AMERICAN ACADEMY OF
DENTAL SLEEP MEDICINE

HILTON MINNEAPOLIS
MINNEAPOLIS, MINNESOTA

JUNE 10-12, 2011

FINAL PROGRAM
As Chair of the AADSM Program Committee, I would like to welcome you to the AADSM 20th Anniversary Meeting.

This year, the AADSM once again experienced major growth in both membership and meeting attendance and we are excited that you are able to partake in the excellent program that we have planned.

The 2011 program provides educational courses for all experience levels, information about the latest services and products in our exhibit hall and multiple opportunities to network with your colleagues. A few events that I would like to highlight are:

- The First time attendees’ breakfast on Saturday morning;
- The Dental Sleep Medicine Facility Accreditation presentation on Saturday afternoon;
- The AADSM General Meeting of the Membership on Saturday evening; and
- The AADSM 20th Anniversary Reception on Saturday evening.

We are pleased to continue offering poster and oral abstract presentations, with the Research Committee announcing this year’s research winners at the start of the general session on Friday afternoon.

It is the hope of the Program Committee that you are able to both renew and initiate relationships with colleagues from around the world while expanding your knowledge of dental sleep medicine.

Enjoy the meeting,

Sincerely,

Todd Morgan, DMD
Chair, Program Committee
American Academy of Dental Sleep Medicine Presents

INTRODUCTION TO DENTAL SLEEP MEDICINE
November 12-13, 2011 | Darien, IL
Course Chair: James Metz, DDS
Introduction to Dental Sleep Medicine will be offered again in the Winter of 2012
More Information Coming Soon!

ADVANCED DENTAL SLEEP MEDICINE
November 12-13, 2011 | Darien, IL
Course Chair: Steve Carstensen, DDS

Learn about dental sleep medicine, particularly oral appliance therapy for snoring and obstructive sleep apnea and how you can incorporate it into your dental practice. Visit the course exhibit hall to speak with industry experts about new products and services.

For more information and to register, please contact the AADSM at www.aadsm.org or call (630) 737-9705

The American Academy of Dental Sleep Medicine is an ADA CERP Recognized Provider. ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

These courses have been approved for ADA CERP credit.
LOCATION
The AADSM 20th Anniversary Meeting will be held June 10-12, 2011, at the Hilton Minneapolis in Minneapolis, Minnesota.

Hilton Minneapolis
1001 Marquette Avenue South
Minneapolis, Minnesota 55403
Phone: (612) 376-1000

REGISTRATION HOURS
The on-site registration hours at the Hilton Minneapolis are:
Friday, June 10  6:30am – 6:00pm
Saturday, June 11  7:00am – 6:00pm
Sunday, June 12  7:00am – 1:00pm

The registration desk is located on the 3rd Floor in the Red Wing Room.

Your registration includes admission to:
• General Sessions
• The 20th Anniversary Reception
• Industry Supported Events
• Exhibit Hall

Note: Educational courses and meet the professor sessions require additional fees.

GUEST PASSES
A registered attendee may elect to buy a guest pass. These guest passes are for family members only and allow entrance to the exhibit hall. Guests are not allowed to attend any of the general or ticketed sessions.

BADGE INFORMATION
All meeting participants and guests must wear a badge. Badges determine entrance to the general sessions and exhibit hall. Your cooperation with this policy is appreciated.

EXHIBIT HALL
The exhibit hall showcases booth displays of dental laboratories, appliance inventors and others. The exhibit hall is located in the Grand Ballroom – Salons ABC.

Exhibit hall hours are:
Friday, June 10  12:30pm – 6:00pm
Saturday, June 11  7:30am – 5:00pm
Sunday, June 12  7:30am – 1:30pm

PHOTOGRAPHY/RECORDING
Photography and/or recording of any kind, other than by the AADSM or registered press approved by the AADSM, of sessions, speakers and the exhibit hall is prohibited. No cameras will be allowed on the exhibit floor or in the meeting rooms at any time. Violation of this rule could result in the confiscation of the film or recording device and removal of individual from the meeting.

MINNEAPOLIS TOURISM
For information on Minneapolis, contact Meet Minneapolis via phone at (612) 767-8000 or visit their website at www.meetminneapolis.com.

SOCIETY INFORMATION
Details about membership and products from the American Academy of Dental Sleep Medicine are available at the registration desk located on the 3rd Floor in the Red Wing Room.

HOTEL INFORMATION
Questions regarding housing for the AADSM 20th Anniversary Meeting should be directed to:
AADSM Housing Bureau
c/o Meet Minneapolis
250 Marquette Ave S, Suite 1300
Minneapolis, MN  55401
Phone: 888-947-2233
E-mail: housing@meetminneapolis.com

PRESS ROOM
Members of the press are encouraged to utilize the press room, open on Saturday, June 11, 2011. The press room contains resources to assist reporters with their stories, including detailed information on the American Academy of Dental Sleep Medicine, meeting program books, and a computer and a fax machine. The press room is located on Level 3 in the Board Room 2.
CONTINUING EDUCATION

CONTINUING EDUCATION CREDIT HOURS (CE HOURS)
American Academy of Dental Sleep Medicine (AADSM) is an ADA CERP Recognized Provider.

ADA CERP is a service of the American Dental Association to assist dental professionals in identifying quality providers of continuing dental education. ADA CERP does not approve or endorse individual courses or instructors, nor does it imply acceptance of credit hours by boards of dentistry.

AADSM designates this activity for 19.5 continuing education credits.

The AADSM 20th Anniversary Meeting is open to all dentists, physicians, scientists and other health care professionals who treat or have an interest in treating patients with sleep related breathing disorders. The AADSM Program will be presented through lectures, panel discussions, open discussions and demonstrations.

The AADSM 20th Anniversary Meeting sessions teach participants a basic knowledge of dental sleep medicine; a knowledge of the epidemiology and pathophysiology of obstructive sleep apnea (OSA) in adults and children; new diagnostic tests for OSA; understanding of the use of mandibular repositioning and tongue retaining devices in the treatment of OSA; and a knowledge of surgical options in the treatment of OSA.

TARGET AUDIENCE

The program of the AADSM 20th Anniversary Meeting is intended for dental professionals who are currently treating patients with obstructive sleep apnea or snoring through the utilization of oral appliance therapy. The AADSM 20th Anniversary Meeting is also intended for dentists, physicians, and dental professionals who are seeking an in-depth knowledge to dental sleep medicine and oral appliance therapy.

AADSM 20TH ANNIVERSARY MEETING LEARNING OBJECTIVES

• Acquire knowledge about the management of obstructive sleep apnea in both adults and children;

• Discuss state-of-the-art knowledge of recent advances in dental sleep medicine and sleep apnea treatment;

• Review the relationship between obstructive sleep apnea, cardiovascular disease and other associated co-morbidities;

• Understand the evidence regarding long-term oral appliance therapy, including potential side effects and options for managing complications in patients with snoring and/or OSA; and

• Apply best practices for building and developing a successful dental sleep medicine practice, including an overview of proper patient management and development of care plans; creating awareness about sleep related breathing disorders and their treatments; positioning your practice as a provider of dental sleep medicine; and proper medical insurance billing.

To review speaker conflicts visit www.aadsm.org.
## Schedule at a Glance

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### Industry Supported Event

- **Sunday, June 6, 2022**
- **8:00 am - 2:30 pm**
- **Venue:** Conference Center

### LEGEND

- **Invited Lecturer**
- **Educational Course**
- **Meet the Professor**
- **Oral Presentation**
- **Poster Presentation**

### Continental Breakfast and Refreshment Breaks

Continental breakfast and refreshment breaks will be offered to attendees on each day of the annual meeting. All other meals are the responsibility of the attendee.

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**Final Program**
HONORARY MEMBERSHIP AWARD 2011
Colin E. Sullivan MD, PhD, FRACP

Dr. Sullivan is a pioneer who invented and demonstrated nasal CPAP as an effective treatment for sleep apnea. He is the author of over 90 scientific publications. He has contributed significantly to the development of sleep disorders medicine and his achievements are recognized internationally. In addition to his broad clinical and research interests, he has proven himself a creative inventor of devices for treating sleep apnea and is involved in their commercial development. He is professor of medicine and director of the David Read Laboratory at the University of Sydney Medical School, as well as a thoracic physician at the Royal Prince Alfred Hospital. In addition, he is a Fellow of the Royal Australian College of Physicians and director of the National SIDS Council Pediatric Sleep Laboratory at the Children’s Hospital, Westmead.

DISTINGUISHED SERVICE AWARD 2011
Jeffrey Prinsell, DMD, MD, Diplomate, ABDSM

Dr. Jeffrey Prinsell received his dental degree from Tufts University and medical degree from Vanderbilt University. He completed a general practice residency in dentistry, general surgery internship and an oral & maxillofacial (OMS) residency at Vanderbilt. Dr. Prinsell has authored numerous publications and lectured extensively on OSA surgery, including innovative surgical techniques, staging protocols and treatment algorithms. His most notable clinical research is a 100% success of MMA surgery in 50 consecutive patients (Chest 1999). His chapter on MMA surgery for OSA in the textbook Current Therapy in OMS is scheduled for publication in July. Dr. Prinsell is a past president of the AADSM, founding president of the ABDSM, past chair of the AAOMS CIG on OSA and served on the AASM standards of practice committee task force to update the practice parameters for OSA surgery. He is a Diplomate of the American Board of OMS, secretary of the Georgia Society of OMS, visiting faculty lecturer at Emory University and Vanderbilt University OMS residency programs, surgical consultant at several metro-Atlanta sleep centers, and maintains an OMS private practice in Marietta, Georgia, where he resides with his wife and two sons.

PIERRE ROBIN AWARD 2011
Fernanda Almeida, DDS, MSc, PhD

Dr. Fernanda Almeida, assistant professor at The University of British Columbia (UBC) Canada, teaches oral and maxillofacial radiology and dental sleep medicine. She has recently been awarded the WW Wood Teaching Award for her outstanding contributions to the educational progress of the undergraduate dental students at UBC. Dr. Almeida received her masters degree from the Federal University of São Paulo and doctorate (PhD) at the University of British Columbia, both in the field of dental sleep medicine. She also sees patients in a private practice restricted to the treatment of sleep related breathing disorders. She leads the area of dental sleep medicine with Dr. Alan Lowe and is part of the UBC sleep research team. She has published more than 35 peer reviewed papers and 4 book chapters. Her research is focused on dental sleep medicine, involving oral appliance side effects on dentition and TMJ, compliance, titration modalities and treatment outcomes. She also researches on upper airway imaging; pediatric and geriatric sleep disorder breathing.

Dr. Almeida is on the editorial board of the Journal of Clinical Sleep Medicine, and is an active reviewer for the journals SLEEP, Sleep Medicine, Journal of Clinical Sleep Medicine, Angle Orthodontics, Chest, Thorax and JADA. She is an associate editor of Sleep & Breathing. She is the founder and current chair of the AADSM research committee, where she has been working on increasing the quantity and quality of research presented and awarded by the AADSM. Dr. Almeida currently serves on various committees for AADSM, where she is a director-at large for the board of directors; member of the program committee for the past 6 years (chair of program committee from 2008-2009). She is the British Columbia representative dentist at the Canadian Sleep Society and has been highly involved with policies and procedures in dental sleep medicine practices.
The American Academy of Dental Sleep Medicine (AADSM) promotes the research of oral appliances (OA) and upper airway surgery for the treatment of sleep related breathing disorders (SRBD) and provides training and resources for those who work directly with patients. To fulfill its mission, the AADSM has an award competition to award students, dentists, physicians, nurses, psychologists and other specialties who conduct research in studies related to dental sleep medicine.

GRADUATE STUDENT RESEARCH AWARD (GSRA)

The Graduate Student Research Awards are for current and recent dental sleep medicine students (master/PhD/postdoctoral students/residents). Applicants will be required to submit an abstract through an application process after which the research committee will select up to three finalists to present their abstracts at the AADSM Annual Meeting.

RESEARCH EXCELLENCE AWARD

Out of the three finalists, one will be selected to receive the Research Excellence Award for having the most outstanding research project.

CLINICAL RESEARCH AWARD (CRA)

The Clinical Research Awards will be presented to clinicians, researchers or academicians in dental sleep medicine for outstanding research efforts. Applicants will be required to submit an abstract through an application process after which the research committee will select up to three finalists to present their abstracts at the AADSM Annual Meeting.

CLINICAL EXCELLENCE AWARD

Out of the three finalists, one will be selected to receive the Clinical Excellence Awards for having the most outstanding research project.

ALL APPLICATIONS AND ABSTRACTS ARE DUE BY DEC. 15, 2011. APPLICATION AND INFORMATION ABOUT THE AWARDS IS AVAILABLE AT THE AADSM WEBSITE, WWW.AADSM.ORG.

RESEARCH COMMITTEE

Fernanda R Almeida, DDS, PhD (Chair)
Peter Cistulli MBBS, PhD, MBA, FRACP
Reyes Enciso, BS, PhD
Kathleen A Ferguson, MD, PhD, FRACP
Aarnoud Hoekema, DDS, PhD
Samuel T Kuna, MD, FRACP
Gilles Lavigne, DDS, PhD
Alan A Lowe, DMD, PhD, FRCDC
Marie Marklund, DDS, PhD
Antonio Romero-Garcia, DDS, PhD
Satoru Tsuiki, DDS, PhD
JOEL BERGER, DDS, MD
Friday, June 10
5:00 PM – 6:00 PM

Dr. Berger holds both his undergraduate and doctorate degrees in dentistry from McGill University, (Montreal, Canada). He also holds a doctorate degree in general medicine from the University of Washington (Seattle). After completing his doctorate degrees, Dr. Berger entered the oral and maxillofacial surgery-training program at the University of Washington to complete his general surgery and oral and maxillofacial training. His specialties are outpatient maxillary and mandibular osteotomies. Dr. Berger is internationally recognized for his expertise in general oral surgery, dental implantology and the surgical treatment of sleep disorders. A well-known speaker and author, Dr. Berger regularly accompanies Dr. Aires in presenting their joint research on immediate function dental implants. He was also co-author of the immediate function dental implant research paper recently published in the International Journal of Implant Dentistry. Dr. Berger is a professor at the University of California, San Diego - Division of Plastic Surgery, as well as the Secretary of the California Coalition of Cleft and Craniofacial Center.

STEVE CARSTENSEN, DDS, DIPLOMATE, ABDSM
Saturday, June 11
4:30 PM – 5:30 PM

Dr. Carstensen earned his DDS from Baylor College of Dentistry in 1983, and is in private practice in Bellevue, WA. Beginning in 1988, he has been a continuous student at the Pankey Institute, was invited to join the visiting faculty in 1996, and serves on the advisory board to the L.D. Pankey Foundation. In 1998, he worked with his first dental appliance for sleep apnea, and in the past several years has helped hundreds of sleep apnea patients using oral appliance therapy. In 2006, he was awarded Diplomate status by the American Board of Dental Sleep Medicine. Steve has spent countless hours volunteering in organized dentistry for local and state dental societies, and currently serves on the American Dental Association’s council for annual sessions and the American Academy of Dental Sleep Medicine board of directors.

PETER CISTULLI, MD, PHD
Sunday, June 12
11:30 AM – 12:30 PM

Dr. Cistulli is professor of respiratory medicine at the University of Sydney and Royal North Shore Hospital, Sydney, Australia, where he heads the Department of Respiratory Medicine and Centre for Sleep Health and Research. He is also a research leader at the Woolcock Institute of Medical Research. For more than a decade his research has focused on dental aspects of obstructive sleep apnea (OSA) diagnosis and management. A feature of the work has been the conduct of rigorous scientific studies evaluating the clinical role of oral appliances in the management of OSA. This important work has been predominantly funded by the National Health and Medical Research Council of Australia and has resulted in a series of high impact publications and translation into clinical practice.

LESLIE DORT, DDS, DIPLOMATE, ABDSM
Saturday, June 11
8:00 AM – 9:00 AM

Dr. Dort graduated with a DDS from the University of Western Ontario in 1980. Although she has practiced general dentistry in both urban and rural locations in Canada, her work is now entirely focused on sleep. She became a Diplomate of the American Board of Dental Sleep Medicine in 2000 and completed a MSc in health research/health economics in 2004. She is a member of the University of Calgary faculty of medicine where she is engaged in research focused on diagnosis and treatment of sleep disordered breathing.
BERNARD FLEURY, MD
Friday, June 10
4:00PM – 5:00PM

Dr. Fleury graduated from the Faculté de Médecine Saint-louis Lariboisière, Paris, France in 1981. After a four-year fellowship in pneumology in Paris and a postgraduate training in respiratory physiology at the Meakins Christie Laboratories (McGill University, Montreal), his interest became focused on the treatment of sleep related breathing disorders. He is currently running the sleep disorders center of the Hôpital saint Antoine, Groupe Hospitalier Paris-Est, Université Pierre et Marie Curie, Paris, France. He works closely with the ENT department and with the orthodontics department of the faculty. He is engaged on research and publication focused on treatment of obstructive sleep apnea in adults, CPAP therapy, surgery and oral appliance.

DIRK PEVERNAGIE, MD
Sunday, June 12
9:00AM – 10:00AM

Dr. Pevernagie is currently medical director of the Kempenhaeghe Sleep Medicine Centre at Heeze, the Netherlands. He became a medical doctor in 1983 and trained in internal medicine and subsequently pulmonary medicine. After a period of research with John Shepard in 1990-1991 at the Mayo Clinic, he was appointed at the department of respiratory diseases of the Ghent University Hospital in Belgium where he founded the sleep clinic for adult patients. In 1994, he obtained a PhD in biomedical science on the topic body position and obstructive sleep apnea. He moved to Kempenhaeghe in 2007, to become the head of a tertiary referral sleep medicine centre. His main research is in the area of sleep related breathing disorders, in particular respiratory sounds, treatment of sleep apnea with positive pressure devices and mandibular advancement devices.

JEFFREY PRINSSELL, DMD, MD, DIPLOMATE, ABDSM
Friday, June 10
5:00PM – 6:00PM

Dr. Prinsell received his dental degree from Tufts University and medical degree from Vanderbilt University. He completed a general practice residency in dentistry, general surgery internship, and an oral and maxillofacial (OMS) residency at Vanderbilt. Dr. Prinsell has authored numerous publications and lectured extensively on OSA surgery, including innovative staging protocols and algorithms. His most notable clinical research is a 100% success of MMA surgery in 50 consecutive patients (Chest 199; 116: 1519-29). Dr. Prinsell is a past president of the AADSM, founding president of the ABDSM, past chair of the AAOMS CIG on OSA, and served on the AASM standards of practice committee task force to update the practice parameters for OSA surgery.
MARY BETH ROGERS
Sunday, June 12
1:30pm – 2:30pm
Ms. Rogers was executive director of the Sleep Disorders Dental Society now the American Academy of Dental Sleep Medicine from 1992-2002. She was the first recipient of the Academy’s Distinguished Service Award in 1998-1999. She has been actively involved in the dental sleep medicine field for almost 20 years. Currently, Mary Beth manages her husband Rob’s dental sleep medicine practice.

RICHARD SCHWAB, MD, FAASM
Sunday, June 12
10:30am – 11:30am
Dr. Schwab is full professor of medicine and co-director, Penn Sleep Center at the University of Pennsylvania Medical Center. Author of numerous articles on sleep, Dr. Schwab has served as a reviewer for journals such as SLEEP, Chest, and the American Journal of Critical Care Medicine. He earned his MD degree from the University of Pennsylvania (1983) and is certified in critical care, internal medicine, pulmonary disease and sleep medicine. Dr. Schwab has been recognized as a “Top Doc” by Philadelphia Magazine. He has developed and utilized sophisticated magnetic resonance imaging and volumetric analysis paradigms to study the mechanisms leading to sleep apnea. His research has resulted in seminal observations about the genetics, pathogenesis and treatment of obstructive sleep apnea, and he has shown the importance of the lateral pharyngeal walls in the pathogenesis of sleep apnea and that the volume of the upper airway soft tissue structures is larger in patients with sleep disordered breathing than normal controls.

STEVEN SCHERR, DDS, DIPLOMATE, ABDSM
Saturday, June 11
4:30pm – 5:30pm
Dr. Scherr is a graduate of the University of Maryland School of Dentistry and a Diplomate of the American Board of Dental Sleep Medicine (ABDSM). He is a private practice general dentist providing oral therapeutics for the treatment of sleep apnea, snoring, facial pain and temporomandibular disorders. He serves as the dental consultant to a number of central Maryland area sleep centers and is on staff at several area hospitals. He is the dental sleep medicine rotation director for both the Johns Hopkins Medical School sleep disorders fellowship program and the University of Maryland Medical School sleep disorders fellowship program. Dr. Scherr has co-authored several professional publications and is currently a member of the board of directors for both the AADSM and the ABDSM.

ROSE SHEATS, DMD, MPH
Saturday, June 11
3:30pm – 4:30pm
Dr. Sheats is an associate professor and graduate orthodontic program director at the University of North Carolina in Chapel Hill. A graduate of the Harvard School of Dental Medicine with an orthodontic certificate from the University of Florida and a Masters in Public Health from Johns Hopkins University, she is a Diplomate of the American Board of Orthodontics. She is the current chair of the education and curriculum committee of the AADSM and a member of the AADSM’s strategic planning advisory taskforce. Dr. Sheats research interests include pediatric sleep related breathing disorders. In 2010, one of her graduate students won the AADSM’s Graduate Student Research Award and Research Excellence Award for research in this area.
EVA SVANBORG, MD, PHD
Saturday, June 11
9:00AM – 10:00AM

Dr. Svanborg received her PhD in 1977 and MD in 1978 at Karolinska Institute, Stockholm, Sweden. She is a specialist in clinical neurophysiology since 1981 and associate professor in clinical neurophysiology, Karolinska Institute since 1990. In 1990, Dr. Svanborg became a founding member of the board of Swedish Sleep Research Society. Currently, she serves as chief physician and department head, at the department of clinical neurophysiology, University Hospital, Linköping. Dr. Svanborg’s research over the years has mainly concerned sleep apnea syndrome. She is author or co-author of 64 articles in peer-reviewed journals, and 16 review articles and book chapters on topics which include myasthenia gravis, non-convulsive epilepsy, spinal root lesions and basic neurophysiology. Her research groups (both in Stockholm and in Linköping) have been working with techniques to diagnose sleep apnea, long-term outcome of surgical treatment, natural evolution of obstructive sleep apnea and, chiefly, different types of nervous lesions in patients with snoring and sleep apnea.

EDWARD WEAVER, MD
Saturday, June 11
2:00PM – 3:00PM

Dr. Weaver is an associate professor of otolaryngology and the chief of sleep surgery at the University of Washington, in Seattle, Washington. He obtained his medical degree at Yale and completed his otolaryngology residency at Yale. He obtained his masters degree in public health (health services research) and completed a clinical research fellowship at the University of Washington. He is board certified in otolaryngology/head and neck surgery and in sleep medicine, and he practices the full range of sleep apnea surgery. He has an active clinical research program studying sleep apnea, and he is involved internationally in policy, research, and clinical activities in sleep surgery.

FATIGUE SYNDROME, FIBROMYALGIA, AND SLEEP-DISORDERED BREATHING. Much of his research has focused on twin studies using the University of Washington Twin Registry. He is currently funded by the NIH NHLBI where he is investigating the impact of sleep duration discordance on metabolic and genomic endpoints in identical twins. He is an associate editor of the Journal of Clinical Sleep Medicine and on the editorial board of SLEEP. He is a member of the board of directors of the American Academy of Sleep Medicine and current president of the American Board of Sleep Medicine.

EVA SVANBORG, MD, PHD
Saturday, June 11
2:15PM – 3:15PM

Dr. Sullivan is a pioneer who invented and demonstrated nasal CPAP as an effective treatment for sleep apnea. He is the author of over 90 scientific publications. He has contributed significantly to the development of sleep disorders medicine and his achievements are recognized internationally. In addition to his broad clinical and research interests, he has proven himself a creative inventor of devices for treating sleep apnea and is involved in their commercial development. He is professor of medicine and director of the David Read Laboratory at the University of Sydney Medical School, as well as a thoracic physician at the Royal Prince Alfred Hospital. In addition, he is a Fellow of the Royal Australian College of Physicians and director of the National SIDS Council Pediatric Sleep Laboratory at the Children’s Hospital, Westmead.

NATHANIEL WATSON, MD, MS, FAASM
Saturday, June 11
10:30AM – 11:30AM

Dr. Watson is a neurologist and board certified sleep specialist at the University of Washington, where he co-directs the sleep center. He is an active clinician and sleep researcher and has published papers on a broad range of topics including epilepsy, traumatic brain injury, chronic fatigue syndrome, fibromyalgia, and sleep-disordered breathing. Much of his research has focused on twin studies using the University of Washington Twin Registry. He is currently funded by the NIH NHLBI where he is investigating the impact of sleep duration discordance on metabolic and genomic endpoints in identical twins. He is an associate editor of the Journal of Clinical Sleep Medicine and on the editorial board of SLEEP. He is a member of the board of directors of the American Academy of Sleep Medicine and current president of the American Board of Sleep Medicine.
O3: SPECIALIZED TOPICS IN DENTAL SLEEP MEDICINE
Ticketed Event
8:00am – 12:30pm
Room: Grand Ballroom – Salon E

Overview: Participants can expect to improve their understanding of dental sleep medicine in specialized areas of expertise. Selected topics will be presented in depth, allowing the practitioner to improve their skill in understanding and/or treating complex concepts and cases.

Target Audience: Advanced

Speakers: Kathleen Bennett, DDS, Diplomate, ABDSM; Dena Garner, PhD; Jonathan Parker, DDS, Diplomate, ABDSM; Ronald Prehn, DDS, Diplomate, ABDSM; and Michael Simmons, DMD

Topics Include:
1. Explain the effects of mouthpiece use on gas exchange parameters during steady state runs in college males and females;
2. Discuss how to implement a multidisciplinary approach to dental sleep medicine;
3. Review the recent findings related to TMD and nocturnal bruxism; and
4. Assess a patient using information provided from a live patient demonstration.
GENERAL SESSIONS

EXHIBIT HALL OPEN
12:30PM – 6:00PM
ROOM: GRAND BALLROOM – SALONS ABC

INTRODUCTION, RESEARCH AWARDS AND WELCOME
1:30PM – 2:15PM
ROOM: GRAND BALLROOM – SALONS DEFG

Sheri Katz, DDS, AADSM President
Todd Morgan, DMD, Chair, AADSM Program Committee
Fernanda Almeida, DDS, PhD, Chair, AADSM Research Committee

THE FUTURE ROLE OF DENTISTS IN DIAGNOSIS AND MANAGEMENT OF SLEEP DISORDERED BREATHING
2:15PM – 3:15PM
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKER:
Colin E. Sullivan, MD, PhD, FRACP
AADSM Honorary Member and Keynote Speaker

OVERVIEW: Dr. Sullivan will present the current trends in the treatment of sleep apnea and forecast future trends.

TARGET AUDIENCE: Dentists

OBJECTIVES:
1. Provide an overview of sleep disordered breathing in children and adults;
2. Outline new models of management of sleep related breathing disorders and the growing role of dentists in the early identification of the problem; and
3. Discuss the potential for prevention through orthodontic management in childhood.

REFRESHMENT BREAK IN EXHIBIT HALL
3:15PM – 3:30PM

REFLECTIONS ON 20 YEARS OF ORAL APPLIANCE THERAPY
3:30PM – 4:00PM
ROOM: GRAND BALLROOM – SALONS DEFG

TITRATION PROCEDURES AND PROTOCOLS
4:00PM – 5:00PM
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKER: Bernard Fleury, MD

OVERVIEW: Dr. Fleury will review optimal mandibular advancement and how it must be evaluated by a titration procedure in the same way that it is performed for nCPAP therapy.

TARGET AUDIENCE: Dentists, orthodontists and sleep medicine specialists

OBJECTIVES:
1. Describe the relationship between mandibular advancement and the upper airways anatomy;
2. Describe the relationship between mandibular advancement and the upper airways mechanics;
3. Review a variety of titration strategies to determine the optimal mandibular position; and
4. Analyze the potential relationship between the degree of mandibular advancement and the dental side effects.

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CLINICAL RESEARCH AWARDS

Comparison of Subjective and Objective Measures of Oral Appliance Compliance during Treatment of Sleep-Disordered Breathing
Oliveir Vanderveken, MD, PhD

Impact of Oral Appliance to Treat OSA on Autonomic Cardiac Modulation–Pilot Study
Lilian Giannasi, PhD

Efficacy and Tolerance of Combination Therapy using MAS Supported Nasal Pillows
John White, DDS

GRADUATE STUDENT RESEARCH AWARDS

Effects of Two Rapid Palatal Expansion Protocols and Maxillary Protraction on the Sagittal Airway Dimensions of Cleft Patients
Fabiane Azeredo

A New Method of Evaluating Snoring and SDB with Mandibular Advancement Splint Therapy
Joachim Ngiam, BDS, MSD

Snoring Children Treatment with Orthodontic and Orthopedic Appliance – Randomized Clinical Trial
Walter Ribeiro Nunes, DDS, MS
General Sessions
FRIDAY, JUNE 10, 2011

Surgical Symposium: Surgical Interventions for Obstructive Sleep Apnea
5:00pm – 6:00pm
Room: Grand Ballroom – Salons DEFG

Speakers: Joel Berger, DDS, MD; Jeffrey Prinsell, DMD, MD, Diplomate, ABDSM; and Edward Weaver, MD

Overview: Faculty will discuss surgical options and 20-year data on mandibular advancement and present a review of how maxillo mandibular advancement as a single-staged extrapharyngeal surgery that enlarges the velo-orohypopharyngeal airway is highly therapeutic for obstructive sleep apnea.

Target Audience: Dentists

Objectives:
1. Describe the goals and guidelines for OSA surgery;
2. Recognize the many surgical procedures and their uses/indications in an anatomic site-specific approach;
3. Describe a comprehensive treatment algorithm that includes surgical staging and adjunctive procedures; and
4. Review the literature regarding success of extrapharyngeal surgery, including primary versus secondary maxillo mandibular advancement versus intrapharyngeal procedures.

AADSM Congratulates 2010 Diplomates of the ABDSM

Diplomate status in the ABDSM is a unique honor that recognizes special competency in dental sleep medicine and significant contributions to the field. The AADSM is pleased to welcome the following new ABDSM Diplomates:

- Terry Bennett, DMD, Diplomate, ABDSM
- Lily Eng, DDS, Diplomate, ABDSM
- Calvin Fritzsche, DDS, Diplomate, ABDSM
- James Hogg, DDS, Diplomate, ABDSM
- Manoj Maggan, DDS, Diplomate, ABDSM
- Steven Olmos, DDS, Diplomate, ABDSM
- Katherine Phillips, DDS, Diplomate, ABDSM
- Warren Schlott, DDS, Diplomate, ABDSM
- Gene Sherman, DDS, Diplomate, ABDSM
- John Tucker, DMD, Diplomate, ABDSM
- Daniel Winter, DDS, Diplomate, ABDSM

Industry-Supported Events

Nierman Practice Management
Marketing Solutions, Medical Billing and Software for Dental Sleep Medicine
6:00pm – 9:00pm
Room: Symphony Ballroom – Level 2

Presenters: Rose Nierman, RDH; and John H. Tucker, DMD, Diplomate, ABDSM

Overview: Medical billing and referrals leaving you sleepless? Attend our appreciation buffet dinner event. Marketing solutions for dental sleep medicine, medical billing and Medicare answers for your most sleep depriving questions. See live, web-based questionnaire & exams for easy diagnostic/narrative reports with precise documentation and letters needed for reimbursement and physician referrals.

Sleep Group Solutions
The Future of Dental Sleep Medicine in Your Practice: Real Time Practice Pearls for Treatment, Billing, Marketing and Software
7:00pm – 10:00pm
Room: Grand Ballroom: Salons EFG – Level 3

Presenters: Michael Gelb, DDS; Warren Groeshel; Marty Lipsey, DDS; Atul Malhotra, MD, FAASM; and Brock Rondeau, DDS

Overview: Dental teams need real information that can help them grow their dental sleep medicine practices. Join us for some thoughts from real practitioners involved in real practice situations and the business of dental sleep medicine. We’ll provide insight for your clinical routine as well as medical billing, marketing and software pearls for your sleep practice. Real practice tips from practicing experts in the field. An event you do not want to miss!

Note: Continuing Education Credit may also be available by attending industry supported events. These credits are made available by the event organizers and are not processed by the AADSM. Please contact Nierman Practice Management or Sleep Group Solutions for more information.
**EXHIBIT HALL OPEN**
7:30am – 6:00pm  
**ROOM: GRand BallRoom – SalonS ABC**

**DENTAL SLEEP MEDICINE: A YEAR IN REVIEW**
8:00am – 9:00am  
**ROOM: GRand BallRoom – SalonS dEFG**

**SPEAKER:** Leslie Dort, DDS, Diplomate, ABDSM

**OVERVIEW:** Dr. Dort will review the literature relevant to dental sleep medicine published in the last twelve months.

**TARGET AUDIENCE:** Dentists interested in dental sleep medicine

**OBJECTIVES:**
1. Summarize the peer-reviewed publications of the past year focused on dental sleep medicine; and
2. Assess the clinical implications of recent publications pertinent to dental sleep medicine.

**NEUROPATHY OF THE SOFT PALATE ASSOCIATED WITH SNORING AND OBSTRUCTIVE SLEEP APNEA**
9:00am – 10:00am  
**ROOM: GRand BallRoom – SalonS dEFG**

**SPEAKER:** Eva Svanborg, MD, PhD

**OVERVIEW:** Dr. Svanborg will review how patients with snoring and obstructive sleep apnea have evidence of progressive nervous lesions on the upper airway.

**TARGET AUDIENCE:** Dentists working with obstructive sleep apnea patients

**OBJECTIVES:**
1. Review the natural history of snoring, rhoncopathy, and obstructive sleep apnea;  
2. Describe the pathophysiology of obstructive sleep apnea;  
3. Explain how motor nervous lesions in obstructive sleep apnea cause partial paresis of dilating upper airway muscles; and
4. Describe sensory nervous lesions in the upper airway of snorers and obstructive sleep apnea patients.

**REFRESHMENT BREAK IN EXHIBIT HALL**
10:00am – 10:30am

**POSTER VIEWING**
10:00am – 10:30am

All posters are available for viewing in Grand Ballroom Salons DEFG throughout the meeting. Presenters of the posters listed below are available for questions and comments from 10:00am – 10:30am on Saturday, June 11, 2011.

**POSTER #001**
IMPACT OF ORAL APPLIANCE TO TREAT OSA ON AUTONOMIC CARDIAC MODULATION–PILOT STUDY  
Giannasi L, Leitão-Filho F, Hirata R, Faria Junior N, Vicente F, de Oliveira L

**POSTER #003**
USE OF CARDIOPULMONARY COUPLING TO TITRATE A MAS: AN INITIAL CASE REPORT  
Essick G, Weisner J, Schramm P

**POSTER #005**
IMPACT OF OCCLUSAL SPLINT ON AUTONOMIC CARDIAC MODULATION IN BRUXERS  

**POSTER #007**
EXAMINATION OF CHANGE IN SLEEP-DISORDERED BREATHING BEFORE AND AFTER ORTHOGNATHIC SURGERY  
Kyoko H, Morio T, Kazumichi S, Takehiro A, Satosi M, Chiemi S, Gen-yuki Y, Tsuneya N

**POSTER #009**
SNORING CHILDREN TREATMENT WITH ORTHODONTIC AND ORTHOPEDIC APPLIANCE–RANDOMIZED CLINICAL TRIAL  
Nunes Junior W, Cantisani Di Francesco R

**POSTER #011**
WILL NOT BE PRESENTED

**POSTER #013**
COMPARISON OF SUBJECTIVE AND OBJECTIVE MEASURES OF ORAL APPLIANCE COMPLIANCE DURING TREATMENT OF SLEEP-DISORDERED BREATHING  
Vanderveken O, Dieltjens M, De Backer W, Van de Heyning P, Braem M

**POSTER #015**
EFFICACY AND TOLERANCE OF COMBINATION THERAPY USING MAS SUPPORTED NASAL PILLOWS  
White J, Boota A, Essick G
PHARMACOLOGY OF SLEEP DISORDERS MEDICATIONS
10:30am – 11:30am
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKER: Nathaniel Watson, MD, MS, FAASM

OVERVIEW: Dr. Watson will provide an overview of medications used in sleep disorders clinic including pharmacological considerations.

TARGET AUDIENCE: Dentists interested in pharmacological aspects of medications used to treat sleep disorders

OBJECTIVES:
1. Explain different classes of medications used to treat sleep disorders;
2. Describe the pharmacology of these medications; and
3. Review the circumstances under which these medications are used.

ORAL ABSTRACT PRESENTATIONS
11:30am – 12:30pm
ROOM: GRAND BALLROOM – SALONS DEFG
The authors of the following four abstracts will present their research during this session. Authors selected for oral presentations are allotted a 10-minute time period to present their abstract, followed by a 5-minute time period for questions and answers.

11:30am - 11:45am
POSTER #013
COMPARISON OF SUBJECTIVE AND OBJECTIVE MEASURES OF ORAL APPLIANCE COMPLIANCE DURING TREATMENT OF SLEEP-DISORDERED BREATHING
Vanderveken O, Dieltjens M, De Backer W, Van de Heyning P, Braem M

11:45am - 12:00pm
POSTER #001
IMPACT OF ORAL APPLIANCE TO TREAT OSA ON AUTONOMIC CARDIAC MODULATION–PILOT STUDY
Giannasi L, Leitão-Filho F, Hirata R, Faria Junior N, Vicente F. de Oliveira L

12:00pm - 12:15pm
POSTER #016
EFFECTS OF TWO RAPID PALATAL EXPANSION PROTOCOLS AND MAXILLARY PROTRACTION ON THE SAGITTAL AIRWAY DIMENSIONS OF CLEFT PATIENTS
Azeredo F, Menezes L, Rizzato S, Enciso R

12:15pm - 12:30pm
POSTER #008
A NEW METHOD OF EVALUATING SNORING AND SDB WITH MANDIBULAR ADVANCEMENT SPLINT THERAPY
Ngiam J, Norman M, Sullivan C

LUNCH BREAK (on your own)
12:30pm – 1:30pm

MEET THE PROFESSORS
Ticketed Event
12:30pm – 1:30pm
All Meet the Professor sessions require additional fees and are ticketed. If the session is not sold out, tickets are available for on-site purchase at the registration counter. During these small-group sessions an expert in dental sleep medicine will lead an informal discussion on a single topic.

ABDSM INFORMATIONAL SESSION
12:30pm – 1:00pm
ROOM: GRAND BALLROOM – SALONS DEFG
Learn about the ABDSM certification process. Board members will be available to answer questions.

ORAL ABSTRACT PRESENTATIONS
1:30pm – 2:00pm
ROOM: GRAND BALLROOM – SALONS DEFG
The authors of the following two abstracts will present their research during this session. Authors selected for oral presentations are allotted a 10-minute time period to present their abstract, followed by a 5-minute time period for questions and answers.

1:30pm - 1:45pm
POSTER #015
EFFICACY AND TOLERANCE OF COMBINATION THERAPY USING MAS SUPPORTED NASAL PILLOWS
White J, Boota A, Essick G

1:45pm - 2:00pm
POSTER #009
SNORING CHILDREN TREATMENT WITH ORTHODONTIC AND ORTHOPEDIC APPLIANCE–RANDOMIZED CLINICAL TRIAL
Nunes Junior W, Cantisani Di Francesco R
VISUALIZING THE UPPER AIRWAY USING ENDOSCOPY

2:00pm – 3:00pm
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKER: Edward Weaver, MD

OVERVIEW: Dr. Weaver will describe upper airway endoscopy as a powerful tool to view upper airway anatomy and function, and to inform surgical and dental interventions for obstructive sleep apnea.

TARGET AUDIENCE: Sleep dentists, sleep surgeons and sleep medicine clinicians

OBJECTIVES:
1. Review the upper airway anatomy;
2. Describe approaches to evaluate upper airway function with endoscopy;
3. Explain how upper airway endoscopy informs surgical and dental treatment for obstructive sleep apnea; and
4. Appreciate the limits of upper airway endoscopy and alternative uses to evaluate the obstructive sleep apnea airway.

REFRESHMENT BREAK IN EXHIBIT HALL
3:00pm – 3:30pm

POSTER VIEWING
3:00pm – 3:30pm
All posters are available for viewing in Grand Ballroom Salons DEFG throughout the AADSM anniversary meeting. Presenters of the posters listed below are available for questions and comments from 3:00pm – 3:30pm on Saturday, June 11, 2011.

POSTER #002
COMPARISON OF CONE-BEAM CT INCIDENTAL FINDINGS BETWEEN OBSTRUCTIVE SLEEP APNEA PATIENTS AND SNORERS
Enciso R, Nguyen M, Clark G

POSTER #004
POSSIBLE INCREASE IN THE SEVERITY OF OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH ORTHODONTIC PREMOLAR EXTRACTIONS
Fukuda T, Tsuiki S, Maeda K, Isono S, Takise Y, Kobayashi M, Inoue Y

Poster #006
VALIDATION OF THE EFFICACY OF PMPOSITIONER APPLIANCE FOR THE TREATMENT OF OBSTRUCTIVE SLEEP APNEA IN BRAZIL
Giannasi L, Almeida F, Vicente F de Oliveira L

Poster #008
A NEW METHOD OF EVALUATING SNORING AND SDB WITH MANDIBULAR ADVANCEMENT SPLINT THERAPY
Ngiam J, Norman M, Sullivan C

Poster #010
THE OCCURRENCE OF SLEEP DISORDERED BREATHING (SDB) IN PATIENTS WITH TEMPOROMANDIBULAR JOINT DISEASE (TMD)
Prehn R, Simmons J

Poster #012
THE RELATIONSHIP BETWEEN CAROTID ARTERY CALCIFICATIONS AND CARDIOVASCULAR RISKS IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA
Tsuda H, Moritsuchi Y, Tsuda T, Higuchi Y, Almeida F, Lowe A

Poster #014
DRUG-INDUCED SLEEPENDOSCOPY WITH SIMULATION BITE APPROACH TO PREDICT TREATMENT SUCCESS OF ORAL APPLIANCE THERAPY IN ADULTS WITH SLEEP-DISORDERED BREATHING

Poster #016
EFFECTS OF TWO RAPID PALATAL EXPANSION PROTOCOLS AND MAXILLARY PROTRACTION ON THE SAGITTAL AIRWAY DIMENSIONS OF CLEFT PATIENTS
Azeredo F, Menezes L, Rizzotto S, Enciso R
RISK FACTORS ASSOCIATED WITH PEDIATRIC SLEEP RELATED BREATHING DISORDERS
3:30pm – 4:30pm
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKER: Rose Sheats, DMD

OVERVIEW: Dr. Sheats will discuss the risk factors associated with sleep related breathing disorders and the pediatric population.

TARGET AUDIENCE: Dentists and physicians

OBJECTIVES:
1. Describe known and putative risk factors for pediatric sleep related breathing disorders; and
2. Review the evidence describing associations between pediatric sleep related breathing disorders and specific risk factors.

DENTAL SLEEP MEDICINE FACILITY ACCREDITATION
4:30pm – 5:30pm
ROOM: GRAND BALLROOM – SALONS DEFG

SPEAKERS: Steve Carstensen, DDS, Diplomate, ABDSM; and Steven Scherr, DDS, Diplomate, ABDSM

OVERVIEW: The American Academy of Dental Sleep Medicine has developed an accreditation process that will enhance your status as a trained dental sleep medicine provider; this presentation will provide up-to-date information about the requirements and application process.

TARGET AUDIENCE: Dentists and office managers

OBJECTIVES:
1. Describe the process of achieving AADSM Accreditation;
2. Review the fees and time requirements involved;
3. Discuss how to position your practice for the future of dental sleep medicine; and
4. Explain how this process will benefit your dental sleep medicine practice.

AADSM GENERAL MEMBERSHIP MEETING
5:30pm – 6:00pm
ROOM: GRAND BALLROOM – SALONS DEFG

The AADSM Board of Directors invites all attendees to come and learn about the recent activities and initiatives of the AADSM. Secretary/Treasurer Steve Carstensen, DDS, Diplomate, ABDSM, will discuss the financial state of the Academy. New members of the AADSM Board of Directors will be introduced.

20TH ANNIVERSARY RECEPTION
The 20th Anniversary Reception takes place on Saturday, June 11, 2011 from 6:30pm - 8:00pm at the Hilton Minneapolis in the Marquette Ballroom on Level 2.

The 20th Anniversary Reception is a social celebration featuring special recognition of the founders of dental sleep medicine, hors d’oeuvres, a full-service cash bar, live music and more!
Members of the AADSM are encouraged to initiate the process of accrediting their facility now. Learn more about this program and review the Standards for Accreditation of Dental Sleep Medicine Facilities on the AADSM website at www.aadsm.org.

Illustrating Quality in the Standards of Dental Sleep Medicine through

**Proficiency**
Accredited facilities must adhere to *Standards* for the appointment, responsibilities and continuing education of staff including a dental director, clinical auxiliaries and coding and billing personnel.

**Practice**
Policies and procedures regarding the acceptance of patients, documentation, patient treatment and billing at an accredited facility must be developed and followed in order to meet the *Standards* for accreditation.

**Professionalism**
Adherence to *Standards* regarding safety, consumer service and follow-up must be met.

In an effort to safeguard patient care and promote appropriate treatment protocols for the use of oral appliance therapy and upper-airway surgery for the treatment of sleep-related breathing disorders, the AADSM has developed an accreditation program for dental sleep medicine facilities.

Through AADSM Dental Sleep Medicine Facility Accreditation, facilities can earn recognition for providing quality patient care through adherence to the *Standards for Accreditation of Dental Sleep Medicine Facilities*. These *Standards* help to ensure that a dental sleep medicine facility demonstrates excellence in:
GENERAL SESSIONS

SUNDAY, JUNE 12, 2011

EXHIBIT HALL OPEN
7:30AM – 1:30PM
ROOM: GRAND BALLROOM – SALONS ABC

OBSURCTIVE SLEEP APNEA IS INCREASING IN PREVALENCE, IS ASSOCIATED WITH EXCESS MORBITIDY AND MORTALITY, IS TREATABLE, BUT MOSTLY UNRECOGNIZED
8:00AM – 9:00AM
ROOM: GRAND BALLROOM – SALONS DEFG
SPEAKER: Shahrokh Javaheri, MD, FAASM

OVERVIEW: Dr. Javaheri will discuss obstructive sleep apnea, including its increasing prevalence. He will describe how it is an under recognized disorder even though it is associated with excess morbidity and mortality and is treatable.

TARGET AUDIENCE: Ear, nose and throat physicians, dentists, sleep physicians, nurses, physician assistants, nurse practitioners and medical students

OBJECTIVES:
1. Distinguish how obstructive sleep apnea looks on PSG;
2. Review nocturnal consequences of obstructive sleep apnea and diurnal manifestations of obstructive sleep apnea; and
3. Describe the impact of treatment of obstructive sleep apnea.

RESPIRATORY SOUNDS DURING SLEEP
9:00AM – 10:00AM
ROOM: GRAND BALLROOM – SALONS DEFG
SPEAKER: Dirk Pevernagie, MD

OVERVIEW: Dr. Pevernagie will describe the full spectrum of respiration-related sounds that may be produced during sleep using recordings of patients.

TARGET AUDIENCE: Professionals who diagnose and treat patients with sleep related breathing disorders.

OBJECTIVES:
1. Identify and discern different types of respiratory sounds that may be produced during sleep;
2. Describe how the characteristics of these sounds are different depending on whether they are related to the inspiratory or expiratory phase of the respiratory cycle;
3. Review how some sounds are a mere manifestation of obstructive breathing, whilst others are part of complex motor behavior during sleep; and
4. Discuss that while snoring is very common it is not the sole sleep-related respiratory sound and should not be confused with ominous manifestations such as stridor.

MORNING REFRESHMENT IN EXHIBIT HALL
10:00AM – 10:30AM

UPPER AIRWAY IMAGING IN SLEEP APNEA
10:30AM – 11:30AM
ROOM: GRAND BALLROOM – SALONS DEFG
SPEAKER: Richard Schwab, MD, FAASM

OVERVIEW: Dr. Schwab will introduce the practice of using upper airway imaging as a diagnostic and treatment tool in the care of patients with sleep apnea.

TARGET AUDIENCE: Physicians and health professionals

OBJECTIVES:
1. Review upper airway anatomy;
2. Review craniofacial changes in patients with sleep apnea; and
3. Review the effect of CPAP, oral appliances, weight loss and surgery on upper airway structure.

ORAL APPLIANCE VERSUS CPAP: EQUIVALENCE IN HEALTH OUTCOMES?
11:30AM – 12:30PM
ROOM: GRAND BALLROOM – SALONS DEFG
SPEAKER: Peter Cistulli, MD, PhD

OVERVIEW: Dr. Cistulli will compare oral appliance and CPAP treatments of obstructive sleep apnea.

TARGET AUDIENCE: Dentists, researchers and nurses

OBJECTIVES:
1. Evaluate the pros and cons of CPAP and oral appliance treatment in obstructive sleep apnea;
2. Describe the impact of efficacy and adherence of effectiveness of treatment; and
3. Compare the health outcomes attained with CPAP and oral appliance treatment in obstructive sleep apnea.

LUNCH BREAK (on your own)
12:30PM – 1:30PM
MEET THE PROFESSORS
Ticketed Event
12:30pm – 1:30pm
All Meet the Professor sessions require additional fees and are ticketed. If the session is not sold out, tickets are available for on-site purchase at the registration counter. During these small-group sessions an expert in dental sleep medicine will lead an informal discussion on a single topic.

05: ORAL APPLIANCES: TIPS, TRICKS AND TESTS
Todd Morgan, DMD
Room: Board Room 1

06: 3 DIMENSIONAL SOFT PALATE MODELING IN OSA
Alan Lowe, DMD, PhD
Room: Director’s Row 4

MEDICARE POLICY UPDATE: WHAT YOU NEED TO KNOW!
1:30pm – 2:30pm
Room: Grand Ballroom – Salons DEFG
Speaker: Mary Beth Rogers

Overview: Ms. Rogers will answer all of your questions about billing Medicare for oral appliance therapy.

Target Audience: Dentists and staff

Objectives:
1. Explain the Medicare Medical Policy on oral appliance therapy;
2. Describe how to become Medicare providers;
3. Review all documentation needed to properly bill Medicare; and
4. Explain how to complete a 1500 claim form.
### Exhibitor Listing

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**Exhibit Floor Map:**

- **GRAND BALLROOM – SALONS ABC**
- **ENTRANCE**
- **BREAK**

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**Final Program**
BOOTH NUMBER: 110
Airway Management, Inc.
Carrollton, TX
(214) 369-0978
www.tapintosleep.com
We are committed to offering products that improve the health and quality of life for people who suffer from sleep-disordered breathing. Our goal is to support our clients with high quality, minimally invasive therapy for snoring and sleep apnea.

BOOTH NUMBER: 204
Airway Metrics LLC
Seattle, WA
(206) 949-8839
www.airwaymetrics.com
A patented 16-piece system for simulating mandibular positions in 40+ anterior/vertical combinations to identify preferred airway position for a sleep apnea device. The selected Simulator connects to a fork and handle for bite registration. It’s repeatable, simple and saves time. Works with virtually all devices and pharyngometry.

BOOTH NUMBER: 320
Appliance Therapy Group
Chatsworth, CA
(800) 423-3270
www.ApplianceTherapy.com
The Appliance Therapy Group encompasses every aspect of appliance therapy; orthotic appliance design and construction, orthotic products and supplies, educational programs and diagnosis and treatment planning.

BOOTH NUMBER: 109
Begin Healing, Inc.
Grand Rapids, MN
(877) 569-2583
www.beginhealing.com
Begin Healing, Inc. distributes Alpha-Stim® which is a microcurrent electromedical device. A body-friendly, drug-free therapy for chronic pain, anxiety, insomnia and depression. If you, or someone you know seek an effective alternative to medication, then search no further. You’ve come to the right place. Alpha-Stim® offers a solution. Look forward to relief with Alpha-Stim® soon.

BOOTH NUMBER: 117
BioRESEARCH Associates Inc.
Milwaukee, WI
(800) 251-2315
www.bioresearchinc.com
Simple, accurate and cost-effective craniofacial diagnostic aids for the general dentist. Used by the best CR and NM dentists worldwide. Joint vibration analysis, T-Scan III, Bio-EMG and jaw tracking technology.

Exhibitor Listing
Monitor your oral appliance therapy using the BRAEBON® MediByte or MediByte Jr Type 3 snoring and apnea recorders: CPAP compatible, multiple nights and the same technology as used in a sleep laboratory. Our new and improved software allows you to titrate both snoring loudness and AHI.

We are a full-service dental laboratory.

The Silent Sleep is a non-custom FDA approved appliance that is fitted chair-side using denture reline material making it more comfortable and retentive than typical boil and bite appliances. Cadwell’s ApneaTrak™ home sleep testing system provides accurate test data collected from FDA approved methods in a comfortable, slim design.

CleveMed is expanding the reach of your sleep services today and tomorrow by offering technologies for emerging sleep markets. The type III SleepView™ and SleepScout™ along with eCrystalPSG™ webportal make home sleep testing accessible. Sapphire PSG™ and DreamPort™ are a wireless solution for remotely attended full PSG recordings.

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Dental Sleep Solutions, LLC exists to provide member dentists training, systems and support to maximize patient acceptance of oral appliance therapy, reimbursement and success. Training and clinically proven systems of operation enable you to be the “go to” dental sleep expert in your community. Join our team today!

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Watermark Medical targets the physician, dental and sleep clinic markets, selling the ARES Home Sleep Testing solution for diagnosing sleep disordered breathing. Our web portal enables practitioners to improve patient care through a turn-key home solution that includes comprehensive screening, home sleep testing, treatment recommendations and life-long disease management.
The aims of this study were to evaluate the effect of MRA to treat OSA on time-domain and frequency domain parameters of heart rate variability using the Nerve-Express System (NES) prior and after 6 month of the device usage.

Methods: Eight OSA patients, with no co-morbidities, were enrolled in this study. Patients reported snoring, nocturnal breathing arrests, tiredness upon awakening, and difficulty in concentrating. The inclusion criteria was present at least a 7.0mm maximum protrusion, 40.0mm of mandibular opening, 08-10 teeth in each arch, periodontal health. Patients with severe temporomandibular dysfunction, clinically significant coexisting disease (e.g., diabetes, hypertension) and predominant central sleep apnea on sleep study were excluded. Prior treatment, they underwent a polysomnogram (PSG) and the heart rate variability (HRV) analysis was performed by NES. Nerve-Express System is a fully automatic, non-invasive computer-based system designed for quantitative assessment of the automatic nervous system and general state of health based on HRV. To perform the HRV analysis, the system uses a method known as rythmography, which reflects HRV wave structure and serves as a fingerprint of autonomic regulatory mechanism. The frequency-domain parameters are assessed by both Fast Fourier Transform and Wavelet spectral method. The assessment is based on the orhostatic test, where the patient changes the position from the supine to upright position, which least five minutes. The MRA chosen was the adjustable PMPositioner. The mean maximum protrusion was 9.0±1.5mm. Patients used the appliance during approximately 06 month and then underwent another PSG with appliance in situ to evaluate the sleep variables and another heart rate variability analysis were performed. Approval was obtained from the institutional Ethics Committee, and all subjects gave their written informed consent. The T-test for paired observation was used to analyze the effects of the device on respiratory variables.

Results: The AHI was reduced from 45.6± 9.0 to 10.0± 2.7 (p<0.05), the mean SaO2nadir increased from 73.3±10 to 88.0±4.5 (P<0.05) and REM% increased from 18.6±4.6 to 22.0±3.4 (p<0.05), the sleep stages 1, 2, and 3 sleep efficiency showed no statistical significance. The frequency–domain parameter were significant for both Fast Fourier Transform and Wavelet spectral method only in parasympathetic area, which improved from 197.0±70.0 to 105± 34.0 (ps<0.05) and from 221.0 ±85.0 to 102.0 to 33.0 respectively (p≤0.05). The RR interval improved from 776.0 ±54.0 to 792.0± 45.0 but was not significant.

Conclusion: Our pilot study shows that the PMPositioner was effective in reducing sleep-related respiratory disorders and in inducing an improvement of cardiac autonomic modulation, as reflected by changes in heart rate variability. Further evaluation with a larger sample is needed.
Program

of maximum jaw advancement (%JA), which reduced his prior to the HSTs, he was treated with a TAPIII MAS at 68% PSG with severe OSA (RDI=39; LSAT=82%). For 5 months 48 yr old non-CPAP adherent male, previously diagnosed by (Embletta Gold), five nights of data were obtained from a Methods:

Advancement.

be sensitive, as well, to changes in SDB associated with jaw resolution of SDB with progressive forward titration of the jaw using a MAS (e.g., Shiomi et al. Sleep 19:370-377,1996). Our

high, very-low frequency coupling that reflects sleep as stable, unstable, fragmented and wake-REM-like periods, low and very-low frequency coupling that reflects sleep as

Normal, stable non-REM sleep is associated with fluctuations in the heart rate (HR) that are synchronized with the respiratory cycle: Heart rate variability (HRV) is with fluctuations in the heart rate (HR) that are synchronized

reflect the influence of sympathetic activity on HR (Low/

frequency-domain measures of HR variability (fHRV) that

respect the respiratory cycle: Heart rate variability (HRV) is with fluctuations in the heart rate (HR) that are synchronized

Conclusion: Even though no statistically significant difference at 95% confidence level was found between the OSA cases and controls in all categories and subcategories, the OSA patients in general had higher percentage of incidental findings compared to the controls.

POSTER #003

USE OF CARDIOPULMONARY COUPLING TO TITRATE A MAS: AN INITIAL CASE REPORT

Essick G1, Weisner J1, Schramm P2

1University of North Carolina School of Dentistry, Chapel Hill, NC, USA

2Embla, Broomfield, CO, USA

Introduction: Normal, stable non-REM sleep is associated with fluctuations in the heart rate (HR) that are synchronized with the respiratory cycle: Heart rate variability (HRV) is modulated by respiration – with RR intervals shortened during inspiration and lengthened during expiration. Tidal volume changes are associated with changes in the ECG R-wave amplitude (ECG-derived respiration, EDR). Cardiopulmonary coupling combines HRV and EDR – high, low, elevated-low and very-low frequency coupling that reflects sleep as stable, unstable, fragmented and wake-REM-like periods, respectively. A few studies have suggested that changes in frequency-domain measures of HR variability (fHRV) that reflect the influence of sympathetic activity on HR (Low/High and Very Low Frequency components) are sensitive to resolution of SDB with progressive forward titration of the jaw using a MAS (e.g., Shiomi et al. Sleep 19:370-377,1996). Our aim is to determine whether novel measures of CPC might be sensitive, as well, to changes in SDB associated with jaw advancement.

Methods: Using a type III home sleep monitoring device (Embletta Gold), five nights of data were obtained from a 48 yr old non-CPAP adherent male, previously diagnosed by PSG with severe OSA (RDI=39; LSAT=82%). For 5 months prior to the HSTs, he was treated with a TAPIII MAS at 68% of maximum jaw advancement (%JA), which reduced his symptoms of snoring and daytime sleepiness. The appliance was not worn on the first two nights on data collection, but was worn on the third. Jaw advancement was increased to 75% and two additional nights of data were obtained. RemLogic software was used to extract novel measures of CPC as well traditional measures of sleep respiration and fHRV. Spearman’s rho was used to explore relationships between physiologic measures and %JA.

Results: The AHI (mean=11.9 events/hr; range=6.6-19.5) did not vary significantly with %JA (rho=-0.32, p>0.6); however, elevated broad-band low-frequency CPC (eBB-LFC) – a CPC correlate of scored apneas and hypopneas in patients with obstructive sleep apnea (Thomas et al. Sleep 30:1756-1769,2007) – decreased (rho=-0.95, p<0.02). Low-frequency CPC (LFC) increased (rho=0.95, p<0.02), suggesting that while sleep fragmentation improved, overall sleep instability remained excessive. However, very low-frequency CPC (VLFC) decreased with %JA (rho=-0.95, p<0.02), suggesting a decrease in periods of wakefulness. No measure of CPC correlated with the AHI in this single case. The traditional L/HF and VLF sympathetic-dominated measures of fHRV did not correlate with %JA, but L/HF increased with AHI (rho=0.9, p<0.04). No correlation between any of the CPC measures and the fHRV measures was suggested by the data.

Conclusion: Accepting the limitations of these data, novel CPC measures provide additional insight into a patient’s sleep that might be useful in determining the end-point of jaw advancement with a MAS. In this patient’s case, the CPC measures were not found to be surrogates of either traditional PSG or frequency-domain HRV measures.

POSTER #004

POSSIBLE INCREASE IN THE SEVERITY OF OBSTRUCTIVE SLEEP APNEA IN PATIENTS WITH ORTHODONTIC PREMOLAR EXTRCTIONS

Fukuda T1, Tsuiki S1,2, Maeda K1,2, Isono S1,2, Takise Y1,2, Kobayashi M1,2, Inoue Y1,2

1Neuropsychiatric Research Institute, Japan

2Department of Somnology, Tokyo Medical University, Japan

3Department of Anesthesiology, Chiba University, Japan

Introduction: Anatomical balance between the size of the craniofacial rigid enclosure (formed by the dentitions, cervical vertebræ, maxilla, and mandible) and the amount of soft tissue (e.g. tongue) influences the upper airway space. The imbalance caused by either an increase in soft tissue volume or a decreased enclosure size may result in pharyngeal obstruction during sleep, leading to Obstructive Sleep Apnea (OSA). Since orthodontic treatment accompanied with premolar extractions (w/PEs) often decreases the dental arch size without an absolute tongue volume change, we hypothesized that the severity of OSA was greater in OSA patients w/PEs than those without orthodontic treatment.

Methods: The protocol of this cross-sectional study was approved by the ethics committee of the Neuropsychiatric Research Institute, Japan. Amongst OSA patients who visited

Abstracts
the Sleep Apnea Dental Clinic from 2005 to 2010, male OSA patients were recruited. As per routine clinical protocol for each patient, an upright lateral cephalogram was undertaken to evaluate maxillomandibular dimensions and tongue size while study models were fabricated for an analysis of dental arches. Seven out of 409 patients previously experienced orthodontic treatment with extractions of four premolars (14, 24, 34 or 35, 44 or 45) during their teens. One patient with narcolepsy was excluded. After matching age, body mass index, and the maxillomandibular dimensions, 6 patients w/ PEs and 6 patients without a history of orthodontic treatment (controls) were selected for analysis. Sagittal tongue size, both upper and lower dental arch width (distance between right and left first molars) and length (distance from the incisal edge of the central incisors to the line that passes through the distal edge of the first molars), and the apneahypopnea index (AHI) were compared between the groups using unpaired t-tests.

Results: The mean age of the subjects w/PEs and controls was 41.5±11.3 and 42.3±12.5 years, respectively. No difference was found with respect to tongue size in addition to upper and lower dental arch lengths between the groups. However, the upper (w/PEs : controls = 33.2±2.6mm : 39.6±2.8mm, p<0.01) and lower (w/PEs : controls = 33.4±3.5mm : 38.2±1.2mm, p<0.01) dental arch widths were significantly smaller in patients w/PEs than in controls. Moreover, the AHI was significantly greater in subjects w/PEs than in controls (w/PEs: controls = 21.3±3.5/hr : 13.1±4.6/hr, p<0.01).

Conclusion: These findings suggest that the reduced dental arch width in OSA patients w/PEs could be a factor increasing the severity of OSA, although these results without a longitudinal study hardly support the avoidance of orthodontic PEs. We rather propose that an anatomically balanced evaluation in planning orthodontic treatment should be considered from a sleep-breathing viewpoint.

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POSTER #005
IMPACT OF OCCLUSAL SPLINT ON AUTONOMIC CARDIAC MODULATION IN BRUXERS
Almeida F1; Giannasi LC2; Leitão-Filho FS3; Hirata RP3; Faria Junior N4, de Oliveira LVF2
1University of Vancouver, Vancouver, Canada
2Postgraduate Program in Rehabilitation, Nove de Julho University Center, São Paulo, Brazil

Introduction: There is still a disagreement about bruxism definition and diagnosis; however, there is a concordance about the multifactorial aetiology of this disorder. Authors have suggested that bruxism may be part of sleep arousal response. Alteration of dopaminergic system has also been related to sleep bruxism (SB) as well stress and personality. Chronic stress exposure could result in increased cardiac sympathetic activity which can be assessed non-invasively by means of spectral analysis of heart rate variability. Few articles about evaluation of autonomic heart rate modulation in bruxers are available. The aim of this study is to evaluate the alteration in heart rate variability (HRV) in bruxers using the nerve Express System (NES) prior and after 1 month of occlusal splint (OS) usage.

Methods: Thirteen consecutive patients were enrolled in the study. Patients related masseter, temporalis, cervical and headache pain. Clinical diagnosis of SB was made considering the presence of tooth wear, the presence of hypertrophy of masseter and/or temporalis muscles and sleep bruxism events related by partners. Upper and lower stone casts were made to analyze tooth wear degree and location. The inclusion criteria were the presence of tooth clenching or grinding witnessed by bed partner in the last six months with or without presence of TMD signs and symptoms, presence of tooth wear and have never been treated with OS. Exclusion criteria were use of drugs and presence of any neurological disease. In order to evaluate the autonomic alterations, NES was used to register the HRV prior and post 1 months of OS usage. To perform the HRV analysis, the system uses a method known as rythmography, which reflects HRV wave structure. The frequency-domain parameters are assessed by both Fast Fourier Transform and Wavelet spectral method. The assessment is based on the orthostatic test, where the patient changes the position from the supine to upright position, which least five minutes. All patients gave informed consent, and study was approved by Ethics Committee at Uniove University. The T-test for paired observation and Wilcoxon test for non paired observations was used to analyze the impact of OS on HRV.

Results: All TMD symptoms were decrease after first month of OS usage. The HRV assessed by NES showed that the RR interval improved from 801.0 ±28.0 to 833.0 ± 30.0 but was not significant. The frequency–domain parameter was not significant for both Fast Fourrier Transform and Wavelet spectral method in both parasympathetic and sympathetic area. Low frequency and High frequency did not alter post 1 month of OS usage.

Conclusion: Occlusal splint reduced all TMD symptoms related prior treatment. HRV was not changed, maybe due to the short period of the study, one month, of OS usage. Further evaluation with a longer period of treatment is needed.

POSTER #006
VALIDATION OF THE EFFICACY OF PMPOSITIONER APPLIANCE FOR THE TREATMENT OF OBSTRUCTIVE SLEEP APNEA IN BRAZIL
Giannasi LC1, Almeida F2, de Oliveira LVF1
1Sleep Laboratory, Nove de Julho University Center, São Paulo, Brazil
2University of Vancouver, Vancouver, Canada

Introduction: Growing research in sleep disorders and the physiopathology of OSA has demonstrated the important
role that dentistry could play in improving the lifespan of individuals with OSA. In Brazil, as in any other country, there are a variety of devices available in the conventional and internet market and is a not uncommon see patient using devices without efficacy proven and not supported by scientific studies. The lack of knowledge from dentists in dental sleep medicine field can be considered dangerous, in the view of the complexity of this disease. The aim of this study was to validate, in Brazil, the use of an OA called the adjustable PMPositioner to treat OSA and primary snoring, comparing the polysomnographic results obtained prior treatment and wearing the OA and using the Epworth Sleepiness Scale (ESS) to evaluate the daytime sleepiness.

Methods: A retrospective study was carried out on 69 patients presented all OSA degrees or primary snoring, who were fitted to PMPositioner between 2000 and 2010, with a minimum of usage of the OA of at least 4 nights per week. The diagnosis and degree of severity were established by a polysomnogram (PSG) prior treatment and the efficacy of OA therapy verified by another PSG after a minimum of 6 month of OA usage. Sleepiness was evaluated by ESS questionnaire prior to treatment and at the follow up.

Results: Patients were divided in two groups, snoring group (SG) with 7 patients and OSA group with 62 patients. Snoring patients showed no statistical results for PSG variables, but snoring was eliminated according to partner’s relate. Within the success treatment criteria cut-off points used in this study, AHI ≤5 was found in 25 (40%) patients, AHI ≤10 was found in 52 (84%) patients, and AHI < 15 was found in 60 (3.2%) patients. Analyzing according to disease severity, among mild patients, the mean AHI reduced from 12.2±2.0 to 3.3±2.6 p<0.0001, among moderate (33) patients, the mean AHI reduced from 21.0±3.5 to 4.6±3.8 and among severe (12) patients, the mean AHI reduced to 44.8±13.5 to 10.0 to 4.3. The mean minimum oxyhemoglobin saturation (SaO2 nadir) for the entire OSA group, increased from 81.1±8.2 to 86.8± 7.7 (p<0.001). Only in the severe patients REM sleep was statistically significant and increased from 18.4±4.8 to 21.5±2.9 (p<0.001). The ESS values reduced significantly from 13.5 ± 5.6 to 8.4 ± 3.5 (p<0.5). The mean titration was 9.4±1.0 for OSA group and 7.7±0.4 for snoring group.

Conclusion: In view of the results we can support the efficacy of adjustable PMpositioner in the OSA therapy in Brazilian patients.

POSTER #007
EXAMINATION OF CHANGE IN SLEEP-DISORDERED BREATHING BEFORE AND AFTER ORTHOGNATHIC SURGERY
Kyoko H1, Morio T1, Kazumichi S1, Takehiro A1, Satoshi M1, Chiemi S1, Gen-yuki Y1, Tsuneya N2
1Department of Oral Medicine, Oral and Maxillofacial Surgery, Tokyo Dental College
2Division of Otorhinolaryngology, Ichikawa General Hospital, Tokyo Dental College

Introduction: Maxillofacial abnormality has been recognized as a risk factor contributing to the development of Obstructive sleep apnea (OSA) and surgical approach has been showed to be one of the effective options of treatment for OSA. However, indications for surgery remain to be established. In this study, we examined sleep disordered breathing on the orthognathic surgery for malocclusion, by analysis of preoperative and postoperative examination findings.

Methods: 28 patients who underwent orthognathic surgery for treatment of malocclusion in Ichikawa General Hospital, Tokyo Dental College were studied. All patients were classified into 5 groups according to surgery type. They had completed the polysomnography (PSG) at the pre and post operation. We examined the relationship between the findings on the PSG date and the direction of jaw movement during orthognathic surgery. Investigated items were Apnea Hypopnea Index (AHI) and AHI during REM sleep (REM-AHI). And pre and postoperative values were compared statistically by Wilcoxon signed-rank test.

Results: The postoperative AHI was significantly decreased in the group that underwent maxillary advancement with or without mandibular movement; however, there was no significant difference between the groups that underwent mandibular movement with and without maxillary movement.

Conclusion: Mandibular morphology is frequently considered when evaluating the relationship between the maxillofacial structure and sleep disordered breathing. Our findings also indicated that maxillary morphology is an important factor as well. We considered that the findings of this study would help to establish important criteria for determining the indications for surgery to treat OSA.
**Methods:** We studied 42 adults (28 male) on two consecutive nights with and without a MAS device. The subjects slept the first night without the MAS and slept with the oral device advanced to 70% of maximum protrusion on the second night. Recordings were made using the Sonomat, a portable unobtrusive device that has sensors contained within a mattress overlay. These sensors detect breathing sounds, snoring, breathing and body movements with no requirement to attach sensors to a patient. Apneas, hypopneas, snoring and body movements are recorded in order to generate snoring indices and AHI.

**Results:** MAS treatment reduced the AHI from 10.3 (4.8, 19.5) events/hour to 3.8 (1.3, 8.2) events/hour (p<0.0001). Using the AASM classification of OSA severity there were 11(norm), 16(mild), 12(moderate) and 3 (severe) subjects, which following treatment, changed to 26(norm), 13(mild), 2(moderate) and 1(severe). There was a decrease in the percentage of total snoring with MAS (37.5% (17.5, 51.7) vs. 14.5% (4.3, 29.0); p<0.0001), and inspiratory snoring decreased from 34.9 % (16.7, 49.0) to 10.6% (4.1, 23.3); p<0.0001. The respiratory event movement index (RMI) reduced from 15.9 (8.6, 27.2) events per hour to 7.6 (2.9, 16.0) events per hour; (p<0.0001). Snoring decreased overall, but 6 of the 42 subjects still snored for greater than 25% of the night, with several having substantial increases in snoring. Of interest, the majority of subjects had short episodes of expiratory snoring (up to 2%) coupled with prolonged expiratory durations of 2 to 3 seconds. A subgroup had an increase in the amount of expiratory snoring to as much as 6% of the total quiescent time.

**Conclusion:** The Sonomat is a simple and effective at home method of assessing MAS outcomes which provides quantitative measures of apnea and snoring. Although MAS is effective in reducing AHI, snoring may persist or even increase in a significant number of patients.

**POSTER #009**

SNORING CHILDREN TREATMENT WITH ORTHODONTIC AND ORTHOPEDIC APPLIANCE—RANDOMIZED CLINICAL TRIAL

Ribeiro Nunes Junior W, Di Francesco RC
Faculdade de Medicina da Universidade de São Paulo, Brasil

**Introduction:** Enlarged tonsils and dental malocclusion have a strong relation with sleep disturbance in children. Its consequences can include abnormalities of craniofacial growth and development resulting in a facial morphology more suitable to sleep apnea in the future. The main objective of this paper is to evaluate the craniofacial growth in children with enlarged tonsils and adenoid, after dental appliance (Bioajusta X) treatment. The secondary objective is to compare the prevalence of snoring before and after treatment.

**Methods:** Forty children from the waiting list for adenotonsillectomy of the ENT Department of University of São Paulo Medical School, from 6 to 9 years old were included. All of them presented snoring, tonsil and adenoid enlargement grades III and IV, and dental malocclusion (constricted maxilla and/or jaw deficiency). Patients were divided into two randomized groups: 24 patients were treated with the Bioajusta X dental appliance and 16 were controls. Cephalometric analysis was used to access the growth direction comparing the vertical jaw relationship according to the angle of the palatal plane with the mandibular plane (ANS-PNS / ML). The parents filled out a questionnaire about respiratory symptoms. They were re-evaluated and compared after 6 months.

**Results:** Cephalometry showed at the treated group a reduction on the palatal x mandibular angle of -2.75 °: Media at T1 = 30.08 ° (sd 3.8) ; Media at T2 = 27.33 ° (sd 3.4) and an increase of this measurement at the untreated group of +1.25 ° : Media at T1 = 28.38 ° (sd 3.8) ; Media at T2 = 29.60 ° (sd 3.5) at the untreated (p<0.001).

**Conclusion:** Children submitted to this treatment protocol presented a more favorable growth direction, an enlargement of pharyngeal dimensions as well as an improvement in breathing and snoring. This data can be relevant in the preventive strategy of sleep apnea on the future.

**POSTER #010**

THE OCCURRENCE OF SLEEP DISORDERED BREATHING (SDB) IN PATIENTS WITH TEMPOROMANDIBULAR JOINT DISEASE (TMD)

Prehn RS, Simmons JH
1Center for Facial Pain and Dental Sleep Medicine, PC, The Woodlands, TX, USA
2Sadler Clinic Sleep Disorders Center, The Woodlands, TX, USA
3Comprehensive Sleep Medicine Associates, Houston, TX, USA
4Sleep Education Consortium, Houston, TX, USA

**Introduction:** It has already been recognized that nocturnal bruxism (NB)/clenching is a common occurrence in patients with SDB and also TMD, but the occurrence of SDB in the TMD population has not been well established. We have previously postulated that the possible etiology of Bruxing/clenching is a compensatory mechanism for a collapsing airway. If this relationship exists, then it would be reflected in the prevalence of SDB at initial exam of TMD patients. The purpose of this study was to determine the occurrence of SDB in patients with TMD.

**Methods:** We reviewed all cases referred to the Center for Facial Pain and Dental Sleep Medicine, PC during 2009. All patients filled out sleep questionnaires, were examined by a double boarded Facial Pain/Dental Sleep Dentist. The cases were sorted based on chief complaints of TMJ (TM joint related), Sleep (sleep complaints only) and Other (HA, neuropathic or other). The Sleep and Other patients were excluded. With the TMJ patients, it was determined how many were diagnosed with Joint disease, Bruxing, HA and Other. When there were signs or symptoms suggestive of SDB in the TMJ population, a referral for a NPSG study was initiated.
Introduction: It is well known that the morbidity rate of arteriosclerosis ultimately becomes clinically manifested as acute cardiovascular events in many individuals and is more frequent in OSA patients than in normal subjects (Drager LF 2005, Wattanakit K 2008). In the progress of arteriosclerosis, the carotid artery calcifies and sometimes appears as a calcified mass on a cephalometric radiograph. We have previously identified a higher prevalence of carotid artery calcification (CAC) in Obstructive Sleep Apnea (OSA) patients compared with general population (Tsuda 2010). The Framingham Heart Study, under the direction of the National Heart, Lung and Blood Institute has identified common factors or characteristics that contribute to cardiovascular disease (CVD) and developed a CVD risk score (http://www.framinghamheartstudy.org/about/index.html). This study was designed to evaluate the demographic data and the prevalence of calcification in cephalometric radiographs of OSA patients to identify cardiovascular risks according to the Framingham Risk Score (FRS) between subjects with and without carotid artery calcification.

Methods: Subjects were patients diagnosed with OSA at the Sleep Center, Tsuda Hospital in Japan. Subjects were divided into two groups according to whether or not calcification was present in the carotid artery area and the characteristic differences between these two groups were analyzed. The evaluated variables included age, BMI, AHI, minimum and average SpO$_2$, ESS, blood pressure, medication history, diabetes mellitus (DM), previous CVD, drinking, smoking, and lipid related measurements such as total lipoprotein and low and high-density lipoprotein. FRSs for stroke, general cardiovascular disease, coronary heart disease and recurring coronary heart disease were calculated. Statistical analyses were performed (SPSS 18.0) with significance defined as a 2-tailed P value less than 0.05. A Pearson’s chi-square test was used to compare the presence of high blood pressure (more than 140/90mmHg), medication for high blood pressure, DM, hyperlipidemia, smoking and drinking consumption, and the CVD history between the groups. Kruskal-Wallis tests compared continuous variables.

Results: A total of 858 subjects completed the data collection (719 males, age 51.7±13.8years, AHI 31.6±23.0 times/h). From FRSs, probabilities of a stroke within 10 years, CVD within 10 years, coronary heart disease within 10 years and recurring coronary heart disease within 2 years were 11.1±7.3%, 18.0±10.0%, 13.6±9.9% and 7.2±2.9% respectively. Some 83 subjects exhibited calcification in the carotid arterial area. Calcification subjects were older than subjects who had no identified calcification (58.8±11.5 vs. 51.0±13.8, p<0.000). Although there is no significant difference in OSA related variables and FRSs, calcified subjects have higher prevalence of high blood pressure medication (p<0.04) and DM (p<0.023).

Conclusion: While the presence of a calcified mass on a cephalometric radiograph is not diagnostic of arteriosclerosis and not a strong predictor of cardiovascular risk, this information may aid in screening for the condition.

Abstracts

POSTER #011
WILL NOT BE PRESENTED

POSTER #012
THE RELATIONSHIP BETWEEN CAROTID ARTERY CALCIFICATIONS AND CARDIOVASCULAR RISKS IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA
Tsuda H$^1$, Moritsuchi Y$^2$, Tsuda T$^2$, Higuchi Y$^3$, Almeida F$^3$, Lowe A$^3$
$^1$General Oral Care, Kyushu University Hospital, Japan
$^2$Sleep Center, Kirigaoka Tsuda Hospital, Japan
$^3$Department of Oral Health Sciences, The University of British Columbia, Canada

Introduction: It is more frequent in OSA patients than in normal subjects as acute cardiovascular events in many individuals and arteriosclerosis ultimately becomes clinically manifested as atherosclerosis, the carotid artery calcifies and sometimes appears as a calcified mass on a cephalometric radiograph. We have previously identified a higher prevalence of carotid artery calcification (CAC) in Obstructive Sleep Apnea (OSA) patients compared with general population (Tsuda 2010). The Framingham Heart Study, under the direction of the National Heart, Lung and Blood Institute has identified common factors or characteristics that contribute to cardiovascular disease (CVD) and developed a CVD risk score (http://www.framinghamheartstudy.org/about/index.html). This study was designed to evaluate the demographic data and the prevalence of calcification in cephalometric radiographs of OSA patients to identify cardiovascular risks according to the Framingham Risk Score (FRS) between subjects with and without carotid artery calcification.

Methods: Subjects were patients diagnosed with OSA at the Sleep Center, Tsuda Hospital in Japan. Subjects were divided into two groups according to whether or not calcification was present in the carotid artery area and the characteristic differences between these two groups were analyzed. The evaluated variables included age, BMI, AHI, minimum and average SpO$_2$, ESS, blood pressure, medication history, diabetes mellitus (DM), previous CVD, drinking, smoking, and lipid related measurements such as total lipoprotein and low and high-density lipoprotein. FRSs for stroke, general cardiovascular disease, coronary heart disease and recurring coronary heart disease were calculated. Statistical analyses were performed (SPSS 18.0) with significance defined as a 2-tailed P value less than 0.05. A Pearson’s chi-square test was used to compare the presence of high blood pressure (more than 140/90mmHg), medication for high blood pressure, DM, hyperlipidemia, smoking and drinking consumption, and the CVD history between the groups. Kruskal-Wallis tests compared continuous variables.

Results: A total of 858 subjects completed the data collection (719 males, age 51.7±13.8years, AHI 31.6±23.0 times/h). From FRSs, probabilities of a stroke within 10 years, CVD within 10 years, coronary heart disease within 10 years and recurring coronary heart disease within 2 years were 11.1±7.3%, 18.0±10.0%, 13.6±9.9% and 7.2±2.9% respectively. Some 83 subjects exhibited calcification in the carotid arterial area. Calcification subjects were older than subjects who had no identified calcification (58.8±11.5 vs. 51.0±13.8, p<0.000). Although there is no significant difference in OSA related variables and FRSs, calcified subjects have higher prevalence of high blood pressure medication (p<0.04) and DM (p<0.023).

Conclusion: While the presence of a calcified mass on a cephalometric radiograph is not diagnostic of arteriosclerosis and not a strong predictor of cardiovascular risk, this information may aid in screening for the condition.
Introduction: Oral appliances, such as Mandibular Repositioning Appliances (MRA), have emerged as a treatment option for sleep-disordered breathing (SDB). Up to this date, no objective method is available in clinical practice to objectively measure compliance during oral appliance treatment for SDB. As with CPAP in the early years, the sleep apnea community nowadays has a strong interest in the objective measurement of compliance with MRA, since this treatment is efficacious, but the objective measurement of its use and adherence remains restrained.

Methods: A 4-week clinical trial was performed comparing active measurement of MRA compliance with patient’s self-report. In twenty-three patients with an established diagnosis of SDB (AHI: 14.8 ± 12.4/h; age: 47 ± 10 y; men/women: 10/13) compliance was measured during MRA treatment by establishing a mean rate of use, using an active built-in microsensor thermometer (TheraMon®, Handelsagentur Gschladt, Austria) with on-chip integrated read-out electronics. The sampling interval of the recording by the active microsensor was done at a rate of 1 measurement per 15 minutes (every 900 seconds). The subjects were unaware that their MRA use was being measured objectively. Ethical approval for this study was obtained from institutional review boards of the Antwerp University Hospital and patients gave informed consent. The read out of the data was performed at a one-month interval (32 ± 3 days). During the follow-up visit patients were asked to fill out a questionnaire about MRA wear during the last 4 weeks (mean hours/night, mean nights/week). The objective measurement of MRA wear time was based on the assumption that the MRA has been worn when the chip records a temperature intraorally > 35 °C. To compare the subjective estimates of the patients with the objective data from the microsensor, a Wilcoxon signed rank test was performed.

Results: The objective mean wearing time in the whole group was 6.8 ± 1.7 h/night (n=23). A total of 21 patients filled out the subjective compliance diary. The objective mean wearing time in that group was 7.0 ± 1.2 h/night and was not statistically significant different from the subjective mean wearing time of 7.0 ± 1.1 h/night. In this study, the subjective and objective compliance data with MRA showed excellent agreement.

Conclusions: The removable nature of an oral appliance warrants an objective assessment of the effective use and compliance with overnight MRA treatment for SDB. The results of this study suggest that the use of an objective instrument to measure oral appliance compliance is feasible, and, therefore should be implemented in future studies. In the reported study, an agreement is found between objective measurement and subjective estimates of compliance during MRA treatment for SDB.
before starting MRA treatment. After an adaptation and titration period (2-3 months after start of treatment), all patients underwent polysomnographic evaluation with their MRA. The correlation between treatment response and the results of DISE was investigated. Treatment success was defined as an important reduction of snoring plus an AHI<5/h and/or a ≥50% reduction in AHI plus a satisfactory decrease of snoring.

**Results:** The results of this study demonstrated a statistically significant correlation between the effect of SB during DISE compared to baseline, and treatment success with MRA (p<0.01). The effect of the chin-lift maneuver during DISE compared to baseline did not correlate with treatment success.

**Conclusion:** The results of this study suggest that the outcome of MRA treatment in patients with OSA can be predicted in a prospective way using the described drug-induced sleep endoscopy (DISE) procedure with a simulation bite (SB) approach. No significant correlation was found between the effect of chin-lift maneuver during DISE and treatment success.

**POSTER #015**

**EFFICACY AND TOLERANCE OF COMBINATION THERAPY USING MAS SUPPORTED NASAL PILLOWS**

White JR1, Boota A2, Essick G3

1White and Siachos, Greenville, SC, USA
2Palmetto Pulmonary and Critical Care Associates, PA, St. Francis Hospital, Greenville, SC, USA
3University of North Carolina School of Dentistry, Chapel Hill, NC, USA

**Introduction:** Combination therapy provides an intuitively attractive, but largely unexplored means to treat severe OSA. Remarkably few reports have been published. Recently, El-Sohl et al. demonstrated that intolerance to high CPAP pressures can be eliminated by using a MAS to lower the minimally effective pressure (Sleep Breath, online November 2010). Using existing data from the medical dental team, we sought to characterize the efficacy and tolerance of PAP therapy using MAS-supported nasal pillows.

**Methods:** Data were available for ten severe OSA, CPAP-intolerant patients (5Ms and 5Fs; mean age=58.5yrs, BMI=29-36.5) treated between June, 2008 and December, 2010 initially with a MAS alone suboptimally titrated to 73% maximum jaw protrusion (range 50-95%). The RDI remained >29 events/hr in all but one patient and a decision was made to initiate combination therapy. A metal rod was secured facially to the maxillary component to provide support and positional stability for nasal pillows, added chairside (TAP-PAP chairside, Airway Management Inc., Dallas, Tx). PSG: Lab sleep data were obtained from patients’ initial diagnostic and CPAP titration studies, and final PAP titration study with MAS. HST: Home sleep data (Watch-Pat) were obtained prior to delivery and after the last adjustment of MAS, and with combination therapy prior to the final PAP titration. Epworth Scores for EDS were obtained also. **CPAP Tolerance:** Using a 13-item checklist, patients reported reasons for intolerance to traditional CPAP and to PAP combined with MAS.

**Results:** One patient moved, leaving incomplete data. Two patients had previous UPPPs and were unable to use the nasal pillows due to oral air leakage. **PSG:** For the remaining 7 patients, the mean AHI was 66 events/hr (range 40.7-108) prior to any treatment. 4.4 events/hr (range 0-20.7) at the initial optimum CPAP of 11.5 cmH2O (range 10-16) without MAS, and 2.6 events/hr (range 0-6.1) at the final optimum CPAP of 9.9 cmH2O (range 9-15) with MAS. The mean lowest SPO2 during these three PSGs were 80%, 90.7%, and 90.3%, respectively. **HST:** The patients’ mean pAHI was 54.4 events/hr prior to MAS delivery, 40.2 events/hr with MAS alone, and 10 events/hr with combination therapy. The %sleep for which SPO2 was < 90% decreased from 20.8% to 11.5% to 3%, respectively. EDS scores decreased from 10.1 to 7.9 to 4.9. **CPAP Tolerance:** With traditional CPAP, each patient reported 2-6 reasons associated with intolerance. Most commonly reported were ‘can’t keep in place’ (85.7% patients), ‘unconsciously remove’ (57.1%); ‘mask uncomfortable’, ‘mask leaks’, and ‘claustrophobia’ (42.9% patients each). With combination therapy, only two patients reported a single negative experience: ‘unconsciously remove’, ‘pull of hose applies force to teeth’.

**Conclusion:** Even without lowering the pressure substantially, CPAP tolerance can be improved and severe OSA fully treated using a MAS that physically supports and stabilizes the position of nasal pillows.

**POSTER #016**

**EFFECTS OF TWO RAPID PALATAL EXPANSION PROTOCOLS AND MAXILLARY PROTRACTION ON THE SAGITTAL AIRWAY DIMENSIONS OF CLEFT PATIENTS**

Azeredo, FC1, Menezes, LM2, Rizzato, SMD2, Enciso, R3

1Graduate student, Department of Orthodontics, Pontifical Catholic University of Rio Grande do Sul, Brazil
2Professor, Department of Orthodontics, Pontifical Catholic University of Rio Grande do Sul, Brazil
3Clinical assistant professor, Division Endodontics, Oral Surgery and Orthodontics, Ostrow School of Dentistry, University of Southern California

**Introduction:** The purpose of this retrospective study was to determine the effects of the association between rapid expansion and maxillary protraction in the naso- oropharyngeal airway dimension in two cleft patient groups, distributed according to different palatal expansion protocols.

**Methods:** The sample consisted of 20 individuals (ten boys and ten girls; mean age of 10.4 years) with unilateral complete cleft lip and palate who had constricted maxilla in the sagittal and transverse dimensions. Ten patients underwent 1 week of rapid palatal expansion with screw...
activation of one complete turn per day (1 mm), followed by 11 months and 3 weeks of maxillary protraction (Group 1). The other 10 patients underwent 7 weeks of alternate rapid maxillary expansion and constriction (one complete turn per day), with a final 7 mm of expansion, followed by 10 months and one week of maxillary protraction (Group 2). Both groups underwent a total of 12 months of treatment. Cephalometric measurements were performed at different times: pretreatment (T1), and after 12 months of treatment (T2). Measurements were compared using the mixed analysis of variance model and Tukey-Kramer method.

**Results:** Both groups presented similar behavior on airway dimensions, with no significant differences between the two protocols. The determinant factor was the treatment (expansion and protraction), evaluated in two different moments (T1 and T2), that produced statistically significant changes in airway dimensions. Average increases in the nasopharyngeal airway were of 2.66, 3.12 e 4.21 mm (Pns-Ad2, Pns-Ad1 and Pns-UPW respectively). Significant decrease of 1.28 mm in the measure Ad2-mP, posteriorly located to nasopharyngeal region, was observed. Significant decrease in the middle (-2.44 mm) and lower (-2.31 mm) airway space in oropharynx was also observed.

**Conclusion:** The performed procedures produced favorable dimensional changes in nasopharynx and non-favorable changes in oropharynx, with no significant differences between the two expansion protocols evaluated.
FERNANDA ALMEIDA, DDS, PHD, is a clinical assistant professor at The University of British Columbia. She has been involved in oral appliance research and the treatment of patients with obstructive sleep apnea since 1996.

KATHLEEN BENNETT, DDS, DIPLOMATE, ABDSM
Dr. Bennett is practicing dental sleep medicine exclusively in a Cincinnati, Ohio University-based practice and is affiliated with Cincinnati Children’s Hospital where she treats spina bifida and adult down syndrome patients with obstructive sleep apnea. She has been in private practice restorative dentistry since 1983.

JOEL BERGER, DDS, MD, is internationally recognized for his expertise in general oral surgery, dental implantology and the surgical treatment of sleep disorders. Dr. Berger is a professor at the University of California, San Diego - Division of Plastic Surgery, as well as the Secretary of the California Coalition of Cleft and Craniofacial Center.

STEVE CARSTENSEN, DDS, DIPLOMATE, ABDSM, earned his DDS from Baylor College of Dentistry in 1983, and is in private practice in Bellevue, WA. In 1998, he worked with his first dental appliance for sleep apnea, and in the past several years has helped hundreds of sleep apnea patients using oral appliance therapy. He has spent countless hours volunteering in organized dentistry for local and state dental societies.

PETER CISTULLI, MD, PHD, is professor of respiratory medicine at the University of Sydney and Royal North Shore Hospital, Sydney, Australia, where he heads the Department of Respiratory Medicine and Centre for Sleep Health and Research. He is also a research leader at the Woolcock Institute of Medical Research. For more than a decade his research has focused on dental aspects of obstructive sleep apnea (OSA) diagnosis and management.

LEOPOLDO CORREA, BDS, is an assistant professor and head of the dental sleep medicine section at the Craniofacial Pain Center, Tufts University School of Dental Medicine. Dr. Correa is a third generation dentist, and he has been involved in the management of TMD patients for almost 10 years.

GAIL DEMKO, DMD, DIPLOMATE, ABDSM, received her DDS from Boston University and was a hospital-based dentist at Beth Israel Deaconess Medical Center in Boston for 20 years. In 1997 she limited her dental practice to the treatment of OSA and is an expert advisor to the FDA on oral appliance therapy. She serves on the AADSM Board of Directors.

LESLIE DORT, DDS, DIPLOMATE, ABDSM, graduated with a DDS from the University of Western Ontario in 1980. Although she has practiced general dentistry in both urban and rural locations in Canada, her work is now entirely focused on sleep. She is a member of the University of Calgary faculty of medicine where she is engaged in research focused on diagnosis and treatment of sleep disordered breathing.

BERNARD FLEURY, MD, is currently running the sleep disorders center of the Hôpital saint Antoine, Groupe Hospitalier Paris-Est-Université Pierre et Marie Curie, Paris, France. He works closely with the ENT department and with the Orthodontics department of the faculty. He is engaged on research and publication focused on treatment of obstructive sleep apnea in adults, CPAP therapy, surgery and oral appliance.

DENA GARNER, PHD, is an associate professor at The Citadel in Charleston, South Carolina. She has been working in the area of mouthpiece research since 2005 with studies that have focused on reaction time, lactate, and cortisol and the effect of mouthpiece use on these parameters. Recent research has focused on mouthpiece use during steady state exercise and effects on oxygen and carbon dioxide exchange as well as the proposed mechanisms for positive effects on airway dynamics in a healthy population.

BARRY GLASSMAN, DMD, DIPLOMATE, ABDSM, is Diplomate of the American Academy of Craniofacial Pain, Diplomate of the American Academy of Pain Management, a Diplomate of the American Academy of Dental Sleep Medicine and a Fellow of the International College of Cranio-mandibular. He is the Co-Medical Director of the St. Lukes Headache Center.

SHAHROKH JAVAHERI, MD, FAASM, is internationally recognized for his extensive research in sleep disorders and in the critical correlation of these disorders to cardiovascular disease and other medical conditions. He is board-certified in sleep medicine, pulmonary medicine and internal medicine.

ALAN LOWE, DMD, PHD, DIPLOMATE, ABDSM, is professor and chair of the Division of Orthodontics in the Faculty of Dentistry at The University of British Columbia and maintains an orthodontic practice in Vancouver, Canada. He has lectured extensively both nationally and internationally in the areas of neurophysiology and orthodontics.

MARIE MARKLUND, DDS, PHD, is associate professor of orthodontics at Umeå University, Sweden. She works in collaboration with the Sleep Apnea Clinic at the Department of Respiratory Medicine, Umeå University Hospital. Her practice focuses mainly on the treatment of patients with snoring and obstructive sleep apnea (OSA) with OA. Dr. Marklund’s research interests include treatment effects and side-effects of OA.

TODD MORGAN, DMD, has been placing oral appliances for sleep apnea since 1991. He currently maintains a private practice at Scripps Memorial Hospital in San Diego, CA, and continues NIH-funded research on the effects of oral appliances on the pharynx, breathing and neurocognitive function. Dr. Morgan currently serves as the AADSM program committee chair.
Ronald Prehn, DDS, Diplomate, ABDSM, focuses his practice on the cusp between medicine and dentistry, providing care for patients with sleep related breathing disturbances as well as headache and TMJ. Dr. Prehn is a board certified Diplomate of both the American Board of Orofacial Pain and the American Board of Dental Sleep Medicine. His limited practice, Center for Facial Pain and Dental Sleep Medicine, is in The Woodlands, Texas (North of Houston).

Jeffrey PrinSELL, DMD, MD, Diplomate, ABDSM, received his dental degree from Tufts University and medical degree from Vanderbilt University. He completed a general practice residency in dentistry, general surgery internship, and an oral and maxillofacial (OMS) residency at Vanderbilt. He has authored numerous publications and lectured extensively on OSA surgery, including innovative staging protocols and algorithms.

John Remmers, MD, is a pulmonologist and professor of internal medicine and physiology at the University of Calgary supported by the Alberta Heritage Foundation. His research interests relate to neurobiology of respiratory rhythmogenesis, chemoreception, and pathophysiology of control of breathing.

Mary Beth Rogers graduated from the University of Pittsburgh in 1976 with a bachelors of science degree in education and taught school in the Pittsburgh area for several years. After teaching she managed a busy dental practice for her husband, Dr. Robert Rogers for many years and is experienced in dental assisting, front office management, bookkeeping and accounting.

Steven Scherr, DDS, Diplomate, ABDSM, is a graduate of the University of Maryland School of Dentistry and a Diplomate of the American Board of Dental Sleep Medicine (ABDSM). He is a private practice general dentist providing oral therapeutics for the treatment of sleep apnea, snoring, facial pain, and temporomandibular disorders.

Richard Schwab, MD, FAASM, is full professor of medicine and co-director, Penn Sleep Center at the University of Pennsylvania Medical Center. His research has resulted in seminal observations about the genetics, pathogenesis and treatment of obstructive sleep apnea, and he has shown the importance of the lateral pharyngeal walls in the pathogenesis of sleep apnea and that the volume of the upper airway soft tissue structures is larger in patients with sleep disordered breathing than normal controls.

Rose Sheats, DMD, MPH, is an associate professor and graduate orthodontic program director at the University of North Carolina in Chapel Hill. Dr. Sheats research interests include pediatric sleep related breathing disorders. In 2010, one of her graduate students won the AADSM’s Graduate Student Research Award and Research Excellence Award for research in this area.

Noah Siegel, MD, is board certified in both sleep medicine and otolaryngology head and neck surgery (ENT). He is a clinical faculty at Harvard Medical School and at Tufts University School of Medicine. He has been board certified in sleep medicine since 2007 and is actively involved the medical and surgical management of patients with sleep apnea.

Michael Simmons, DMD, has been a lecturer and course co-chair at UCLA’s dental school in the Department of Oral Medicine and Orofacial Pain since 1987 and more recently also appointed as Clinical Assistant Professor at USC. He maintains two private practices with focus on TMJ, orofacial pain and sleep related breathing disorders as well as cosmetic and general dentistry.

Eva Svanborg, MD, PhD, serves as chief physician and department head, at the department of clinical neurophysiology, University Hospital, Linköping. She is author or co-author of 64 articles in peer-reviewed journals, and 16 review articles and book chapters on topics which include myasthenia gravis, non-convulsive epilepsy, spinal root lesions and basic neurophysiology.

Nathaniel Watson, MD, MS, FAASM, is a neurologist and board certified sleep specialist at the University of Washington, where he co-directs the sleep center. He is an active clinician and sleep researcher and has published papers on a broad range of topics including epilepsy, traumatic brain injury, chronic fatigue syndrome, fibromyalgia, and sleep-disordered breathing.

Edward Weaver, MD, is an associate professor of otolaryngology and the chief of sleep surgery at the University of Washington, in Seattle, Washington. He is board certified in otolaryngology/head and neck surgery and in sleep medicine, and he practices the full range of sleep apnea surgery.
21st Annual Meeting of the American Academy of Dental Sleep Medicine

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