

MAS Review

SomnoMed, Inc. Newsletter September 2007
Volume I, Issue I

What's New at SomnoMed?



Exciting things are on the horizon at SomnoMed, including the first edition of MAS Review, the SomnoMed, Inc. Newsletter. Through our relationship with you, the Dentist, we have identified ways that we can better serve you and your patients as well as the Sleep Physicians with whom you work. We have made significant changes to Patient

Educational Materials which are available to you free of charge by simply calling us. Dentist and Sleep Physician Literature is also available which acts as a guide to grow and sustain Dental Sleep Medicine into your practice. The new content attempts to address three concerns: Education on the SomnoMed MAS™, including taking the bite, ordering the device and filing for insurance; Networking with Sleep Physicians; and Advertising, both internal and external to patients. Please call 1-888-447-6673 or email ussales@somnomed.com for our entire collateral kit if you have not already received one. Coming in October, our website, www.somnomed.com, will have a new look and feel. The new design will be more user friendly both for you and your patients. As always, we at SomnoMed are looking for ways to better serve you and hope you utilize these improvements to your advantage.

Upcoming Continuing Education Courses

Orthodontic, TMJ and Sleep Conference
Las Vegas, NV – October 18-20, 2007

Dr. Barry Glassman – Dental Sleep Medicine Course
Allentown, PA – October 19-20, 2007

Dr. Barry Glassman-Introduction to Dental Sleep Medicine
Dallas, TX - December 7, 2007
Houston, TX - December 8, 2007
San Antonio - December 9, 2007

SomnoMed, Ltd. in the News

SomnoMed, Ltd. recently announced that it is developing a new SomnoMed MAS™ device to add to its suite of products, among which are the existing SomnoMed MAS™ Acrylic and the SomnoMed MAS™ Laminate. The new SomnoMed MAS™ will be made with a SMH Biomaterial, which is more elastic and does not require metal ball clasps, making the device more comfortable for the patient to wear. The new SomnoMed MAS™ is expected to make its debut at the September 2007 Worldsleep Conference in Cairns, Australia, the year's most important international conference focusing on the causes and treatment of sleep disorders. The SomnoMed MAS™ with the new material is expected to launch in Europe and the United States early next year. For this and other press releases, visit our website www.somnomed.com or call 1-888-447-6673.

Research



The SomnoMed MAS™ is the most widely researched MAS device on the market today. Its exceptional levels of patient acceptance, compliance, and treatment efficacy are backed by clinical research conducted by leading researchers, including

Peter Cistulli, MD, PhD of St. George Hospital and The University of New South Wales, Sydney Australia. One of the major advantages offered by the SomnoMed MAS™ is improved patient compliance.

- 96% of patients with proven OSA stated they would like to continue to use the SomnoMed MAS™
- 91% of patients reported substantial improvement in sleep quality with the SomnoMed MAS™
- 87.5% of patients reported nightly use of the SomnoMed MAS™

For full research articles, please call us at 1-888-447-6673 or email ussales@somnomed.com.

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From the Laboratory

Each SomnoMed MAS™ is designed and manufactured in accordance with Quality System Requirements (QSR). Our products are manufactured under a quality system that is designed to be fully compliant with QSR and we are subject to periodic FDA monitoring and oversight. In addition, SomnoMed's quality system is also designed to meet the International Quality System Standard ISO 13485, which is the globally accepted standard for the design, manufacture, and distribution of medical devices.

Special Feature Author, Dr. Barry Glassman



Barry Glassman, DMD, maintains a private practice in Allentown, PA, which is limited to chronic pain management, temporomandibular joint dysfunction and dental sleep medicine. He is a Diplomate of the American Academy of Craniofacial Pain, a Fellow of the International College of Craniomandibular Orthopedics, a Fellow of the Academy of Dentistry International, and a Diplomate of the American Academy of Pain Management. He is on staff at the Lehigh Valley Hospital where he serves as a resident instructor of Craniofacial Pain and Dysfunction and Dental Sleep Medicine. He is a Diplomate of the Academy of Dental Sleep Medicine, and is on staff at the Sacred Heart Hospital Sleep Disorder Center as well as serving as the Chief Dental Consultant to three other sleep centers in the Lehigh Valley. He is a popular and dynamic international speaker and serves as a guest lecturer throughout the year. He hosts in-house courses on both Pain Management and Sleep Disorders and is a frequent speaker at major chronic pain and joint dysfunction meetings. He speaks extensively throughout the year on joint dysfunction, chronic pain, headache, sleep disorders, and migraine headache. He was recently named Co Medical Director of the St. Lukes Hospital Headache Center and recently made a presentation to the Academy of Pain Management on "The Role of Parafunction and Ligament Insertion Injuries in Migraine Therapy." He has had several articles on pain management and sleep disorders published in both peer and non peer reviewed journals. His editorial recently appeared in *Cranio*, as well as articles on joint dysfunction and altered chewing patterns. SomnoMed is honored to have Dr. Barry Glassman present the first of a series, *Basic Principles of Dental Sleep Medicine*.

Special Feature

Basic Principles of Dental Sleep Medicine

By Dr. Barry Glassman

The sub specialty of Sleep Medicine is relatively new. The medical community is becoming more and more aware of the significant role that sleep disturbances play in our patient's general health. Physicians treating sleep disorders more clearly understand the relationship between sleep and chronic pain and appreciate the key role that sleep plays in healing from both micro trauma and macro trauma. Many have acknowledged a concern for the social problems associated with snoring. Most importantly a greater understanding of the serious co-morbidities of hypertension, myocardial infarctions, stroke, weight gain, diabetes, acid reflux (GERD), excessive daytime sleepiness leading to work and home

injuries and motor vehicle accidents, and stroke associated with sleep disturbed breathing has made the treatment of these conditions a high priority.

Although there is still much about our sleep physiology that remains a mystery, the science of sleep medicine has improved dramatically in recent years. While, like any new science, there is much to be learned, the recent awareness and improvements in therapy have already led to an improved quality of life for many of our patients. Yet, ninety percent of those people with sleep disturbed breathing remain undiagnosed.

The role that dentistry can play in this critical field is

Who's Who at SomnoMed

Dr. Peter Neustad	Chairman
John W. Truitt, III	Chief Executive Officer
Scott Mackinaw	Controller
Jodi Burke	Sales Manager
Walid Raad	Laboratory Manager
Gus Dorrell	Logistics Manager

extremely important. Because we as dentists tend to see our patients on a more regular basis than general physicians, it is very important that we learn to ask the right questions so that we can make the proper referrals. It is equally important that we as dentists avoid the pitfalls that can lead to improper therapy or a competitive environment with the very sleep physicians with whom we need to function in harmony in the best interest of our patients needs. Providing treatment for patients who snore without a complete and accurate diagnosis is problematic. Such therapy is no different than treating a patient's pain without understanding the underlying causes. If the snoring is resolved, the patient will then not seek further therapy. Consequently, his obstructive disorder will continue and he remains at risk for hypertension, stroke, and the other associated co-morbidities. This is an example of providing therapy without an accurate diagnosis and is akin to treating a patient for gingivitis without diagnosing the underlying bone loss. Of course the consequences of sleep disturbances are potentially more severe than tooth loss from underlying periodontitis.

This will be the first of several articles to serve as an introduction to dental sleep medicine. This first article will review the basics of sleep medicine. The second article will focus on the classification of sleep disorders. The third article will focus on dentistry's key role in providing a therapeutic option; in some cases the only viable option for the patient.

NORMAL SLEEP STAGES

Normal sleep is divided into two types: non-REM (NREM) and REM. REM stands for rapid eye movement. NREM sleep is divided into four distinct stages. Stages one through four each have their own characterizations based upon brain wave activity as recorded in an electroencephalogram. As one proceeds through the stages brain activity, as well as muscle tone, changes. A normal sleep pattern has four to five cycles throughout the night. NREM and REM sleep states alternate in cycles that usually last between ninety and one hundred and ten minutes. Normal NREM sleep occupies seventy five percent of the night and is characterized by a decrease in body temperature, blood pressure, breathing rate, and most physiologic functions. REM sleep is characterized by a highly active brain in an essentially paralyzed body.

As a result of this pattern, it is clear that normal sleep will present with specific relative time spent in each stage. Arousals (events that alter normal stage progression) will cause alteration of this normal architecture and are often responsible for sleep disturbances and hypersomnolence, which is defined as excessive daytime sleepiness. Arousals can be due to partial obstructions leading to snoring or difficult breathing, complete obstructions defined as apneas, or can have other non-obstructive causes such as pain, central apneas (stoppage of

breathing due to lack of respiratory effort as opposed to an obstruction), involuntary body movements or some psychological causes.

NREM sleep is divided into four stages. Stage one sleep usually occupies approximately five percent of the sleep cycle and is represented by a relatively active brain wave pattern. Stage two is represented by active brain waves that include specific patterns call K complexes and sleep spindles. This stage usually occupies forty-five percent of the sleep cycle. Stages three and four combined are referred to as slow wave sleep. Earlier in sleep medicine these stages were often referred to as "Delta" sleep. These stages represent progressively deeper sleep, are identified by slow high amplitude brain waves, and usually occupy approximately twenty five percent of the night's pattern. These percentages do alter as the patient ages with slow wave sleep decreasing significantly in the sixth and seventh decade. Various medications have an effect on specific sleep stages as well.

REM sleep is characterized by rapid eye movement, irregular breathing, relative muscle paralysis, and a decrease in body temperature. It is when most of our dreaming occurs, and it occupies twenty to twenty five percent of the normal sleep cycle.

The gold standard for diagnosis of sleep disorders is the polysomnogram (PSG). This overnight study is done in sleep laboratories. Patients are monitored through the night. The PSG monitors brain waves (EEG's to determine sleep stages), eye movements (EOG), muscle tone (EMG), nasal air flow, blood oxygen levels and respirations, cardiac data (EKG), respiratory effort, postural information, and the existence of snoring. From this study we can determine if there is an alteration in normal sleep architecture. The patient is monitored throughout the night and often videotaped. The sleep study is then scored and among the plethora of information received and calculated is the RDI (respiratory disturbance index). The RDI represents the number of hypopneas (which has several definitions, the most common of which is a four percent drop in blood oxygen levels) plus apneas (universally described as total obstruction of air flow for ten seconds or longer) per hour. EMG's on leg muscles are used to evaluate the existence of periodic leg movements. Recently, placement of the surface EMG electrodes on the elevator musculature has allowed us to look more closely at parafunction.

In the next issue of *MAS Review*, we will look at the Classification of Sleep Disorders.

The author would like to thank Dr. William Pistone, Mr. David Brooks, and Mr. Adrian Zacher for their contributions.