.926.736. **7.** Kushiha. Evaluation of sleep complaints, an issue of sleep medicine clinics. New York: Elsevier Health Sciences, 2014. **8.** Oztura I, Guilleminault C. Neuromuscular disorders and sleep. Current Neurology and Neuroscience Reports, 2005. 5(2): p.147-152.

DR HOANG NGUYEN HUU
MEDICAL DOCTOR (MD)

Attending Physician, Phoi Viet Respiratory Clinic, HCMC, Vietnam

"Obstructive apneas and hypopneas during REM sleep are longer in duration and are associated with significantly greater oxygen desaturation compared with events in non-REM sleep.[1] "

-Dr. Hoang Nguyen Huu

Interview with Dr. Hoang on REM Sleep Obstructive Sleep Apnea (OSA)

How many types of sleep do we have?

- Normal human sleep comprises two states – non - rapid eye movement (NREM) and rapid eye movement (REM) sleep – that alternate cyclically across a sleep episode.

- State characteristics are well defined: NREM sleep includes a variably synchronous cortical electroencephalogram (EEG; including sleep spindles, K-complexes, and slow waves) associated with low muscle tones and minimal psychological activity; the REM sleep EEG is desynchronised, muscles are atonic, and dreaming is typical.[6]

- Sleep begins in NREM and progresses through deeper three NREM stages (N1, N2, N3) before the first episode of REM sleep approximately 80 to 100 minutes later. NREM sleep and REM sleep cycle with a period of approximately 90 minutes.[6]

In which part of the night do NREM and REM sleep occur predominantly?

- NREM sleep and REM sleep continue to alternate through the night in cyclical fashion. REM sleep predominates in the later half of night and the episodes usually become longer across the night.[6]

- NREM sleep is usually 75% to 80% of sleep. [6]

- REM sleep is usually 20% to 25% of sleep, occurring in four to six discrete episodes.[6]

How do we define REM OSA?

There is no consensus definition of REM OSA. Differrent studies have used different definitions of REM OSA. Some of the definitions used for REM OSA are[1]

- AHI NREM<5events/hr and AHI REM at least 5events/hr with at least 30 min of REM Sleep[1]

- AHI REM/AHI NREM>2 and AHI NREM<15events/hr[1]

How does OSA occurring during REM sleep differ from OSA occurring during NREM sleep?

Obstructive apneas and hypopneas during REM sleep are longer in duration and are associated with significantly greater oxygen desaturation compared with events in non-REM sleep.[1]

Events in REM sleep occur more than non-REM sleep. [1]

How do we define adherence to Continuous Positive Airway Pressure (CPAP) therapy?

Adherence to CPAP is defined as usage greater or equal to 4 hours per night on 70% of nights during a consecutive 30 days, anytime during the first 3 months of initial usage.[5]

What are the findings of two recent studies regarding the relationship between REM OSA & Hypertension and REM OSA & Diabetes Mellitus?

- OSA in REM sleep is cross-sectionally and longitudinally associated with hypertension. Because REM sleep predominates in the early morning hours before typical awakening, the cardiovascular benefits of therapy may not be achieved with the typical CPAP use of 3–4 hours at the beginning of the night.[3]

- In prediabetics, 8-hour nightly CPAP treatment for 2-weeks improves glucose metabolism, as compared to placebo. Thus, CPAP treatment may be beneficial for metabolic risk reduction.[4]

- In Type 2 diabetes, OSA during REM sleep may influence long-term glycemic control. The metabolic benefits of CPAP therapy may not be achieved with the typical adherence of 4 hours per night.[2]

What is your advice for Diabetes Mellitus and hypertensive patients with OSA regarding the number of hrs of CPAP used at night?

My advice is as follows

- For Diabetes Mellitus patients with OSA, they should use CPAP for at least 8 hours every night.

- For hypertensive patients with OSA, they should use CPAP for at least 7 hours every night.

References: 1. Mokhlesi B; Punjabi NM. "REM-related" obstructive sleep apnea: an epiphenomenon or a clinically important entity? SLEEP 2012;35(1):5-7. **2.** Diabetes Care 2014;37:355–363. **3.** Am J Respir Crit Care Med Vol 190, Iss 10, pp 1158–1167, Nov 15, 2014. **4.** Am J Respir Crit Care Med. 2015 Jul 1;192(1):96-105. **5.** Indian J Med Res. 2010 Feb; 131: 245–258. **6.** Institute of Medicine (US) Committee on Sleep Medicine and Research; Colten HR, Altevogt BM, editors. Sleep Disorders and Sleep Deprivation: An Unmet Public Health Problem. Washington (DC): National Academies Press (US); 2006. 2, Sleep Physiology. Available from: http://www.ncbi.nlm.nih.gov/books/NBK19956/

DR KITTISAK SAWANYAWISUTH
MD, MAS, PHD, MHPE

Department of Medicine, Faculty of Medicine, Khon Kaen University, Thailand

"Yes, both thermistor and pressure transducers are recommended and either one of them can be used during HST.[1] "

-Dr. Kittisak

Interview with Dr. Kittisak on American Academy of Sleep Medicine (AASM) Scoring rules for Respiratory events during Home Sleep Testing (HST)

Which sensors are recommended to monitor air flow during HST?

Both nasal pressure transducers and thermal sensors (thermocouples and thermistors) are recommended devices to monitor air flow during HST. However, there is limited evidence in literatures to support these devices. Both devices have different advantages and disadvantages. The nasal pressure sensor is more accurate than thermal sensor but may not be appropriate for mouth breathers. Additionally, tidal volume sensors (i.e. RIPsum) can also be used.[1]

Does AASM recommend the use of both thermistor and pressure transducer to monitor airflow during HST?
Yes, both thermistor and pressure transducers are recommended and either one of them can be used during HST.[1]

Which sensors are recommended by AASM to monitor respiratory effort during HST?

There is limited data on appropriate sensors to monitor respiratory effort during HST. Data are based on in-laboratory PSG. Respiratory inductive plethysmography is recommended to monitor chest and abdomen efforts with good reproducibility and moderate agreement between observers. Note that this sensor should be calibrated with in-laboratory PSG and, to define hypopnea, should be used with other conjunctions i.e. oxygenation.[1]

How many belts are recommended by AASM to monitor respiratory effort during HST?

Single or dual thoracoabdominal belts are recommended. [1]

What is Respiratory Event Index (REI)? How is it related to AHI?

Both indexes have similar numerators (number of apnea plus hypopnea events) but the denominators are different. The REI has monitoring time as the denominator, while the AHI uses sleep time as the denominator.[1]

What is Monitoring Time (MT)? How do we determine MT?

The MT is the actual monitoring time by the HST. It can be calculated by total recording time minus periods of artifact and time the patient was awake as determined by actigraphy, body position sensor, respiratory pattern, or patient diary. The method used to determine MT should be stated in the official report.[1]

How is hypopnea defined if sleep is not recorded during HST?

There are several types of HST; sleep staging may or may not be defined. If sleep is not recorded, hypopnea is defined by reduction of nasal flow more than or equal to 30% for more than 10 seconds plus more than or equal to 3% or 4% drop of oxygen desaturation.[1]

How is hypopnea defined if sleep is recorded during HST?

There are several types of HST; sleep staging may or may not be defined. If sleep is recorded, hypopnea is defined by reduction of nasal flow more than or equal to 30% for more than 10 seconds, plus more than or equal 3% drop of oxygen desaturation and/or associated with arousal. The second criteria is reduction of nasal flow more than or equal to 30% for more than 10 seconds, plus more than or equal to 4% oxygen desaturation from pre-event baseline.[1]

References: 1. Berry R, Brooks R, Gamaldo C, et al. The AASM manual for the scoring of sleep and associated events: rules, terminology, and technical specification, Version 2.2. Darien, IL: American Academy of Sleep 2015.

DR TEOFILO L. LEE-CHIONG JR.
Professor of Medicine, National Jewish Health and University of Colorado Denver School of Medicine
Chief Medical Liaison for Philips Respironics
Denver, USA

"Patients with CSA have better sleep quality with ASV compared to CPAP."

-Dr. Teofilo

Dr. Teofilo's summary on studies relating to Sleep Disordered Breathing (SDB) and Positive Airway Pressure Therapy (PAP)

1 CPAP therapy is more effective than mandibular advancement devices in reducing daytime sleepiness in patients with OSA.

Meta-analysis of 67 published randomised controlled trials to May 31, 2015 (consisting of 6873 patients) showed that ESS scores were reduced by 2.5 and 1.7 points by CPAP and MAD, respectively, compared to controls.

Bratton DJ et al. Lancet Respir Med. 2015 Oct 20.

2 Expiratory pressure relief decreases CPAP efficacy for OSA if not corrected for at the time of CPAP titration.

Positive airway pressure devices (CPAP and APAP) with and without pressure relief features (PRF) were exposed to bench-simulated obstructive apneas. When PRF was activated, CPAP settings obtained without PRF were associated with lower mean pressures and more breathing events.

Zhu K et al. J Clin Sleep Med. 2015 Nov 6.

3 Management of sleep apnea using a telemedicine-based strategy is cost-effective.

Similar CPAP compliance, improvements in daytime sleepiness and QOL, adverse effects and patient satisfaction were found at 6 months for standard face-to-face care vs. telemedicine in a randomised controlled trial involving 139 patients. Total costs were lower with telemedicine.

Isetta V et al. Thorax. 2015 Nov;70(11):1054-61.

4 Adult patients with OSA who were unable to tolerate PAP therapy are unlikely to be referred for additional therapies.

Retrospective review of subsequent management of 616 patients documented PAP adherence in 42%. Only 35% of untreated patients were referred for other treatment options.

Russell JO et al. Otolaryngol Head Neck Surg. 2015 Nov;153(5):881-7.

5 Modifications to the current diagnostic criteria for split-night PSG are needed for Asian patients.

Researchers compared full-night PSG data with data from the first 2 hours of sleep in 134 patients with OSA (AHI≥5). There was no difference in AHI noted between the two data sets. Compared to the current American Academy of Sleep Medicine criterion of AHI≥40 in the first 2 hours to qualify for a split night study, the threshold of AHI≥30 had better diagnostic accuracy and higher correlation with the full night data.

Kim DK et al. Sleep Breath. 2015 Dec;19(4):1273-7.

6 CPAP therapy for OSA decreased risk of atrial fibrillation.

This meta-analysis included a search of databases till June 2015 and consisted of 8 studies involving 698 CPAP users and 549 non-CPAP users. Patients who were treated with CPAP had a 42% lower risk of atrial fibrillation. Benefits of CPAP therapy were more pronounced in male, younger and obese patients.

Qureshi WT et al. Am J Cardiol. 2015 Dec 1;116(11):1767-73.

7 Patients with CSA have better sleep quality with ASV compared to CPAP.

Twenty-seven patients with SDB (AHI of 55 ± 24 and central apnea index of 23 ± 18 at baseline) were enrolled in a prospective, multicenter, observational trial. Following an automated ASV titration without technician intervention, 26 patients used ASV at home for 3 months. Mean adherence was 4.2 h per night. Sleep quality was better on ASV than CPAP. Epworth Sleepiness Scale decreased significantly from 12.8 to 7.8.

Javaheri S et al. Chest. 2015 Dec 1;148(6):1454-61.

8 OSA is highly prevalent among patients with complaints of insomnia or restless legs symptoms.

This cohort consisted of 1900 adults who underwent PSG studies. Over 30% of patients with symptoms of insomnia or restless legs, but not sleep apnea, were found to have OSA (AHI > 5).

Bianchi MT et al. Acta Neurol Scand. 2016 Jan;133(1):61-7.

9 Obstructive sleep apnea is associated with significant adverse cognitive effects.

Results from 19 studies that utilised objective neuropsychological tests showed significant effects on various cognitive domains, including attention, perception, concept formation, construction, executive functioning, motor control and performance, non-verbal, working and verbal memory, psychomotor speed, speed of processing, and verbal functioning and reasoning.

Stranks EK et al. Arch Clin Neuropsychol. 2016 Jan 6.

10 Risk of incident chronic kidney disease is higher in patients with sleep apnea.

In a retrospective cohort study involving 8,687 adult patients with newly diagnosed sleep apnea and 34,747 matched subjects without sleep apnea, 157 and 298 new chronic kidney disease events were recorded in patients with and without sleep apnea, respectively, during a mean follow-up period of 3.9 years. Increased risk from sleep apnea was similar to that from HTN but less than from DM.

Chu H et al. Respirology. 2016 Jan 22.

11 Nasal CPAP therapy of OSA improves sexual function among male patients and their female partners.

Sexual functioning was evaluated prospectively in 21 male patients with moderate to severe OSA and erectile dysfunctions, and their female partners, before and after 12 weeks of nasal CPAP therapy. Treatment was associated with significantly higher International Index of Erectile Function (IIEF) scores among men, and Female Sexual Function Index in women.

Acar M et al. Eur Arch Otorhinolaryngol. 2016 Jan;273(1):133-7.

12 Heated breathing tube humidification does not increase treatment adherence, reduce adverse effects or improve quality of life compared to conventional heated humidification in patients with OSA using CPAP.

Investigators randomised 88 subjects with OSA using CPAP to 12 months of a heated humidifier and integrated heated breathing tube or a conventional heated humidifier. Improvements in quality of sleep and respiratory disturbances were similar in the two groups as were overall satisfaction, rate of side effects and quality of life. There was no statistically significant difference in duration of nightly CPAP use.

Galetke W et al. Respiration. 2016;91(1):18-25.

Events in the region and world June-Dec 2016

Sleep Disorder Society of Malaysia Meeting Nilai, Malaysia	3-5 Jun 2016
RESPINA, Jakarta Indonesia respina.org	24-27 Aug 2016
23rd Congress of the European Sleep Research Society, Bologna Italy www.esrs-congress.eu/esrs2016/welcome/invitation-letter.html	Sep 2016
Indonesian Sleep Medicine Meeting Bandung, Indonesia	2-4 Sep 2016
ERS International Congress, London UK erscongress.org/88-congress-2016/354-ers-international-congress-2016.html	3-7 Sep 2016
Sleep Down Under, Adelaide Australia www.sleep.org.au/conferences/sleep-downunder-2016	20-22 Oct 2016
Society of Anesthesia and Sleep Medicine (SASM) Annual Conference Chicago US	20-21 Oct 2016
APSR, Bangkok Thailand www.apsresp.org/congress/2016.html	12-15 Nov 2016
National Sleep Technology Course (NSTC), AIIMS Delhi www.issr.in	28-29 Nov 2016
OMICS: 2nd International Conference on Sleep Disorders and Medicine Chicago, USA www.sleepmedicine.global-summit.com	28-30 Nov 2016
National Sleep Medicine Course (NSMC), Dehradun India www.issr.in	2-3 Dec 2016

Sleepmatters past issues

To access the past issues of sleepmatters, please go to the below webpage
www.philips.com.sg/healthcare-consumer/sleep-apnea/resources#sleep-physicians-newsletters