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DEAR AADSM ANNUAL MEETING ATTENDEES:

As Chair of the AADSM Annual Meeting Committee, I welcome you to the AADSM 24th Annual Meeting.

It is the hope of the Annual Meeting 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. There are three educational courses being offered in 2015: an advanced course, introductory course for attendees new to dental sleep medicine, and a mini board review course geared toward those taking the ABDSM Diplomate Exam this year and beyond. Once again, we are offering two general session tracks with a wide variety of topics, as well as nine meet the professor sessions.

This year’s meeting will also feature poster and oral abstract presentations with the Research Committee announcing this year’s research winners at the start of the general session on Thursday afternoon, as well as a number of invited lecturers, clinical workshops, symposia and discussion groups on clinical challenges and methods, and the latest research presented by expert dental practitioners, physicians and researchers.

Beyond the scientific program, there are several other events throughout our annual meeting. The AADSM exhibit hall, which will be open Thursday through Saturday, displays the newest dental sleep medicine products and services available. EzSleep, ResMed and MicroDental Laboratories will be hosting networking and educational opportunities on Thursday night. The general membership meeting will take place on Friday after the general session. Don’t miss the President’s Reception on Friday evening to celebrate the AADSM’s past presidents and the 2015 awardees of the Pierre Robin Award and the Distinguished Service Award.

As you delve further into this final program, keep in mind that this meeting is a truly unique opportunity to become involved with the AADSM. Welcome to Seattle!

Sincerely,

Nelly Huynh, PhD
Chair, Annual Meeting Committee
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## Contact Us

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c/o Visit Seattle
701 Pike Street, Suite 800
Seattle, WA 98101
Phone: (888) 877-0255
Email: hotelres@visitseattle.org

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We want your feedback / Visit www.aadsm.org/evaluations
LOCATION
The AADSM 24th Annual Meeting is Thursday, June 4 – Saturday, June 6, 2015, at the Washington State Convention Center in Seattle, Washington.

ON-SITE REGISTRATION HOURS
The on-site registration hours at the Washington State Convention Center are:

- **Thursday, June 4, 2015**: 6:30 AM – 5:30 PM
- **Friday, June 5, 2015**: 7:00 AM – 6:00 PM
- **Saturday, June 6, 2015**: 7:00 AM – 3:30 PM

The registration desk is located in the West Lobby on level six of the Washington State Convention Center.

Your registration includes admission to:
- General Sessions (Thursday afternoon – Saturday)
- The President’s Reception
- Industry Supported Events
- Exhibit Hall

Note: Educational Courses and Meet the Professor sessions require additional fees. Additional registration may be required for Industry Supported Events (See page 26).

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. Children under 16 years of age are not permitted in the exhibit hall or in the general session rooms.

BADGE INFORMATION
All meeting participants and guests must wear a badge. Badges allow 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 and others. Exhibit Hall hours are:

- **Thursday, June 4, 2015**: 6:30 AM – 4:00 PM
- **Friday, June 5, 2015**: 7:00 AM – 4:00 PM
- **Saturday, June 6, 2015**: 7:00 AM – 3:00 PM

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 confiscation of the film or recording device and removal of the individual from the meeting.

SOCIETY INFORMATION
Details about membership and products from the American Academy of Dental Sleep Medicine are available near the registration desk located in the West Lobby on level six of the Washington State Convention Center.

SEATING
General Sessions are filled on a first-come, fist-served basis. AADSM does its best to match room size with anticipated demand; however, interest in a topic occasionally exceeds seating capacity. Seating limits are strictly enforced by the Fire Marshal. We encourage you to arrive at meeting rooms as early as possible for best seating.

WE WANT YOUR FEEDBACK
All attendees are encouraged to evaluate each session they attend throughout the conference. Visit www.aadsm.org/evaluations at any time during the meeting to rate the sessions you attend. The site will close July 1, 2015.

The sole purpose of this site is to evaluate speakers and sessions that you attend at the AADSM Annual Meeting. The Annual Meeting Committee will use this information to plan future events.
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.

American Academy of Dental Sleep Medicine (AADSM) designates this activity for 20.50 continuing education credits.

The AADSM 24th Annual 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 24th Annual 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 24th Annual Meeting is intended for dentists and dental professionals who are currently treating patients with obstructive sleep apnea or snoring through the utilization of oral appliance therapy. The AADSM 24th Annual Meeting is also intended for dentists, physicians, and dental professionals who are seeking an in-depth introduction to dental sleep medicine and oral appliance therapy.

AADSM 24TH ANNUAL MEETING LEARNING OBJECTIVES

1. Acquire knowledge about the management of obstructive sleep apnea in both adults and children, including interaction with medical colleagues;

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

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

4. 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

5. 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.

CLAIM MEETING CREDITS

To claim credit from the meeting, complete and submit the credit claim form to the registration desk before you leave the meeting. Forms are available near registration.

The deadline to claim credit is October 1, 2015.

To review speaker conflicts, visit www.aadsm.org.
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MEET THE PROFESSORS ARE ON THE SECOND FLOOR OF THE CONVENTION CENTER
Session Types

**C**  EDUCATIONAL COURSES    Intensive reviews of topics presented in a half day session format prior to the scientific program

**D**  DISCUSSION GROUPS    Forums for informal presentations of a specific topic, which may include conversations on controversial subjects or pro/con discussions and presentations

**I**  INVITED LECTURERS    One-hours lectures during which senior-level investigators/clinicians present in their areas of expertise

**M**  MEET THE PROFESSORS    Small-group lunch sessions during which an expert in the field leads an informal discussion on a single topic

**O**  ORAL PRESENTATIONS    15-minute presentations during which investigators present their latest research and new ideas in the field

**R**  CASE REPORTS    Review of challenging cases by an expert panel

**S**  SYMPOSIA    Sessions focusing on the latest data and ideas in the field

**W**  CLINICAL WORKSHOPS    Reviews of the latest clinical challenges, presentations or discussions of controversial clinical topics or difficult clinical situations that demonstrate the critical thinking process in clinical dental sleep medicine

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WE WANT YOUR FEEDBACK / VISIT WWW.AADSM.ORG/EVALUATIONS

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Honorary Membership Award

GILLES LAVIGNE, DMD, PHD

Dr. Lavigne completed his postdoctoral training on the neurobiology of pain at NIH, Bethesda, MD. He received a Doctor honoris causa from the Faculty of Medicine, University of Zurich, Switzerland. He holds a Canada Research Chair in Pain, Sleep & Trauma and is Dean of the Faculty of Dental Medicine at the Université de Montréal, Canada. He was President of the Canadian Sleep Society and is currently President of the Canadian Pain Society (2014–2016). He is co-founder and past Director of the three research networks for Oral Health, Pain and Placebo Mechanisms under the Fonds de la Recherche en Santé du Quebec and the Canadian Institutes of Health Research (CIHR). Dr. Lavigne is internationally recognized for his experimental and clinical research projects on sleep bruxism and the interactions between sleep, pain, and breathing disorders.

Pierre Robin Award

FRÉDÉRIC GAGNADOUX, MD, PHD

Frédéric Gagnadoux received his medical doctorate and obtained his diploma of specialist in Pneumonology from Tours University (Tours, France) in 1995. He obtained his certificate as specialist in sleep medicine in 1997. He gained his PhD in biology from Tours University in 2006. Frédéric Gagnadoux is currently Professor of Pneumonology in the University Hospital of Angers, member of the Faculty of Medicine of Angers University and of the INSERM unit 1063 “SOPAM” (Angers, France). He is member of the scientific committees of the French Pneumonology Society and of the French Sleep Research and Medicine Society and a member of the European Respiratory Society. Frédéric Gagnadoux’s education, training and research have focused on clinical and translational research into the consequences and therapeutic strategies of obstructive sleep apnea (OSA). He runs the Pays de Loire Sleep Cohort which includes more than 10,000 patients with OSA. He performed several clinical trials evaluating the therapeutic efficacy of oral appliances in OSA and is involved in the Oral Appliance Network for Global Effectiveness (ORANGE). His recent translational research focused on the role of circulating microparticles in the pathophysiology of vascular dysfunction in OSA.

Distinguished Service Award

SHERI KATZ, DDS, DIPLOMATE, ABDSM

Sheri Katz, DDS, Diplomate, ABDSM received her dental degree from Emory University in Georgia. She has developed a special interest in and has limited her practice to the field of dental sleep medicine. Dr. Katz is a Diplomate of the American Board of Dental Sleep Medicine and a past president of the AADSM. Dr Katz served on the AASM/AADSM Oral Appliances Task Force, which developed the “Clinical Practice Guideline for the Treatment of Obstructive Sleep Apnea and Snoring with Oral Appliance Therapy” that will be published in 2015.
THURSDAY, JUNE 4, 2015 / 2:15 PM – 3:15 PM  
I01: IMPACT OF OPIATES ON SLEEP AND ADDICTION RISK: WHAT DENTISTS SHOULD KNOW

Dr. Lavigne completed his postdoctoral training on the neurobiology of pain at NIH, Bethesda, MD. He received a Doctor honoris causa from the Faculty of Medicine, University of Zurich, Switzerland. He holds a Canada Research Chair in Pain, Sleep & Trauma and is Dean of the Faculty of Dental Medicine at the Université de Montréal, Canada. He was President of the Canadian Sleep Society and is currently President of the Canadian Pain Society (2014–2016). He is co-founder and past Director of the three research networks for Oral Health, Pain and Placebo Mechanisms under the Fonds de la Recherche en Santé du Quebec and the Canadian Institutes of Health Research (CIHR). Dr. Lavigne is internationally recognized for his experimental and clinical research projects on sleep bruxism and the interactions between sleep, pain, and breathing disorders.

THURSDAY, JUNE 4, 2015 / 3:30 PM – 4:30 PM  
I02: PEDIATRIC SLEEP APNEA

Dr. Gozal is currently the Herbert T. Abelson Professor in the Department of Pediatrics at the University of Chicago and Physician in Chief of the Comer Children’s Hospital in Chicago, where he also holds the title of Pritzker Scholar. He received his MD from the Hebrew University of Jerusalem, completed his pediatric residency at the Haifa Medical Center in Israel, and then spent 2 years in Cameroon, West Africa, developing rural healthcare networks, for which he received the title of “Knight of the Order of Merit”. Dr. Gozal then completed his pediatric pulmonology and sleep medicine training at Childrens Hospital Los Angeles in 1993, and joined the faculty at the University of Southern California and UCLA. In 1994, he moved to Tulane University, where he rose through the ranks and was appointed tenured Professor and Constance Kaufman Endowed Chair in Pediatric Pulmonology Research. From 1999 till 2009, Dr. Gozal was at the University of Louisville as the Children’s Hospital Foundation Chair for Pediatric Research, Distinguished University Scholar, Vice-Chair for Research, Director of the Kosair Children’s Research Institute, and Chief of the Division of Pediatric Sleep Medicine and the Sleep Medicine Fellowship Program, both of which were recognized as Programs of Distinction by the American Academy of Sleep Medicine.

He is the current Vice-President of the American Thoracic Society (slated to become President in 2016), deputy editor for the journals SLEEP and Frontiers in Neurology, past associate editor of the American Journal of Respiratory and Critical Care Medicine, and a regular member of the NNRS study section at NIH, as well as serving on the editorial boards of several journals in the field. He has been the recipient of multiple professional accolades, and most recently was awarded the William C. Dement Academic Achievement Award by the American Academy of Sleep Medicine in 2013.
NANCY COLLOP, MD

THURSDAY, JUNE 4, 2015 / 4:30 PM – 5:30 PM
I03: SUCCESSFUL MANAGEMENT OF DISEASE WITH ORAL APPLIANCE THERAPY

Dr. Collop was the 2011-2012 president of the American Academy of Sleep Medicine, and is currently the director of the Emory Sleep Center in Atlanta, Ga. She holds a primary appointment in the Emory School of Medicine as professor of Medicine in the Division of Pulmonary, Allergy and Critical Care Medicine, as well as a secondary appointment as Professor of Neurology. Dr. Collop earned a medical degree in 1984 from the Pennsylvania State University College of Medicine in Hershey, Pa. She completed an internal medicine internship and residency at the Medical College of Virginia in Richmond, Va., and a pulmonary/critical care fellowship at the University of Florida in Gainesville, Fla. Dr. Collop has also served on the American Board of Sleep Medicine (ABSM) Board of Directors since 1998, holding the position of ABSM president from 2002-2009. She currently serves as the Editor-in-Chief of the Journal of Clinical Sleep Medicine.

ALAN LOWE, DMD, PhD

FRIDAY, JUNE 5, 2015 / 4:45 PM – 5:45 PM
I04: CONTROVERSIES IN ORAL APPLIANCE TITRATION TECHNIQUES

Dr. Lowe is currently Professor and Chair of the Division of Orthodontics and Director of the Frontier Clinical Research Centre at the University of British Columbia and has maintained a private orthodontic specialty practice in Vancouver, Canada for 35 years. He has lectured extensively both nationally and internationally in the areas of neurophysiology and orthodontics with a particular emphasis on the etiology and treatment of snoring and Obstructive Sleep Apnea. His research activities have been funded by both provincial and federal governments and he has published over 120 papers, 150 abstracts and 15 book chapters. In addition, he has successfully filed Canadian, U.S. and international patents for each of three inventions.

NATHANIEL WATSON, MD, MS

SATURDAY, JUNE 6, 2015 / 9:00 AM – 10:00 AM
I05: TRENDS IN SLEEP MEDICINE

Dr. Watson is Professor of Neurology at the University of Washington (UW), Director of the Harborview Medical Center Sleep Clinic and Co-director of the UW Medicine Sleep Center. He is Board Certified in sleep medicine and neurology. Dr. Watson is President-Elect of the American Academy of Sleep Medicine. His research interests are diverse, but mainly focus on investigating the untoward impact of sleep curtailment through gene-environment interactions in twin studies. He is a passionate advocate for sleep reprioritization in society and has appeared in numerous media including print, television, and radio pressing this issue. His policy work focuses on fatigue in transportation safety.
The educational courses in the morning on Thursday, June 5, 2015, are not included in the general admission registration; all educational courses are additional fees and are ticketed. If the educational courses are not sold out, tickets are available for on-site purchase at the registration counter. There are three educational tracks available. Total CE credit for each course is 4.00. All educational courses will include morning refreshment breaks from 6:30 AM - 8:00 AM and 10:00 AM – 10:15 AM.

**C01: INTRODUCTION TO DENTAL SLEEP MEDICINE**
Ticketed Event / 8:00 AM - 12:15 PM  
Room: 615

**Overview:** This educational session will provide an overview of and introduction to the most common issues seen in dental sleep medicine.

**Target Audience:** Dentists, dental hygienists, physicians and auxiliary staff

**Chair:** Katherine Phillips, DDS

**Faculty:** Donald Farquhar, DDS / James Hogg, DDS / Kevin Postol, DDS

**Agenda:**

- **8:00 AM – 9:00 AM**  
  Obstructive Sleep Apnea: Pathophysiology, Diagnosis, Co-Morbidities  
  Donald Farquhar, DDS

- **9:00 AM – 10:00 AM**  
  Oral Appliances: History, Types, Mechanism of Action  
  Katherine Phillips, DDS

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**C02: ADVANCED DENTAL SLEEP MEDICINE**
Ticketed Event / 8:00 AM – 12:15 PM  
Room: 6E

**Overview:** Clinically-oriented topics will improve the participants’ understanding of advanced concepts and improve their ability to critically evaluate the current literature and industry supported claims.

**Target Audience:** Advanced-level dentists, orthodontists, clinicians and researchers

**Chair:** Steven Marinkovich, DDS

**Faculty:** Fernanda Almeida, DDS, PhD / Alan Lowe, DMD, PhD / Jonathan Parker, DDS / Olivier Vanderveken, MD, PhD

**Agenda:**

- **8:00 AM – 9:00 AM**  
  Complications Encountered with OA Treatment  
  Jonathan Parker, DDS

- **9:00 AM – 10:00 AM**  
  Dental Changes Encountered with OA Treatment  
  Fernanda Almeida, DDS

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**REFRESHMENT BREAK IN THE EXHIBIT HALL**  
6:30 AM – 8:00 AM

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**REFRESHMENT BREAK IN THE EXHIBIT HALL**  
10:00 AM – 10:15 AM
ELECTRONIC MATERIALS

The AADSM will provide course materials in an electronic format only. Attendees are provided with the materials on a flash drive. Prior to the meeting, attendees who pre-registered were allowed to download and print the course materials. Please note that the AADSM will not supply computers or tablets to view the material or power for computers or tablets. It is imperative that attendees wishing to view the course materials on their laptops or tablets have them sufficiently powered prior to arrival at the meeting each day.

REFRESHMENT BREAK IN THE EXHIBIT HALL
10:00 AM – 10:15 AM

10:15 AM – 11:15 AM
Can We Determine Who Will Respond To OA Treatment?
Olivier Vanderveken, MD, PhD

11:15 AM – 12:15 PM
What If Maximum Success Is Not Achieved with OA Treatment?
Alan Lowe, DMD, PhD

C03: MINI BOARD REVIEW COURSE
Ticketed Event / 8:00 AM – 12:15 PM
Room: 620

Overview: This educational session is geared toward those who are taking the American Board of Dental Sleep Medicine exam or seeking a broad overview of dental sleep medicine.

Target Audience: Any dentist currently active in dental sleep medicine planning on sitting for the ABDSM Board Exam in the near future.

Chair: Alan Blanton, DDS

Faculty: Kelly Carden, MD / Steven Lamberg, DDS / and Kevin Postol, DDS

Agenda:
8:00 AM – 10:00 AM
Basic Sleep Medicine, Analysis of PSG, Tx Alternatives for SRBD Review
Kelly Carden, MD
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CLINICAL EXCELLENCE AWARD
An Auto-Titrating Mandibular Positioner: Accuracy in Predicting Oral Appliance Therapy Outcome and Efficacious Mandibular Protrusion
Shouresh Charkhandeh, DDS

CLINICAL RESEARCH AWARDS
Effects of Neuromuscular Electrical Stimulation on the Masticatory Muscles and Physiologic Sleep Variables in Adults with Cerebral Palsy: A Novel Therapy Approach
Lilian Giannasi, PhD

Effect of Titration on the Therapeutic Efficacy of Mandibular Advancement Therapy
Marijke Dieltjens, PhD

STUDENT EXCELLENCE AWARD
Elevated Risk of Obstructive Sleep Apnea Predicts Temporomandibular Disorder Independently of Sleep Bruxism and Awake Bruxism
Elizabeth Kornegay

STUDENT RESEARCH AWARDS
Three-dimensional Analysis of the Oropharyngeal Airways in Cleft and Non-cleft Patients Before and After Maxillary Expansion
Fabiane Azered

Development of an Auto-Adjusting Mandibular Repositioning Device for In-Home Use
Rita Brugarolas

MEET THE PROFESSORS
Ticketed Events / 12:15 PM – 1:30 PM

During these small-group sessions, an expert in dental sleep medicine will lead an informal discussion on a single topic.

M01: Dentofacial Morphology in Obstructive Sleep Apnea / Benjamin Pliska, DDS / Room: 213

M02: Therapeutic Options in Residual OSA After T&A in Children / David Gozal, MD / Room: 212

M03: How Titration of Oral Appliances, Trial Appliance Therapy, and Combination Therapy Fit in Our Treatment Protocols / Jonathan Parker, DDS / Room: 211

INTRODUCTION & AWARDS
1:30 PM – 2:15 PM / Room: 6E

KATHLEEN BENNETT, DDS, DIPLOMATE, ABDSM, AADSM PRESIDENT

NELLY HUYNH, PhD
CHAIR, AADSM ANNUAL COMMITTEE

GREGORY ESSICK, DDS, PhD
CHAIR, AADSM RESEARCH COMMITTEE
KEYNOTE ADDRESS
I01: IMPACT OF OPIATES ON SLEEP AND ADDICTION RISK: WHAT DENTISTS SHOULD KNOW
2:15 PM - 3:15 PM / Room: 6E
Speaker: Gilles Lavigne, DMD, PhD
Overview: Dr. Lavigne will review the relationship between sleep and pain and the effects that opiates can have on breathing during sleep. This session will also review the risk of addiction and what dentists should know about opiate use.
Target Audience: Dentists, researchers and other providers interested in dental sleep medicine
Objectives:
1. Review the interaction between pain and sleep;
2. Discuss the effect of opiates on breathing during sleep including: hypoxia and central sleep apnea; and
3. Evaluate risk of addiction with analgesic including: putative role of insomnia, mood, altered pain relief and reward expectation, chronic pain and brain injury.

I02: PEDIATRIC SLEEP APNEA
3:30 PM – 4:30 PM / Room: 6E
Speaker: David Gozal, MD
Overview: Dr. Gozal will explore the pathophysiology of pediatric Obstructive Sleep Apnea including the genetic predisposition to pediatric OSA and the outcomes of adenotonsillectomy.
Target Audience: Dentists, clinicians and physicians
Objectives:
1. Review the multifaceted pathophysiology of OSA in children;
2. Examine the presence of a multiplicity of clinical phenotypes in pediatric OSA;
3. Address genetic and epigenetic mechanisms involved in phenotypic variance; and
4. Describe the outcomes of adenotonsillectomy in pediatric OSA.

I03: SUCCESSFUL MANAGEMENT OF DISEASE WITH ORAL APPLIANCE THERAPY
4:30 PM – 5:30 PM / Room: 6E
Speaker: Nancy Collop, MD
Overview: In this presentation the process of diagnosing, referring and managing OSA patients needing an oral appliance will be discussed from the perspective of Dr. Nancy Collop, a board certified sleep medicine physician.
Target Audience: Dentists and other providers interested in sleep medicine
Objectives:
1. Discuss the diagnostic evaluation of suspected sleep apnea patients;
2. Review what types of patients are and are not good candidates for oral appliance therapy based on their presentation, comorbid illnesses and sleep study results; and
3. Discuss the team approach to managing patients with oral appliances including handoffs back and forth between dental and medical professionals.

REFRESHMENT BREAK IN THE EXHIBIT HALL
3:15 PM – 3:30 PM
Industry Supported Events

Please contact MicroDental Laboratory, ResMed or EZ Sleep for more information and to register. Space is limited and pre-registration is strongly encouraged.

MicroDental Laboratory
OSA Appliance Titration; Finding the Starting Position
Thursday, June 4, 2015 / 6:00 PM – 8:00 PM / Washington State Convention Center Room: 615

Overview: This event will include a panel discussion featuring industry experts who will offer candid insight into the various options for determining the starting and therapeutic position for the mandible in OSA Oral Appliance Therapy. They will discuss patient types, bite taking devices, advances in titration technology and appliance influences on determining which technique is most appropriate.

For more information and to register, contact Heather Whalen at events@microdental.com, call 925.803.8653, visit http://microdental.com/aadsm or stop by Booth #201.

ResMed
The Science of Progress
Thursday, June 4, 2015 / 6:30 PM – 8:30 PM / Washington State Convention Center Room: 620

Overview: Join ResMed in discussion around improved patient flow in North America, increased patient access to therapy, and collaborated efforts across the industry. Learn the versatility of Narval CC through presented case studies from leading clinicians.

For more information and to register, email KayMarie.Moreno@resmed.com or stop by Booth #304.

EZ Sleep
Silent Dangers of Compromised Airways
Thursday, June 4, 2015 / 6:30 PM – 8:30 PM / Sheraton Seattle Hotel, Metropolitan Ballroom

Overview: EZ Sleep will present “Silent Dangers of Compromised Airways” which will feature a product presentation as well as an overview of TMD/Sleep Apnea with a focus on airway restriction.

For more information and to register, stop by Booth #300.

Note: Continuing Education Credit may also be available by attending industry supported events. These credits are made available by the event organizer and are not processed by the AADSM. Please contact the event organizers for more information.
FIRST-TIME ATTENDEE BREAKFAST  
7:00 AM – 8:00 AM / ROOM: 620

The AADSM Board of Directors will host a breakfast for all first-time attendees at the 24th Annual Meeting. The breakfast will provide an opportunity for all first-time attendees to network with each other as well as gain some insight into the dental sleep medicine profession. All first-time attendees will receive a ticket with their registration materials, which will be required to gain entrance to the breakfast.

REFRESHMENT BREAK IN THE EXHIBIT HALL  
7:00 AM – 8:00 AM

S01: YEAR IN REVIEW  
8:00 AM – 9:00 AM / Room: 6E

Speaker: B. Gail Demko, DMD

Overview: Dr. Demko will review key literature published in the past two years in the field of dental sleep medicine.

Target Audience: Dentists and dental staff

Objective:

1. Review the latest literature from 2014 and 2015.

W01: NASAL AND PHARYNGEAL SURGERY FOR OSA  
8:00 AM – 9:00 AM / Room: 615

Speaker: Edward Weaver, MD

Overview: Dr. Weaver will review throat and nasal surgery, the effects on breathing and implications for dental practitioners.

Target Audience: Dentists, physicians and clinicians

Objectives:

1. Review the distinct roles of surgery to treat OSA; and
2. Discuss the breadth of surgical procedures available to treat OSA; and
3. Review some of the scientific evidence that supports surgical treatment of OSA.

W02: THE NEW CLINICAL PRACTICE GUIDELINES FOR ORAL APPLIANCE THERAPY: WHERE DID THEY COME FROM AND WHAT DO THEY MEAN FOR YOUR PRACTICE?  
9:00 AM – 10:00 AM / Room: 6E

Speaker: Leslie Dort, DDS / Sheri Katz, DDS

Overview: Drs. Dort and Katz will present a review of the new clinical practice guidelines for Oral Appliance Therapy, including how and why they were created as well as a review of the principles for your practice.

Target Audience: Dentists and physicians

Objectives:

1. Review the rationale for the new clinical guidelines for the use of oral appliances in the treatment of sleep disordered breathing;
2. Review the methods used to formulate the guidelines;
3. Discuss the significant changes from previous guidelines; and
4. Discuss the potential impact the new guidelines will have on clinical practice.

R01: CHALLENGING CASE REPORTS  
9:00am – 10:00am / Room: 615

During this session, challenging case reports will be presented and an expert panel will discuss their approach to diagnosis and treatment.

REFRESHMENT BREAK IN THE EXHIBIT HALL  
10:00 AM – 10:30 AM
Friday, June 5

POSTER VIEWING / 10:00 AM – 10:30 AM

All posters are available for viewing outside the session rooms throughout the AADSM Annual Meeting. Presenters of the posters listed below are available for questions and comments from 10:00 AM – 10:30 AM on Friday, June 5, 2015.

POSTER #001
Quantitative evaluation of upper airway using nasoendoscopy for prediction of oral appliance treatment outcome in moderate and severe obstructive sleep apnea

POSTER #003
Oral appliance therapy versus nasal CPAP in obstructive sleep apnea: a randomized, placebo-controlled trial on sleep-related comorbidities
Aarab G, Nikolopoulos M, Byraki A, Ahlberg J, Heymans MW, de Lange J, Lobbezoo F

POSTER #005
Halitosis and obstructive sleep apnea have improved by lip muscle training

POSTER #007
Prediction of the therapeutic efficacy of Oral Appliance Therapy based on AHI and BMI
Dieltjens M, Verbruggen AE, Van de Heyning PH, Vanderveken OM, Braem MJ

POSTER #009
The Prospective Power of Drug-Induced Sedation Endoscopy in Predicting Therapeutic Outcome in Obstructive Sleep Apnea Patients Treated with Oral Appliance Therapy in a Fixed Mandibular Protrusion

POSTER #011
Three-dimensional analysis of the oropharyngeal airways in cleft and non-cleft patients before and after maxillary expansion
Azeredo F, de Menezes LM, Deon Rizzotto SM, Enciso R

POSTER #013
Development of an Auto-Adjusting Mandibular Repositioning Device for In-Home Use
Brugarolas R, Valero-Sarmiento JM, Essick GK

POSTER #015
Three-year effect of oral appliance use on mandibular position in patients with obstructive sleep apnea
Furuhata A, Furuhata M, Inoue Y, Tsuiki S

POSTER #017
An Auto-Titrating Mandibular Positioner: Accuracy in Predicting Oral Appliance Therapy Outcome and Efficacious Mandibular Protrusion

D01: PANEL DISCUSSION: APPROPRIATE THERAPY FOR OBSTRUCTIVE SLEEP APNEA
10:30 AM – 12:30 PM / Room: 6E

Speakers: Gilles Lavigne, DMD, PhD / Satoru Tsuiki, DDS Olivier Vanderveken, MD, PhD / Edward Weaver, MD

Overview: This panel presentation will discuss the various methods of treatment for OSA and explore how to find the most appropriate therapy depending upon the clinical situation.

Target Audience: Dentists, affiliated providers, and clinical researchers

Objectives:
1. Discuss the major treatments for OSA; and
2. Review clinical situations where each treatment may be the most appropriate.

LUNCH ON YOUR OWN / 12:30 PM – 1:45 PM

ABDSM INFORMATIONAL SESSION
12:30PM – 1:00PM
Room: 6E

Learn about the ABDSM certification process. Board members will be available to answer questions.

WE WANT YOUR FEEDBACK / VISIT WWW.AADSM.ORG/EVALUATIONS
MEET THE PROFESSORS

Ticketed Events / 12:30 PM – 1:45 PM

During these small-group sessions, an expert in dental sleep medicine will lead an informal discussion on a single topic.

M04: Managing Oral Appliance Therapy in the Sleep Center / Nancy Collop, MD / Room: 211

M05: Tips for Insurance in the Dental Sleep Medicine Practice / Jan Palmer / Room: 12

M06: Social Media & Your Practice / Laura Bohacz
Room: 213

W03: THE AFFORDABLE CARE ACT
1:45 PM – 3:15 PM / Room: 6E

Speaker: Deborah Ziwot, DMD

Overview: This session will present the essential components of the Affordable Care Act that directly or indirectly impact oral appliance therapy for the treatment of obstructive sleep apnea.

Target Audience: Dentists and dental professionals

Objectives:
1. Review the sleep center industry prior to the enactment of the Affordable Care Act;
2. Discuss the impact of the Affordable Care Act on sleep centers, specifically in regards to the delivery of care in the diagnosis and treatment of obstructive sleep apnea;
3. Examine the impact of the Affordable Care Act on oral appliance therapy; and
4. Identify strategies for promoting oral appliance therapy in the current legislative and economic environment.

S02: GIZMOS AND GADGETS: USING TECHNOLOGY TO ENHANCE THE CARE OF PATIENTS WITH SLEEP DISORDERS
1:45 PM – 3:15 PM / Room: 615

Speaker: Neil Freedman, MD

Overview: This session will provide the attendee with an overview of the rapidly evolving technologies used to diagnose and manage sleep disorders.

Target Audience: Dentists, physicians and other affiliated professionals

Objectives:
1. Discuss the available portable monitoring systems commonly used in an outpatient setting for the diagnosis of obstructive sleep apnea;
2. Identify the indications and limitations of various PAP devices and non-PAP advanced technologies for the management of the spectrum of sleep disordered breathing;
3. Describe how telemedicine and the electronic health record may be used to enhance the care of patients with sleep disorders; and
4. List the potential advantages and limitations of various consumer directed technologies that are marketed to assess sleep and sleep disorders.

REFRESHMENT BREAK IN THE EXHIBIT HALL
3:15 PM – 3:30 PM
POSTER VIEWING / 3:15 PM – 3:45 PM

All posters are available for viewing in outside the meeting rooms throughout the AADSM Annual Meeting. Presenters of the posters listed below are available for questions and comments from 3:15pm – 3:45pm on Friday, June 5, 2015.

POSTER #002
Effects of a non-mandibular advancement device in adults with severe obstructive sleep apnea
Griffin T, Singh D

POSTER #004
WITHDRAWN

POSTER #006
Elevated Risk of Obstructive Sleep Apnea Predicts Temporomandibular Disorder Independently of Sleep Bruxism and Awake Bruxism
Kornegay EC, Sanders AE, Essick GK

POSTER #008
Effect of titration on the therapeutic efficacy of Mandibular Advancedment Therapy
Dieltjens M, Braem MJ, Verbruggen AE, Van de Heyning PH, Vanderveken OM

POSTER #010
Longitudinal Survey Of Mandibular Advancement Aplint (MAS) Usage, Adherence, Side Effects and Interplay With Continuous Positive Airway Pressure (CPAP) Therapy: An Australian Story
Gano C, Ng AT, Lee P

POSTER #012
Impact of a custom-made mandibular repositioning device on blood pressure in obstructive sleep apnea patients noncompliant with continuous positive airway pressure
Vecchierini MF, Kerbrat JB, Monteyrol PJ, Morin L, Meurice JC

POSTER #014
Dentofacial characteristics of children suspected of obstructive sleep apnea
Lee J, Chadha NK, Pliska BT

POSTER #016
Innovative technique for the fabrication of the custom face mask for Hybrid Therapy
Prehn RS, Colquitt T

POSTER #018
Parallel changes in the frequency of respiratory event and swallowing during sleep in obstructive sleep apnea patients with and without a mandibular advancement device
Yagi K, Lowe AA, Ayas NT, Fleetham JA, Ichikawa T, Almeida FR

POSTER #020
Effects of neuromuscular electrical stimulation on the masticatory muscles and physiologic sleep variables in adults with cerebral palsy: a novel therapy approach
Giannasi LC, Matsui MY, Nacif SR, Grossmann E, Amorim JBO, Oliveira LVF, Oliveira CS, Gomes MF

W04: A WHIRLWIND TOUR OF MEDICAL INSURANCE IN THE DENTAL SLEEP PRACTICE
3:45pm – 4:45pm / Room: 6E

Speaker: Jan Palmer

Overview: This presentation will provide an overview of medical insurance and the dental office.

Target Audience: Practitioners and staff

Objectives:

1. Review the basics of medical insurance in the dental sleep office;
2. Discuss the completion of the CMS 1500 02/12 claim form;
3. Review the choices of Medicare participation; and
4. Identify the basic responsibilities of the dental office when treating Medicare recipients.
The authors of the following six abstracts will present their research during this session. Authors selected for oral presentations are allotted an 8-minute time period to present their abstract, followed by a 2-minute time period for questions and answers. The three-digit poster ID number corresponds to the abstract listing on page 53.

**3:45 PM - 3:55 PM | POSTER #006**
Elevated Risk of Obstructive Sleep Apnea Predicts Temporomandibular Disorder Independently of Sleep Bruxism and Awake Bruxism
Kornegay E, Sanders A, Essick G

**4:05 PM - 4:15 PM | POSTER #013**
Development of an Auto-Adjusting Mandibular Repositioning Device for In-Home Use
Brugarolas R, Valero-Sarmiento J, Essick G

**4:15 PM - 4:25 PM | POSTER #017**
An Auto-Titrating Mandibular Positioner: Accuracy in Predicting Oral Appliance Therapy Outcome and Efficacious Mandibular Protrusion

**4:25 PM - 4:35 PM | POSTER #020**
Effects of Neuromuscular Electrical Stimulation on the Masticatory Muscles and Physiologic Sleep Variables in Adults with Cerebral Palsy: A Novel Therapy Approach
Giannasi LC, Matsui MY, Nacif SR, Grossmann E, Amorim JBO, Oliveira LVF, Oliveira CS, Gomes MF

**4:35 PM - 4:45 PM | POSTER #008**
Effect of Titration on the Therapeutic Efficacy of Mandibular Advancement Therapy
Dieltjens M, Braem M, Verbruggen A, Van de Heyning P, Vanderveken O

**104: CONTROVERSIES IN ORAL APPLIANCE TITRATION TECHNIQUES**
4:45 PM – 5:45 PM / Room: 6E

**Speakers:** Alan Lowe, DMD

**Overview:** Dr. Lowe will discuss the advantages and disadvantages of four different oral appliance titration techniques to facilitate better utilization of oral appliances in dental sleep medicine.

**Target Audience:** Dentists and dental staff

**Objectives:**
1. Discuss how to titrate an adjustable oral appliance to achieve the maximum effectiveness for the treatment of snoring and/or OSA;
2. Compare and contrast the titration options of patient or bed partner reports, home oximetry, portable monitoring and in hospital polysomnography;
3. Discuss potential issues with all four options so as to facilitate efficacious patient care; and
4. Discuss the current oral appliance titration guidelines provided by regulatory and professional organizations.
**President’s Reception**

6:15 pm – 7:15 pm

**METROPOLITAN BALLROOM, 3rd FLOOR
SHERATON SEATTLE HOTEL**

The AADSM Board of Directors invites all meeting attendees to the President’s Reception. The President’s Reception takes place on Friday, June 5, 2015 from 6:15pm - 7:15pm in the Metropolitan Ballroom at the Sheraton Seattle Hotel.

The President’s Reception is a social celebration featuring hors d’oeuvres, a full-service cash bar, live music and more!

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**W05: SLEEP APNEA’S CONTRIBUTION TO THE STRESS LOAD AND MINDFULNESS BASED STRESS REDUCTION**

4:45 pm – 5:45 pm / Room: 615

**Speaker:** Mark Abramson, DDS

**Overview:** Dr. Abramson will review the sympathetic stress response and arousal reaction in stress and sleep apnea.

**Target Audience:** Dentists and clinicians

**Objectives:**

1. Review the stress reaction in an apnea event;
2. Discuss the parallels in stress reactions in sleep and wake;
3. Identify how mindfulness can help one get into sleep and manage stress in daily life; and
4. Describe the stress horomoe cycles in sleep and wake affect health.

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The American Academy of Dental Sleep Medicine acknowledges and thanks the following companies for their participation in the AADSM Sponsorship Program. Thank you for your generous support and continued involvement in the advancement of dental sleep medicine.

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**S03: DENTOFACIAL CONSEQUENCES OF CPAP**
8:00 AM – 9:00 AM / Room: 6E

**Speaker:** Hiroko Tsuda, DDS, PhD

**Overview:** Dr. Tsuda will review the oral health related consequences of CPAP therapy, and discuss the need to raise awareness of this issue and the role of dental sleep medicine in OSA management.

**Target Audience:** Dentist, physicians and dental staff

**Objectives:**
1. Review the current evidence of the dentofacial consequences of CPAP use in pediatric and adult OSA;
2. Describe the different types of CPAP interface;
3. Discuss possible factors that affect oral health in OSA patients or CPAP users; and
4. Recognize the role of dentists in oral health management of CPAP users.

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**S04: OUT OF CENTER SLEEP TESTING (OCST)**
8:00 AM – 9:00 AM / Room: 615

**Speaker:** Samuel Kuna, MD

**Overview:** This session will provide an overview of the data on out of center sleep testing (OCST).

**Target Audience:** Dentists, clinicians, researchers and dental staff

**Objectives:**
1. Review the literature on OCST versus in-lab testing; and
2. Discuss the evolution and potential future of OCST devices and technology.

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**I05: TRENDS IN CLINICAL SLEEP MEDICINE**
9:00 AM – 10:00 AM / Room: 6E

**Speaker:** Nathaniel Watson, MD, MS

**Overview:** This presentation will cover recent developments in the world of sleep medicine by American Academy of Sleep Medicine President-Elect, Dr Nathaniel Watson.

**Target Audience:** Dentists, clinicians, and providers of sleep medicine services

**Objectives:**
1. Discuss the results of the AASM Sleep Duration Consensus Conference;
2. Recognize how consumer sleep technologies are impacting sleep medicine; and
3. Review newly developed therapies in sleep medicine.

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**S05: SLEEP AND CANCER**
9:00 AM – 10:00 AM / Room: 615

**Speakers:** Catherine Vena, PhD, RN, CNE

**Overview:** This presentation will present a broad overview of sleep and sleep disorders in persons with cancer including the scientific evidence for disturbed sleep, potential interactions between sleep and cancer disease and treatments, and clinical implications for practitioners.

**Target Audience:** Dentists and clinicians

**Objectives:**
1. Examine the literature on sleep quality and sleep disorders in persons with cancer;
2. Illustrate the potential effects of the cancer disease process and current treatments on sleep quality; and
3. Review the implications for dental sleep medicine practice in cancer patients and survivors.
S06: OROFACIAL NEUROPATHIC PAIN: CLINICAL PRESENTATION, MECHANISMS, AND EVIDENCE-BASED MANAGEMENT
10:15 AM – 11:15 AM / Room: 6E
Speaker: Thuan Dao, DMD, PhD
Overview: Dr. Dao will discuss the clinical manifestations of persistent orofacial neuropathic pain following dental interventions, their underlying neural mechanisms and evidence-based management strategies.
Target Audience: Dentists and other health professionals
Objectives:
1. Recognize the clinical signs and symptoms of orofacial neuropathic pain;
2. Describe the basic mechanisms underlying neuropathic orofacial pain, and use these to explain the clinical phenomena associated with orofacial neuropathic pain; and
3. Review the rationale of the evidence-based management of orofacial neuropathic pain.

D02: THE CIRCLE OF CARE — DEVELOPING A SUSTAINABLE PHYSICIAN REFERRAL NETWORK
10:15 AM – 11:15 AM / Room: 615
Speakers: Patricia Braga, DDS
Overview: This presentation is intended provide a discussion of what is important in the development of a solid physician referral network.
Target Audience: Dentists and other health professionals
Objectives:
1. Review the necessity and efficiency of physician referrals in building a Dental Sleep Medicine Practice;
2. Discuss strategies to increase the sleep specialist physician’s awareness of the benefits of using Mandibular Advancement Devices (MAD) and enhancing the physician’s understanding of the level of treatment sophistication and collaboration provided by well-trained and credentialed dentists;
3. Discussion what is important to the Sleep Physician in choosing a sleep apnea dentist for a patient referral; and
4. Discuss how to use the “Circle of Care.”

W06: LIABILITY AND LOSS PREVENTION
11:15 AM – 12:15 PM / Room: 6E
Speaker: Aiju Thevatheril
Overview: This session will provide risk management, claims and litigation overview on medical and dental malpractice.
Target Audience: Sleep medicine specialists, dentists, oral surgeons and anesthesiologists
Objectives:
1. Discuss who can be sued for malpractice;
2. Review the reasons for why you can be sued;
3. Explain what you can do if you are sued; and
4. Discuss how to avoid being sued.
S07: SLEEP AND POSITIONAL THERAPY  
11:15 AM – 12:15 PM / Room: 615  
**Speaker:** Marijke Dieltjens, PhD  
**Overview:** In this presentation, the effect of body and head position on the severity and prevalence of sleep apnea will be discussed, as well as the results of positional therapy applied in patients with residual positional sleep apnea under oral appliance therapy.  
**Target Audience:** Dentists  
**Objectives:**  
1. Discuss the effect of body vs head positioning on the severity of obstructive sleep apnea;  
2. Describe the prevalence of positional obstructive sleep apnea (POSA) among the sleep apnea population, and in particular the prevalence of POSA in patients under oral appliance therapy (OAT);  
3. Describe new advances in positional therapy; and  
4. Summarize the results of a randomized clinical trial on the effect of positional therapy in patients with residual POSAs under OAT.

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LUNCH ON YOUR OWN / 12:15 PM – 1:30 PM

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S08: OBJECTIVE COMPLIANCE MONITORING  
1:30 PM – 2:30 PM / Room: 6E  
**Speakers:** Thomas Schell, DMD  
**Overview:** This session will be a comparative review of available compliance monitors, their importance and application.  
**Target Audience:** Dentists, clinicians and dental staff  
**Objectives:**  
1. Discuss the current objective monitors available on the market today;  
2. Review the importance of objective monitors in the application of oral appliance therapy; and  
3. Discuss the benefits & drawbacks of available monitors.

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S09: SLEEP AND DEPRESSION  
1:30 PM – 2:30 PM / Room: 615  
**Speaker:** Colin Shapiro, PhD  
**Overview:** This session is designed to be a look at the impact of sleep disorders on depression and depression on sleep disorders  
**Target Audience:** Dentists  
**Objectives:**  
1. Discuss the bidirectional links between sleep and depression;  
2. Discus how sleep architecture may be a biomarker of depression;  
3. Describe how this can be done unattended in the home; and  
4. Review the Stop Bang questionnaire.

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MEET THE PROFESSORS

**Ticketed Events** / 12:15 PM – 1:30 PM  
During these small-group sessions, an expert in dental sleep medicine will lead an informal discussion on a single topic.  
**M07: Combination Therapy, Research and Clinical Views** / Fernanda Almeida, DDS, PhD / Room: 212  
**M08: There is More to Sleep Than Apnea: An Insight into Other Sleep Disorders which May Co-exist with and Confuse an OSA Diagnosis**  
Timothy Quinnell, MBBS / Room: 213  
**M09: Differential Diagnosis of Sleep Bruxism**  
Gilles Lavigne, DMD, PhD / Room: 211
W07: COST EFFECTIVENESS OF ORAL APPLIANCE
2:30 PM – 3:30 PM / Room: 6E

Speaker: Timothy Quinnell, MBBS

Overview: This presentation will explore the existing evidence for cost effectiveness of oral appliance therapy in obstructive sleep apnea and examine how cost considerations may influence the development of treatment strategies.

Target Audience: Dentists specializing in the treatment of OSA

Objectives:
1. Discuss the existing evidence regarding cost effectiveness of oral appliances in OSA;
2. Review the obstacles and pitfalls affecting the provision of affordable oral appliance therapy;
3. Identify strategies to improve the prediction of successful oral appliance therapy that might interact with cost effectiveness; and
4. Discuss future research needed in this area.

D03: WHY AND HOW TO GET DSM FACILITY ACCREDITATION
2:30 PM – 3:30 PM / Room: 615

Speaker: Norm Blumenstock, DDS; Patricia Braga, DDS; and Earl Bogrow, DDS

Overview: This presentation will explain the benefits and details of the application process for Dental Sleep Medicine Facility Accreditation.

Target Audience: Dentists and dental staff

Objectives:
1. Discuss the benefits of accreditation; and
2. Review the application process.
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POSTER #001
QUANTITATIVE EVALUATION OF UPPER AIRWAY USING NASOENDOSCOPY FOR PREDICTION OF ORAL APPLIANCE TREATMENT OUTCOME IN MODERATE AND SEVERE OBSTRUCTIVE SLEEP APNEA

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Introduction: Treatment with oral appliances (OA) is an alternative to continuous positive airway pressure (CPAP) for obstructive sleep apnea (OSA), although it appears to be less efficacious but more accepted by patients. As the efficacy of oral appliances varies greatly in patients with moderate to severe OSA, the prediction of OA treatment response is of key importance for efficient disease management. Nasoendoscopy has been previously reported as a useful approach to assess the upper airway and as a predictor of OA treatment. However, previous studies have been limited by qualitative assessments and retrospective study designs. In the present study, we report on the prospective and quantitative prediction of OA treatment outcomes using nasoendoscopy.

Method: A total of 61 patients with moderate to severe PSG-diagnosed OSA were prospectively and consecutively recruited for this study. The velopharynx and oropharynx was assessed via nasoendoscopy for each patient while awake and in the supine position. The airway expansion ratio, defined as the cross-sectional area of the airway during maximum mandibular protrusion divided by the area in centric occlusion, was then calculated at the level of both the velopharynx and oropharynx. Treatment success was defined as an AHI <10/h in addition to a >50% reduction in baseline AHI. A Mann-Whitney U-test was used to compare the expansion ratio between responders and non-responders. A Multivariable logistic regression analysis was performed, with OA treatment outcome as the dependent variable and the independent variables included age, body mass index (BMI), baseline AHI, and the airway expansion ratio in the velopharynx and oropharynx. A receiver operating characteristics (ROC) curve analysis was used to determine the prediction and the best cut-off value for the expansion ratio.

Results: The expansion ratio of the velopharynx was significantly greater in responders than in non-responders (2.9 vs 1.7, p<0.001). Similarly, the expansion ratio of the oropharynx was also significantly greater in responders than in non-responders (3.4 vs 2.4, p<0.05). Baseline AHI and the expansion ratio of the velopharynx were found to be independent predictors of OA treatment outcome with the multivariate logistic regression analysis. The estimated area under the curve (AUC) was 75.7 and the cut-off value of the expansion ratio was 2.00. The best combination of sensitivity/specificity and PPV/PPV was 85.7/80.8 and 85.7/80.8.

Conclusion: The airway expansion ratio of the velopharynx was significantly greater in responders than in non-responders, and a cut-off value of 2.0 provided a prediction with a high accuracy. Nasoendoscopy may have significant clinical utility in predicting success of OA treatment.

POSTER #002
EFFECTS OF A NON-MANDIBULAR ADVANCEMENT DEVICE IN ADULTS WITH SEVERE OBSTRUCTIVE SLEEP APNEA

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Introduction: Mandibular repositioning devices (MRD) have been deployed for the management of mild, moderate and even severe cases of OSA, but there are some concerns regarding unwanted tooth movements, temporomandibular joint issues and facial profile changes using that approach. Biomimetic oral appliance therapy (BOAT) differs from conventional MRD therapy as it aims to correct the nasal airway through midfacial redevelopment followed by mandibular correction, which aims to improve the oropharyngeal airway in adults. In this investigation, we test the hypothesis that severe OSA can be addressed without primary mandibular advancement using BOAT.
Methods: In this preliminary study, we included 8 consecutive adults aged >21yrs that had been diagnosed with severe OSA, following an overnight sleep study that had been interpreted by a Board certified sleep physician. Each subject that participated in this pilot study had failed to comply with CPAP therapy, and was treated under medical supervision by a dentist with advanced training in dental sleep medicine. At each monthly follow-up visit, examination for progress and adjustments of the devices were performed to optimize their efficacy. The mean apnea–hypopnea index (AHI) of the study sample was calculated prior to and after BOAT. The findings were subjected to statistical analysis, using paired t-tests.

Results: There were 5 females and 3 males that were included in this preliminary study. The mean age of the sample was approx. 60.2 yrs. ± 5.6. Prior to treatment the mean AHI of the study subjects was 46.6 ± 12.9. A further follow sleep study was done at a mean of 10.4 mos. ± 2.6. At this time, the AHI decreased significantly (p < 0.001) to a mean value of 13.9 ± 10.5 after BOAT, which represents a fall in the mean AHI by 70% for the study sample. Indeed, three subjects had an AHI of between 3.1 to 5.1 with no appliance in the mouth when the post-treatment sleep studies were done.

Conclusions: BOAT may be a useful method of managing severe cases of OSA in adults, and may represent an alternative to CPAP and MRD therapy. However, long-term follow up using a larger sample size is needed to reach more definitive conclusions on these initial findings.

POSTER #003
ORAL APPLIANCE THERAPY VERSUS NASAL CPAP IN OBSTRUCTIVE SLEEP APNEA: A RANDOMIZED, PLACEBO-CONTROLLED TRIAL ON SLEEP-RELATED COMORBIDITIES
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Introduction: Obstructive sleep apnea (OSA) is associated with several other sleep disorders and sleep-related problems such as insomnia and daytime dysfunction. To our best knowledge, no randomized placebo-controlled trials have been performed comparing the effects of an objectively titrated mandibular advancement device (MAD) and Continuous Positive Airway Pressure (CPAP) on common sleep-related comorbidities. Therefore, the aim of this study was to compare the effects of an MAD with those of nasal CPAP (nCPAP) on symptoms of common sleep disorders and sleep-related problems.

Methods: This study is part of a randomized placebo-controlled trial in which different treatment effects of a titrated MAD are compared with those of nCPAP and an intra-oral placebo appliance in a parallel design. 64 mild/moderate OSA patients (52.0 ± 9.6 years) were randomly allocated to these three therapy groups. All patients filled out the Dutch Sleep Disorders Questionnaire (SDQ) twice: one before treatment and one after six months of treatment. The SDQ is a validated questionnaire that is designed for the assessment of common sleep disorders and sleep-related problems. Based on 88 questions, thirteen scales were constructed, representing the following sleep disorders and sleep-related problems: “insomnia”, “psychiatric sleep disorder”, “periodic limb movements”, “sleep apnea”, “excessive daytime sleepiness”, “cataplexy”, “sleep paralysis”, “daytime dysfunction”, “hypnagogic hallucinations/dreaming”, “sexual/social dissatisfaction”, “restless sleep”, “negative conditioning” and “automatic behavior”. Linear mixed model analyses were performed to study differences between the groups for the different SDQ scales over time.

Results: At baseline, there were no significant differences between the three therapy groups in the symptoms of these sleep disorders and sleep-related problems (F = 1.947-0.015; P = 0.153-0.985). The MAD group showed significant improvements in symptoms over time corresponding with “insomnia”, “psychiatric sleep disorder”, “periodic limb movements”, “sleep apnea”, “excessive daytime sleepiness”, “sleep paralysis”, “daytime dysfunctioning”, “hypnagogic hallucinations/dreaming”, “restless sleep”, “negative conditioning” and “automatic behavior” (F = 29.82-6.86, P = 0.000-0.014). These improvements in symptoms were, however, not significantly different from the improvements in symptoms observed in the nCPAP and placebo groups (P = 0.082-0.949).
Conclusion: There is no significant difference between MAD and nCPAP in their beneficial effects on symptoms of common sleep disorders and sleep-related problems in mild and moderate OSA patients. These beneficial effects may be a result of the time course and/or of placebo effects.

POSTER #004
WITHDRAWN

POSTER # 005
HALITOSIS AND OBSTUCTIVE SLEEP APNEA HAVE IMPROVED BY LIP MUSCLE TRAINING

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Introduction: In recent years, patients are increasingly complaining of dry mouth and halitosis, as well as snoring and obstructive sleep apnea (OSA), all of which are problems associated with mouth breathing. Despite the common thread, these conditions are often treated separately and there are few reports in the literature. We herein report a case of a patient who complained of halitosis and snoring, and whose symptoms were improved with lip muscle training.

Methods: The patient is Forty-year-old woman whose chief complaint is halitosis. The patient visited the Department of Comprehensive Clinical Dentistry, Nihon University School of Dentistry at Matsudo hospital in May 2012 for treatment of moderate halitosis following a halitosis test. The patient underwent periodontal treatment for one year according to hospital procedures, after which second halitosis test was given in July 2013. The results showed some improvement in, but no change in unpleasant subjective symptoms. The patient then mentioned that she snored. A simplified sleep test (SAS-2100, Teijin, Tokyo Japan) recorded a Respiratory Disturbance Index (RDI) of 8.2 times/hour, and the patient was diagnosed with mild OSA. The patient was treated with a mandibular advancement device (MAD) and an M-Patakara (PTR, Patakara Co., Ltd., Tokyo, Japan) was used for lip muscle training. PTR is made from flexible plastic and rubber, the resilience of which directly conditions the oral muscles to increase strength. In accordance with the supplied instructions for the use of M-Patakara®, patient underwent this training at the clinic and/or home for 5 minutes four times a day, every day, for 2 months. After several days of wearing the MAD, the patient complained of soreness in her temporomandibular joints. She discontinued using the MAD, and only continued treatment with the PTR. Two months of PTR use resulted in an increase in lip closure force, a reduction in RDI to 3.2 times/hour, and a decrease in foul odor to a low threshold that the patient could scarcely detect.

Results: Prolonged chronic mouth breathing can reportedly lead to weakening of the orbicularis oris muscles and changes in tongue position. Moreover, mouth breathing may trigger halitosis, snoring and OSA. Through continued lip muscle training, the above patient no longer experienced halitosis upon awakening and her sleeping improved. These results suggest that there is a strong connection between halitosis and OSA via mouth breathing. We plan to conduct further studies on this relationship.

Conclusion: Lip muscle training increased lip closure force. And also, lip muscle training improved halitosis and RDI during sleep.

POSTER #006
ELEVATED RISK FOR OBSTUCTIVE SLEEP APNEA PREDICTS TEMPOROMANDIBULAR DISORDER INDEPENDENTLY OF SLEEP BRUXISM AND AWAKE BRUXISM
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Introduction: Temporomandibular disorder (TMD) is a musculoskeletal disorder characterized by persistent pain in the temporomandibular joint, periauricular region, or the head and neck muscles. Elevated risk for obstructive sleep apnea (OSA) predicts incident TMD; but whether this is a spurious association, confounded by sleep bruxism and awake bruxism, remains unclear. We hypothesized that baseline elevated risk for OSA, sleep bruxism and awake bruxism were each independent predictors of first-onset TMD incidence.

Methods: The prospective cohort, “Orofacial Pain, Prospective Evaluation and Risk Assessment” (OPPERA) study investigated risk factors for TMD incidence in people with no lifetime history of TMD. Between 2006 and 2008, men and women aged 18-44 years were recruited from four study sites: Chapel Hill, NC; Baltimore, MD; Buffalo, NY; and Gainesville, FL. At baseline, participants self-reported sleep bruxism and
Introduction: To evaluate risk for OSA, they self-reported loud snoring, daytime tiredness, witnessed apnea, and hypertension. Participants with \( \geq 2 \) of these OSA signs/symptoms, or a prior diagnosis of OSA, were classified as having elevated risk for OSA. A baseline clinical examination verified absence of TMD, according to modified Research Diagnostic Criteria. In up to 5.2 years of follow-up, participants completed TMD screening questionnaires every three months to monitor symptoms of first-onset TMD. Clinical re-examination determined TMD in the presence of: (1) \( \geq 5 \) days/month of pain in the masticatory structures and (2) findings of arthralgia and/or myalgia. Risk for OSA, sleep and awake bruxism were modeled in multivariable Cox proportional hazards regression to estimate hazard ratios (HR) and 95% confidence limits (CL) for incident TMD, adjusting for potential confounding.

Results: Of a cohort of 2,660 adults, at baseline 5.8% of participants had elevated risk for OSA; 16.6% reported sleep bruxism at least 1-3 nights/month; and 14.7% reported awake bruxism at least some of the time. Over a median 2.8 years, 252 of the adults developed first-onset TMD. In univariate analysis, elevated risk for OSA, sleep bruxism, and awake bruxism were each significant individual predictors of TMD incidence. In multivariable analysis, the strength of association between OSA risk and TMD incidence was not attenuated with subsequent inclusion of sleep bruxism and awake bruxism. In the fully-adjusted model, incidence of first-onset TMD was 68% higher in participants at elevated risk for OSA (HR = 1.7, 95% CL: 1.1, 2.6) compared to those at low risk for OSA.

Conclusion: In OPPERA, elevated risk for OSA, reported sleep bruxism, and reported awake bruxism were independent risk factors for developing first-onset TMD.

POSTER #007
PREDICTION OF THE THERAPEUTIC EFFICACY OF ORAL APPLIANCE THERAPY BASED ON AHI AND BMI

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Introduction: Indication for oral appliance therapy (OAT) is often expressed as a function of obstructive sleep apnea (OSA) severity. Classically OAT is indicated when the apnea/hypopnea index (AHI) shows mild (5<AHI<15) to moderate (15<AHI<30) OSA and/or in patients with severe (AHI>30) OSA that refuse other treatment. In many patients OSA severity is also linked to their body mass index (BMI). The aim of the present study is to investigate the validity of preselecting patients on the basis of the baseline AHI and BMI with respect to therapy outcome defined as a decrease in AHI with a mandibular advancement device (OAm).

Materials and methods: In a group of 89 patients (mean age 48 \( \pm \) 10 years, M/F ratio 87%, BMI 27.7 \( \pm \) 3.4 kg/m\(^2\), AHI baseline 18.7 \( \pm \) 11.9/h), OAT with a custom made titratable duoblock “Respident” (Belgium) OAm started in 75% of the maximal protrusion (MP). After 3 months a control PSG with OAm75% (n=68) was made. Success was defined as “Δ AHI ≥ 50% or AHI < 5/h”.

Results: The OAm75% significantly reduced the AHI to 12.3 \( \pm \) 12.9/h (p<0.001) while the changes in BMI did not exceed 1 kg/m\(^2\). Plotting the AHI baseline versus BMI while defining an area delineated by AHI = 30/h and BMI = 30 kg/m\(^2\) as the theoretical upper borders of patients treatable with OAm, the results show that n=45 are within this box of which n=21 (47%) were successfully treated. Outside the box are n=23 of which n=12 were successfully treated (52%). There is no significant difference in therapeutic outcome (p=1.000) between the patients inside the “30-30 box” versus those situated outside. The same is true when plotting the change in AHI versus BMI.

Conclusion: Treatment success defined as “Δ AHI ≥ 50% or AHI < 5/h” in a group of patients with a custom-made duoblock titratable oral appliance in 75% of the maximal protrusion, cannot be predicted on the basis of AHI baseline and BMI.

POSTER# 008
EFFECT OF TITRATION ON THE THERAPEUTIC EFFICACY OF MANDIBULAR ADVANCEMENT THERAPY

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Introduction: Titratable oral appliance therapy (OAT) is generally started in an arbitrary mandibular protrusion. Therefore, additional protrusion or “titration” is required to optimize therapeutic outcome. More protrusion is
However not always associated with a corresponding reduction in sleep apnea severity and could lead to increased side-effects. The aim of this study is to investigate whether titration will yield to a higher therapeutic efficacy in terms of an additional decrease in apnea-hypopnea index (AHI) in patients that started OAT in 75% of maximal protrusion (MP).

**Methods:** This study is an extension to the prospective clinical trial ‘Predicting therapeutic outcome of mandibular advancement device treatment in obstructive sleep apnea (PROMAD)’. In the PROMAD protocol, 100 patients with obstructive sleep apnea (OSA) are included and started OAT at 75% of MP. In patients with a residual AHI > 5/h on a full night polysomnography (PSG) in the 75% of MP, the OAT was adjusted to 90% of MP with constant vertical dimension. This 90% position is a weighted compromise between efficacy and side-effects. After an habituation period but within 2 months after the PSG with OAT, a PSG was performed to assess the efficacy of the 90% position.

**Results:** Fifty-two OSA patients were included in this study. In 17 out of 52 patients (33%), the 75% position yielded an AHI < 5/h. The remaining 35 patients had an AHI > 5/h under OAT in 75% of MP and gave informed consent to adjust the OAT to the 90% of MP. In this group, the AH1 decreased significantly from 22.6 ± 14.2/h at baseline, to 17.6 ± 14.6/h in the 75% MP (p < 0.05). The AHI further decreased significantly to 12.8 ± 8.6 in the 90% MP (p < 0.05). Nineteen patients (54%) showed a lower AHI in the 90% MP when compared to the 75% MP, whereas in 16 patients (46%) the AHI was higher in the 90% MP when compared to the 75% MP. In 6 patients (17%) the 90% MP resulted in AHI < 5/h.

**Conclusion:** Additional titration from 75% to 90% MP in patients who were not completely treated, an increased therapeutic efficacy could be achieved in 54% of the patients. In 17% of patients, the 90% MP resulted in AHI < 5/h.

**POSTER #009**

**THE PROSPECTIVE POWER OF DRUG-INDUCED SEDATION ENDOSCOPY IN PREDICTING THERAPEUTIC OUTCOME IN OBSTRUCTIVE SLEEP APNEA PATIENTS TREATED WITH ORAL APPLIANCE THERAPY IN A FIXED MANDIBULAR PROTRUSION**


**Introduction:** There is a high need for the prospective identification of favorable candidates for oral appliance therapy in the treatment of obstructive sleep apnea (OSA). The objective of this prospective observational study was to evaluate the role of drug-induced sedation endoscopy (DISE) baseline findings in the prediction of treatment outcome in terms of treatment response and deterioration with a mandibular advancement type of oral appliance (OAm).

**Methods:** One hundred OSA patients were included in the study (83% male; age, 47.4 ± 11.5 years; body mass index (BMI), 26.9 ± 3.3 kg/m²; apnea/hypopnea-index (AHI) at inclusion, 21.0 ± 11.2 events/hour sleep) whereafter a new baseline (BL) polysomnography (PSG) was obtained. They started OAm therapy in a fixed protrusion of 75% of the maximal mandibular protrusion. 67 out of 100 patients underwent a DISE as well as a PSG with OAm in that fixed protrusion. Statistical analysis was performed to evaluate the correlation between DISE findings and treatment outcome. Treatment success was defined as a decrease in AHI by PSG of 50% or more with OAm as compared to BL PSG or AHI with OAm < 5/h; whereas deterioration was defined as an increase in AHI with OAm when compared to BL PSG.

**Results:** Overall, thirty-one patients (46%) were successfully treated with the OAm in the fixed 75% protrusion. Statistical analysis with correction for the confounding factors BMI and AHI at BL, revealed that hypopharyngeal collapse during BL DISE is a negative predictor for success with an odds ratio (OR) of 0.25 (95% confidence interval (CI): 0.08 – 0.78, p = 0.0165). In addition, a complete concentric collapse (CCC) at the level of the palate was found to be associated with a higher risk for deterioration with an OR of 4.56 (95% CI 1.21 – 17.16, p = 0.0250). In 30 out of the 67 patients, there was no hypopharyngeal or palatal CCC during BL DISE. The success rate in those 30 patients is 60%.

**Conclusion:** DISE needs to be recommended as a patient selection tool for OAm therapy to treat OSA. The study shows that hypopharyngeal collapse during BL DISE is a negative predictor for treatment success and that a palatal complete concentric collapse predicts deterioration with OAm therapy.
POSTER #010
LONGITUDINAL SURVEY OF MANDIBULAR ADVANCEMENT SPLINT (MAS) USAGE, ADHERENCE, SIDE EFFECTS AND INTERPLAY WITH CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP) THERAPY: AN AUSTRALIAN STORY

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Introduction: Although CPAP remains the gold standard treatment for obstructive sleep apnea (OSA), many patients use alternative therapies such as MAS either alone or in combination. However, little is known about how patients use these 2 treatments. We surveyed Australian patients regarding this, their experience with MAS side effects and their adherence.

Method: A questionnaire was sent using both mail and email to 1460 patients who had used MAS for the management of OSA or snoring.

Results: Thirty-three percent responded via mail and 25% via email (total 403 respondents for a total response rate of 28%). Median MAS usage was 1.6 +/- 1.5 years. Eighty-two percent of respondents used the device for 6 hours or more per night, 2.5% used it for 4-6 hours/night and 5% stated usage was variable. Fifty-nine percent used MAS as a first-line OSA therapy with 6% switching to CPAP. Thirty-five percent had had a previous trial of CPAP and 85% of these switched to regular MAS usage. In keeping with accepted MAS guidelines, the device was predominantly used for mild to moderate OSA (71.3%). Other cases were: severe OSA in 21.5%, primary snoring in 0.6% and 6.6% not specified. Eighty-nine percent of patients felt the MAS was comfortable and improved sleep quality. Within this group, 79% reported improvement or resolution of snoring. Regarding adverse events, 24.8% had minor side effects (e.g. transient temporomandibular joint discomfort, sore muscles, dry mouth) and 1.4 % had major adverse events (e.g. orthodontic side effects). Overall, 77% felt MAS was uncomfortable and 19 patients ceased MAS due to side effects. Sixty-one percent felt that MAS should be applied to a larger portion of the population as an effective therapy for OSA/snoring. Thirteen percent of patients used the combination of MAS and CPAP (e.g. MAS therapy for travel and CPAP for home). An interesting observation was that 19% of these reported simultaneous CPAP and MAS therapy on a nightly basis.

Conclusion: This Australian study has found that MAS is used largely in mild to moderate OSA patients. Tolerance, usage and side effects were generally acceptable. A proportion of MAS patients also used CPAP, occasionally simultaneously.

POSTER #011
THREE-DIMENSIONAL ANALYSIS OF THE OROPHARYNGEAL AIRWAYS IN CLEFT AND NON-CLEFT PATIENTS BEFORE AND AFTER MAXILLARY EXPANSION

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Introduction: The aim of this prospective study was to assess and compare the oropharyngeal airway dimensions in cleft and non-cleft lip and palate growing patients with maxillary constriction, before and after rapid maxillary expansion (RME).

Methods: The sample comprised 63 patients (mean age=10.3 years), 30 cleft and 33 non-cleft individuals. Cone-beam computed tomography (CBCT) scans were taken to measure the oropharyngeal airway differences in terms of volume, axial cross-sectional areas, and anteroposterior and transverse widths before and after RME. Shapiro-Wilk normality test and Generalized Estimating Equations (GEE) with Bonferroni adjustment were used. The intrarater repeatability was calculated with intraclass correlation coefficient (ICC).

Results: The oropharyngeal airway dimensions were not significantly different when cleft and non-cleft patients were compared before the treatment. After RME, the total airway volume and the upper cross-sectional area were significantly increased in cleft patients (p=0.007 and p=0.002, respectively). Non-cleft patients presented significant increases in the area and transverse measurements at the upper cross-sectional plane of oropharynx (p=0.043 and p=0.005, respectively). Also, in the minimal cross-sectional plane there was significant increase in the transverse width (p=0.020), and significant decrease in the anteroposterior width (p=0.042). However, non-cleft patients showed no significant changes in the airway volume.
Conclusion: There were no dimensional differences in the oropharynx between cleft and non-cleft patients before the treatment. RME increased the airway volume, and it was significant in cleft patients. Non-cleft subjects presented increases in the transverse widths at upper limit and minimal cross sectional planes of oropharynx after RME.

POSTER #012
IMPACT OF A CUSTOM-MADE MANDIBULAR REPOSITIONING DEVICE ON BLOOD PRESSURE IN OBSTRUCTIVE SLEEP APNEA PATIENTS NONCOMPLIANT WITH CONTINUOUS POSITIVE AIRWAY PRESSURE

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Introduction: Guidelines recommend mandibular repositioning devices (MRDs) as second-line therapy for obstructive sleep apnea (OSA) patients noncompliant with continuous positive airway pressure (CPAP). The prevalence of arterial hypertension (HTN) is high in patients with OSA pts and MRD therapy may improve blood pressure (BP). ORCADES, a French prospective multicenter cohort study, is evaluating the clinical benefits of a custom-made MRD over 5 years in OSA pts who refused or did not tolerate CPAP. Interim 3-month (efficacy) and 9-month (tolerability) follow-up data are presented.

Methods: Sleep data, OSA symptoms, BP, quality of life, side effects and MRD compliance were evaluated in OSA pts fitted with a CAD/CAM MRD (Narval CC™). Treatment success was defined as a ≥50% decrease from baseline in the apnea-hypopnea index (AHI) and complete response was defined as an AHI of <10/h. HTN was defined as office systolic (SBP) and/or diastolic BP (DBP) of ≥140 and ≥90 mmHg, respectively.

Results: 299 OSA patients treated with MRD were analyzed: 222 (74%) without HTN (non-HTN; SBP 122±9 mmHg, DBP 74±8 mmHg) and 77 (26%) with HTN (SBP 140±8 mmHg, DBP 89±8 mmHg). Sex ratio (75% male), age (53±11y) and baseline AHI (29±15/h) were similar in both groups. In the HTN group, body mass index, neck and waist circumferences were higher and nadir SpO2 was lower. MRD treatment success rate and mean AHI reduction were greater in the non-HTN vs. HTN group: 83.8% vs. 65.7%, p=0.0012 and −19.7±12.4 vs. −16.2±12.3, p=0.042. However, the complete response rate was similar in both groups (66%). Improvements in oxygen saturation, OSA symptoms and quality of life were similar in both groups. In the HTN group, MRD therapy significantly reduced SBP and DBP in HTN patients (by 7.6±12.7 and 6.8±10.2 mmHg; p<0.0001 vs. baseline and p<0.0001 vs. non-HTN group); BP was normalized in 59%. BP did not change significantly during MRD therapy in the non-HTN group. There was a significant correlation between DBP decrease and baseline AHI. MRD compliance was high and similar in both groups (mean 6.6 h/night on mean 6.7 days/week). Half of treated patients from each group reported side effects, 14% of whom had severe events based on investigator assessment. Severe side effects included temporomandibular joint pain (4%, n=13), dental or jaw pain (3.2%, n=10), gum or periodontal pain (2.8%, n=9) and gum irritation (1.5%, n=5); 25 patients (8%) stopped treatment early due to side effects, mainly pain or irritation.

Conclusion: Custom-made CAD/CAM MRD is effective and has an acceptable tolerability profile in OSA patients noncompliant with CPAP. This treatment may also reduce BP in patients with HTN.

POSTER #013
DEVELOPMENT OF AN AUTO-ADJUSTING MANDIBULAR REPOSITIONING DEVICE FOR IN-HOME USE
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Introduction: Although continuous positive airway pressure (CPAP) provides a more efficacious therapy than mandibular repositioning devices (MRDs) for the treatment of obstructive sleep-disordered breathing, CPAP is poorly tolerated by many patients. Recent studies suggest that both therapies are comparable in overall effectiveness due to greater patient preference and adherence to MRDs. However, acceptance of MRDs by the medical profession has been hindered by the
long periods of time before the maximum efficacy of treatment is achieved and/or confirmed, and by the lack of objective means to assess nightly utilization. These barriers have been overcome for the in-home use of auto-adjusting CPAP, which adjusts the pressure required to minimize respiratory events while recording their occurrence and hours of utilization. The purpose of this ongoing project is to investigate the feasibility of an auto-adjusting MRD for in-home use, recognizing that the patency of the airway is improved by a different mechanism.

Methods: The concept of an auto-adjusting MRD consists of a commercially available MRD, fabricated with a MRD-specific pneumatic actuator (add-on) capable of changing the position of the jaw. A small flexible tube connects the actuator to a small syringe pump connected to a controller. The controller wirelessly receives signals from respiratory sounds sampled from the add-on in the patient’s mouth, from a digital pulse oximeter, and from a body position sensor. Changes in jaw position can be specified in response to respiratory related signals after short (a few consecutive breaths) or longer (a few consecutive nights) periods of time. In pilot testing, a pneumatic actuator was designed and constructed for a simple prefabricated device, the MyTAP appliance (Airway Management, Inc.). Two different iterations made of a biocompatible polymer were tested, measuring 9.62 cm³ and 16.63 cm³ and weighting 4.52 g and 10.56 g, respectively. To verify their performance both devices were tested on the same male adult, being awake and resting in supine position. His maximum retrusion and protrusion were 5 mm and 9 mm from the incisor edge-to-edge position. The jaw displacement was measured starting at the edge-to-edge position and compared against the air pressure that was required to advance the jaw.

Results: The device with the smallest form factor achieved 4 mm of jaw protrusion at 10 psi and a maximum of 8 mm at a pressure of 24 psi, while the larger device achieved 4.5 mm of jaw protrusion at 2.8 psi and 9 mm at 5.26 psi, reaching the maximum protrusion limit of the subject.

Conclusion: A low-cost, minimally intrusive pneumatic actuator provides an effective means to produce linear horizontal changes in jaw position as part of an auto-adjusting MRD.

POSTER #014
DENTOFACIAL CHARACTERISTICS OF CHILDREN SUSPECTED OF OBSTRUCTIVE SLEEP APNEA
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Introduction: Obstructive sleep apnea (OSA) in children is a common and serious disease effecting 1-5% of the population. Potential causes of OSA in children include adenotonsillar hypertrophy, obesity, neuromuscular disease and craniofacial abnormalities. The orthodontic correction of certain malocclusions, namely posterior crossbite and mandibular retrusion have been shown to be effective at ameliorating OSA symptoms. However it is currently unknown to what extent these forms of orthodontic treatment may be suitable in patients presenting to a tertiary care center for assessment and treatment of suspected OSA. The aim of this study is to report the incidence of malocclusion, and therefore indications for orthodontic treatment, of a population of children with suspected OSA.

Methods: Data collection consisted of a retrospective chart review of 110 patients between the ages of 5-10 referred to the Otolaryngology clinic at BC Children’s Hospital between June 2012 and August 2014. All patients underwent a full clinical assessment by the attending otolaryngologist and orthodontist. The patient record provided comprehensive information regarding the patient history and soft tissues, as well as dentofacial features. Characteristics related to specific indications for early orthodontic intervention were recorded, including history of mouth breathing, tonsillar size, anterior crossbite, posterior crossbite, excess overjet and overbite. The Clinical Research Ethics Board of the University of British Columbia approved this study #H14-01596.

Results: The average patient age was 6.79 years. The parents of 47.3% of the patients reported a history of mouth breathing, while 57.5% of the patients presented with either Grade 3 or 4 tonsils on the Brodsky Grading scale. In terms of maxillary constriction, 13.6% of patients had a posterior crossbite, while 4.5% of patients had anterior crossbite. An increase overjet greater than 7mm was reported in 3.7% of patients, and 9.3% of patients presented with an overbite of more than 90%.
**Conclusion:** Maxillary expansion and mandibular advancement were indicated in 14% and 4% of the sample, respectively.

**POSTER #015**

THREE-YEAR EFFECT OF ORAL APPLIANCE USE ON MANDIBULAR POSITION IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA

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**Introduction:** In individuals with obstructive sleep apnea (OSA) who use mandibular advancing oral appliances, the occlusal contact area is smaller in the morning than in the evening because of a bite change associated with mandibular protrusion during night. Considering that patients are encouraged to use an appliance daily, we hypothesized that the use of an oral appliance for several years could affect the position of the mandible in OSA patients.

**Methods:** This study was conducted in accordance with the amended Declaration of Helsinki. Patients who received their oral appliances from October 2000 to August 2008 after a diagnosis of OSA based on polysomnography were recruited. At their first visit to the dental clinic, patients agreed that their data could be used for research and provided their written consent for the anonymous use of their data. When a construction bite was registered to permit manufacture of the initial (i.e., stage 1) and follow-up (i.e., stage 2) monobloc oral appliances, resting mandibular position (RE) and maximum mandibular advancement position (MAX) were both recorded with a George Gauge. The absolute range of the maximum mandibular advancement in mm was then calculated as MAX-RE. Paired t-tests were used to compare the differences in each parameter between stage 1 and stage 2.

**Results:** The average duration of use of the initial oral appliance was 3 years and 5 months in 77 OSA patients. There were significant differences in RE (-5.8±1.9 vs -4.8±2.3 mm, p<0.01) and MAX (6.3±2.2 vs 7.8±2.4 mm, p<0.01) between the two stages. There was a significant change in MAX-RE from 12.1±1.7 to 12.6±1.6 mm (p<0.01), with an average difference of 0.61±1.5 mm. Moreover, a significant positive correlation was observed between the duration of initial oral appliance use and MAX-RE (r=0.27, p<0.05).

**Conclusion:** These findings suggest that the use of an oral appliance for 3 years can alter the mandibular position, which is associated with a greater change in the absolute range of maximum mandibular protrusion in patients who have used an oral appliance for longer. Since the treatment of OSA is a lifelong process, potential adverse effects should be minimized. We conclude that routine approaches to accelerate the repositioning of the mandible to the normal position, such as the use of jaw exercises in the morning, need to be more strongly emphasized in oral appliance therapy for OSA.

**POSTER #016**

INNOVATIVE TECHNIQUE FOR THE FABRICATION OF THE CUSTOM FACE MASK FOR HYBRID THERAPY

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**Introduction:** The development of the TAP-PAP™ CM (Custom Mask) has changed the landscape of the treatment of OSA. The CM (Keith Thornton DDS inventor, FDA cleared and manufacture by Airway Management) is a custom CPAP face mask that is fabricated from the impression of the face. This mask is then connected to the post screwed into the TAP 3™ mechanism. This strapless CPAP face mask features efficient and stable CPAP interface with mandibular stabilization (Hybrid Therapy). The effectiveness and seal of the mask against the face is dependent on the accuracy of the face impression. Since observation is the beginning of science, the purpose of this study is to identify the type of impression that results in the most efficient seal of the CM.

**Methods:** A new technique of a two stage polyvinyl siloxane (PVS) face impression was accomplished on three patients. Preparation of the patient for this impression is the same for the one stage impression. A breathing tube is put over the post that is attached to the patients TAP 3™ and extruding out between the closed the lips. Then a piece of cotton roll is put into both nostrils allowing the border of the nares exposed for impression. Last, Vaseline is applied to the face. Stage one was a light body PVS applied with an impression syringe directly onto the face. Stage two was a medium
body PVS applied to a molded thermoplastic perforated disk, then put onto the face over the stage one application. When set, it was pulled off and inspected for any defects.

**Results:** The impressions were superior to the single stage alginate or PVS impression. Frequent issues with single stage impressions included voids, compressed tissue, inadequate borders and a rushed experience due to setting time of the single stage. Retakes for both alginate and PVS are about 20% based on these authors extensive experience. These issues were all eliminated with the two stage technique. With the first stage being applied to the face via syringe, there was absolute control over all these issues. This technique afforded the time to calmly apply the material, which produced an extremely accurate impression of the face with one attempt, which resulted in a CM that fit accurately on the first insertion.

**Conclusion:** This study clearly demonstrates, that the two stage face impression technique for the fabrication of the Custom Mask is superior to previous techniques. It eliminates the issues of obtaining accurate face impressions that are inherent of the one stage impression technique. This two stage impression technique will not only reduce the time required for the impression and the delivery of the CM, but will also give a superior seal of the highest quality CPAP interface in our profession at this time.

**POSTER #017**

**AN AUTO-TITRATING MANDIBULAR POSITIONER: ACCURACY IN PREDICTING ORAL APPLIANCE THERAPY OUTCOME AND Efficacious Mandibular Protrusion**

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**Introduction:** We have developed an auto-titrating mandibular positioner for predicting oral appliance therapy (OAT) outcome and efficacious target protrusive position (ETPP) in obstructive sleep apnea (OSA). The present study evaluates the accuracy of the automated titrator when used unattended in the home.

**Methods:** Study participants (n=124, mean AHI=24.9±13.0hr-1) were derived from 151 patients with OSA, of whom 9 discontinued participation, 14 are currently in progress, and 4 had inconclusive studies. The remaining 124 participants formed our study population. All participants received a two night unattended mandibular titration study at home The mandibular positioner comprised of temporary dental trays attached to a computer-controlled actuator, and during the titration study, apneas and hypopneas were automatically detected from respiratory airflow and oxyhemoglobin saturation. Study 1 involved continuous interaction between detected respiratory events and mandibular position. In Study 2, the positioner held the mandible at an ETPP predicted by Study 1, and further protruded the mandible when the AHI exceeded 10hr-1. Prospectively established prediction rules applied to the results of each titration study predicted OAT outcome, either predicted success (PS) or predicted failure (PF), and discrepant predictions were resolved by repeating Study 2. Participants classified PS were prospectively assigned a predicted ETPP, and participants classified PF were assigned a sham protrusive target (70% of full protrusion). All participants received a custom dental appliance (G2 Somnomed). Baseline and outcome AHI values were the mean of two nights of home sleep testing, and therapeutic success with OAT was defined as outcome AHI<10hr-1 & 50% of baseline AHI.

**Results:** The unattended auto-titration studies provided satisfactory results in almost all cases (inconclusive study rate: 3%). The overall therapeutic success rate was 73%. Using prospective prediction rules 83 participants were classified as PS and 41 as PF. Values for sensitivity/specificity and positive/negative predictive (P/NPV) were 0.82/0.76 and 0.90/0.61, respectively, with an overall incorrect prediction rate of 19%. A retrospective, classification decision tree analysis reduced this rate to 11% and provided values for sensitivity/specificity and P/NPV values of 0.93/0.77 and 0.91/0.82, respectively. Of the 75 PS participants who experienced therapeutic success, 71 responded at the predicted ETPP (PPV = 0.95). For the 75, the median relative protrusion at therapeutic success was 75% (range: 9–100%) and in 41% therapeutic success occurred at less than 70% of full protrusion.

**Conclusion:** The results of this prospective clinical trial show that the auto-titrating mandibular positioner is suitable for use in the home and accurately predicts OAT outcome as well as an ETPP. The system may increase OAT efficacy and efficiency while avoiding excessive mandibular protrusion in some cases.
(This research was supported by grants from NRC-IRAP of Canada, Alberta Innovates-Technology Futures, and Zephyr Sleep Technologies.)

**POSTER #018**

PARALLEL CHANGES IN THE FREQUENCY OF RESPIRATORY EVENTS AND SWALLOWING DURING SLEEP IN OBSTRUCTIVE SLEEP APNEA PATIENTS WITH AND WITHOUT A MANDIBULAR ADVANCEMENT DEVICE

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**Introduction:** We have previously demonstrated that swallowing frequency during sleep increases with obstructive sleep apnea (OSA) severity in most OSA patients, and that these swallowing events predominately occur subsequent to respiratory events. The findings obtained in the cross-sectional cohort study leave open the possibility that respiratory event frequency may be a key determinant of swallowing frequency during sleep in OSA patients. To test this possibility, we carried out a split-night sleep study and investigated frequency changes in respiratory events and swallowing during sleep in OSA patients with and without a mandibular advancement device.

**Methods:** Ten patients with previously diagnosed OSA were prospectively and consecutively enrolled in a split-night sleep study for the follow-up of a titratable mandibular advancement device in a hospital sleep laboratory. During the split-night sleep study using standard video-polysomnography, the first half of the night was assigned to a diagnostic phase and the second half of the night was assigned to a mandibular advancement device therapy phase. Swallowing was evaluated with a piezoelectric sensor placed over the neck superior to the laryngeal prominence. A swallowing event was defined as simultaneous signals of an increased chin EMG activity, transient interruption of airflow and a transient elevation of the thyroid cartilage. The frequency of swallowing per hour of sleep was calculated in each phase. P values of <0.05 were considered significant.

**Results:** Nine of the 10 OSA patients slept for more than 60 minutes in each phase (diagnostic phase, 118.6±31.4 [mean±sd] min; mandibular advancement device therapy phase, 213.0±32.6 min) and the phases were compared. Eight of the 9 OSA patients exhibited parallel changes in the apnea hypopnea index (AHI) and swallowing frequency between the two phases. In 5 of the 8 patients, the AHI and swallowing frequency both decreased during the mandibular advancement device therapy phase compared to that of the diagnostic phase. In the remaining 3 of 8 patients, the AHI and swallowing frequency both increased during the mandibular advancement device therapy phase compared to that of the diagnostic phase. An increase in an AHI was significantly correlated with an increase in swallowing frequency between the two phases (rs=0.85, P=0.004).

**Conclusions:** Respiratory event frequency, rather than the presence of a mandibular advancement device in place, can be a determinant of swallowing frequency during sleep in most OSA patients.

**POSTER #019**

EFFECTS OF COMBINED MAXILLO-MANDIBULAR ORAL APPLIANCE THERAPY IN ADULTS WITH SEVERE OSA

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**Introduction:** Mandibular repositioning devices (MRD) have long been deployed for the management of mild to moderate OSA, but there is less evidence on their efficacy in severe cases that have failed to comply with CPAP therapy. Biomimetic oral appliance therapy (BOAT) differs from conventional MRD therapy as it aims to correct the nasal airway through midfacial redevelopment in combination with mandibular repositioning, which aims to improve the oropharyngeal airway in adults. In this preliminary investigation, we tested the hypothesis that severe OSA can be addressed using combined maxillo-mandibular BOAT in adults.

**Methods:** In this pilot study, we included 7 consecutive adults aged >21yrs that had been diagnosed with severe OSA, following an overnight home sleep study that had been interpreted by a Medical physician. Each subject that participated in this study had failed to comply with CPAP therapy and was treated under medical supervision by a dentist with advanced training in dental sleep medicine. At each monthly follow-up visit, examination for progress and adjustments of the devices were performed to optimize their efficacy. The mean apnea-hypopnea index (AHI), respiratory disturbance index (RDI)
and oxygen desaturation index (ODI) of the study sample was calculated prior to and after BOAT. The findings were subjected to statistical analysis, using paired t-tests.

**Results:** Prior to treatment the mean AHI of the study subjects was 45.2 ± 8; the mean RDI was 47.4 ± 8, and the ODI was 33.6 ± 9. A further follow home sleep study was done after approximately 9 mos. At this time, the AHI decreased significantly (p < 0.001) to a mean value of 19.5 ± 6 after BOAT, which represents a fall in the mean AHI of 57% for the study sample. The mean RDI fell to 23.7 ± 7.7 (p < 0.001), and the ODI was improved to 11.2 ± 1.9 (p < 0.001).

**Conclusion:** This pilot study suggests that combined maxillo-mandibular oral appliance therapy may be a useful method of managing severe cases of OSA in adults, and might represent an alternative to CPAP and MRD therapy. However, long-term follow up using a larger sample size is needed to reach more definitive conclusions on these preliminary findings.

**POSTER #020**

**EFFECTS OF NEUROMUSCULAR ELECTRICAL STIMULATION ON THE MASTICATORY MUSCLES AND PHYSIOLOGIC SLEEP VARIABLES IN ADULTS WITH CEREBRAL PALSY: A NOVEL THERAPY APPROACH**

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**Introduction:** Cerebral palsy (CP) is a term employed to define a group of non-progressive neuromotor disorders caused by damage to the immature or developing brain, with consequent limitations regarding movement and posture. CP may impair oral pharynx muscular tonus leading to a compromised mastication and to sleep disorders (e.g.: obstructive sleep apnea). The aim of the present study was evaluate the effects of NMES on the masticatory muscles and physiologic sleep variables in adults with CP using EMG and PSG. The hypothesis is the NMES will improve masticatory function and sleep variables.

**Methods:** 15 adults with CP underwent bilateral masseter and temporalis neuromuscular electrical stimulation (NMES) therapy and its effect over masticatory muscle and sleep variables were evaluated through electromyography (EMG) and polysomnography (PSG), respectively, prior and post 2 months of NMES therapy. EMG consisted of 3 tests in different position: rest, mouth opening and maximum clenching effort (MCE).

**Results:** The EMG values in the resting position were 100% higher prior to therapy for all muscles analyzed (p < 0.05); mean mouth opening rose from 38.0 ± 8.0 to 44.0 ± 10.0 cm (p = 0.03) and MCE was significantly only for right masseter, whereas other muscles exhibited improvements in comparison to baseline. PSG shown that AHI improved from 7.1/h to 1.7/h (p < 0.05), total sleep time improved from 185 min to 250 min (p = 0.04) and minimal SaO2 improved from 83.6±3.0 to 86.4±4.0 (p=0.04).

**Conclusion:** NMES performed over a two-month period led to an increase in the electrical activity of the masticatory muscles at rest, opening and during isometric contraction and improved sleep variables, including the elimination of sleep apneas events in CP patients.
MARK ABRAMSON, MD is the founder and facilitator of Mindfulness-Meditation Based Stress Reduction programs at Stanford Health Care and Stanford University School of Medicine. He trained with John Kabat-Zinn and has conducted these classes several times a year for twelve years. He has practiced dentistry in the Bay Area for more than twenty-five years, specializing in the treatment of chronic pain and temporomandibular disorders, focusing on non-drug oriented care integrating traditional dental approaches with mind/body techniques, osteopathic manual medicine, and acupuncture. He has been an instructor at the College of Osteopathic Medicine in Pomona since 1985, has lectured throughout the country on TMJ/orofacial pain, and leads retreats on mindfulness meditation.

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ALAN BLANTON, DDS graduated from the University of Tennessee College of Dentistry in 1983 and has been in private general practice in Collierville, TN since then. He completed a mini-residency program in Orofacial Pain and Dental Sleep Medicine at the University of Kentucky with Dr. Jeffery Okeson and the staff of the U of K Orofacial Pain Clinic in 2010. He has a Masters in Counseling, Educational Psychology and Research from the University of Memphis and is a Diplomate of the American Board of Dental Sleep Medicine. Dr. Blanton devotes a significant portion of his practice to Dental Sleep Medicine. He is a member of the American Dental Association, the Tennessee Dental Association, the Memphis Dental Society, the American Academy of Orofacial Pain, the American Academy of Sleep Medicine, the American Academy of Dental Sleep Medicine, the Tennessee Sleep Society, and the American Academy for Sports Dentistry. He is also the Team Dentist for St. George’s Independent School Varsity Football and Girls and Boys Varsity Lacrosse teams.

NORMAN BLUMENSTOCK, DDS graduated from Dental School at Columbia University in 1975. Prior to entering private practice, he did a general practice residency at Montefiore Hospital and Medical Center in New York City. He is proud to have earned both Fellowship and Mastership awards from the Academy of General Dentistry. He received his training in TMD and Oral Facial Pain from UMDNJ in 1991. For the past 25 years, he has focused on dental sleep medicine. Since 1991, Dr. Blumenstock is currently appointed to the Medical Department as an Assistant Clinical Professor at Rutgers University - Robert Wood Johnson Medical School. Dr. Blumenstock is a charter member of the American Academy of Dental Sleep Medicine (formerly the Sleep Disorder Dental Society in 1991) and has been credentialed by the American Board of Dental Sleep Medicine. He served on the task force for structuring the facility accreditation process and currently serves as Chairman for the facility Accreditation Committee. He has also participated in the consensus conference for formulating the definition of an oral appliance for dental sleep medicine. In 2013, he received the Distinguished Service Award from the American Academy of Dental Sleep Medicine.

EARL BOGROW, DDS has been in private practice in Southfield, Michigan in general dentistry since 1981. He graduated from the University of Michigan Dental School in 1979, and completed a residency at the Department of Dental Health in Honolulu, Hawaii in 1981. In 2012, Dr. Bogrow is a diplomate of the American Board of Dental Sleep Medicine and member of the American Academy of Dental Sleep Medicine. He is a Fellow of the Academy of General Dentistry and belongs to the American Dental Association, the Michigan Dental Association, Alpha Omega Dental Fraternity, the L. D. Pankey Alumni Association, and the Detroit Dental Clinic Club.
PATRICIA BRAGA, DDS graduated from the University of Minnesota School of Dentistry and is one of the founding partners of Cahill Dental Care in Inver Grove Heights, Minnesota. In 2006 Dr. Braga entered the field of dental sleep medicine and became a Diplomate in 2013. She is also Clinical Director of Dental Sleep Medicine at Cahill Dental Care, an Accredited Dental Sleep Medicine facility in the State of Minnesota. Dr. Braga is also Fellow in the International College of CranioMandibular Orthopedics. Her memberships include the MN Sleep Society and the Dental Organization for Sleep Apnea. She currently serves on the AADSM Accreditation Committee. She has developed a loyal sleep physician referring network by using a "Circle of Care" with Sleep Physicians and ENTs. The concept was presented to sleep physician attendees at the 2013 AASM. She has been a presenter at the Annual Meeting of the American Academy of Dental Sleep Medicine as well as making numerous presentations to sleep apnea physicians and dental sleep apnea dentists on the topic of dental sleep medicine.

KELLY CARDEN, MD currently works with Sleep Medicine of Middle Tennessee and St. Thomas Health in Nashville, Tennessee. She is board-certified in internal medicine, pulmonary disease, critical care medicine and sleep medicine; however, she now commits all of her time to sleep medicine. She completed her fellowship training including her sleep medicine fellowship at Harvard Medical School. She is a physician champion for dental sleep medicine, the use of oral appliance therapy and the importance of the physician-dentist relationship.

NANCY COLLOP, MD was the 2011-2012 president of the American Academy of Sleep Medicine (AASM), and is currently the director of the Emory Sleep Center in Atlanta, Ga. She holds a primary appointment in the Emory School of Medicine as professor of Medicine in the Division of Pulmonary, Allergy and Critical Care Medicine, as well as a secondary appointment as professor of Neurology. Dr. Collop earned a medical degree in 1984 from the Pennsylvania State University College of Medicine in Hershey, Pa. She completed an internal medicine internship and residency at the Medical College of Virginia in Richmond, Va., and a pulmonary/critical care fellowship at the University of Florida in Gainesville, Fla. Dr. Collop has also served on the American Board of Sleep Medicine (ABSM) board of directors since 1998, holding the position of ABSM president from 2002-2009. In January 2015, she will became Editor-in-Chief of the Journal of Clinical Sleep Medicine.

THUAN DAO, DMD, PHD received her Bachelor in French Literature (Vietnam), DMD (University of Montreal), MSc (Neuroscience, Universityof Montreal), Diploma in Prosthodontics (University of Toronto), PhD (Biomedical Sciences, University of Montreal), Fellow of the Royal College of Dentists of Canada (Prosthodontics), is an Associate Professor in the Department of Clinical Sciences at the Faculty of Dentistry University of Toronto. She is cross-appointed to the University of Toronto Centre for the Study of Pain. Dr. Dao is a Past President of the International Association for Dental Research Neuroscience Group, and Past Councilor in Prosthodontics at the Royal College of Dentists of Canada. Her research activities and publications are mainly focused on the pathophysiology and management of orofacial pain and sensory disorders, and their impact on patients' quality of life.

B. GAIL DEMKO, DMD received her DMD 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 is the Immediate Past-President of the AADSM and is a recipient of the AADSM Distinguished Service Award.

MARIJKE DIELTJENS, PHD graduated in 2009 as Biomedical Scientist at the University of Antwerp in Belgium. After her graduation, she started a PhD at the University of Antwerp and the Antwerp University Hospital. She defended her PhD entitled ‘Novel Approaches on Compliance, Titration and Sleep Position to Optimize the Therapeutic Outcome of Oral Appliance Therapy in Patients with Sleep-Disordered Breathing’ successfully in December 2014.

LESLIE DORT, DDS is a Calgary dentist whose practice is limited to treating sleep disordered breathing and TMJ issues. She works in a multi-disciplinary sleep center in conjunction with physicians and respiratory therapists. She is affiliated with the University of Calgary and is involved in research related to oral appliance therapy for sleep disorders and the development of best practice guidelines in dental sleep medicine. She is currently Editor of the Journal of Dental Sleep Medicine and a member of the AASM/AADSM Task Force on Oral Appliances.

DONALD FARQUHAR, DDS graduated from the University of Western Ontario Faculty of Dentistry in 1979. He has a large general practice with two associates in Midland, Ontario. Dr. Farquhar enjoys restorative
dentistry and utilizes his Cerec system whenever he can, as well as treating patients with snoring and obstructive sleep apnea. He belongs to the Toronto Academy of Cosmetic Dentistry, the Toronto Digital Dentistry Study Club, the International Congress of Oral Implantolgy, and the Ontario Dental Association. He has been a member of the American Academy of Dental Sleep Medicine since 2005 and currently is a member of the Education Committee, and vice-chair of the AADSM Essentials of Dental Sleep Medicine course.

NEIL FREEDMAN, MD is the current Head of the Division of Pulmonary, Critical Care, Allergy and Immunology in the Department of Medicine at the Northshore University Health System in Evanston, IL. Within the health system, he also serves as a member of the steering committee for the sleep program and is the medical director for the Sleep Center in Bannockburn, IL. Dr. Freedman has previously served, and currently serves, in several educational and leadership roles in many professional societies. He was the previous chairman of the Annual Sleep Medicine course and is the current chairman of the Sleep Medicine Board Review course for the ACCP/ CHEST. Within ACCP/ CHEST, he is the vice chairman the educational product SEEK for Sleep Medicine, is a member of the program committee for the CHEST Annual Conference and educational committee and is the current chair of the sleep network. He is a member of the APSS program committee, has developed and chaired several post-graduate courses for the AASM and has served as a member of the AASM task force on the utilization of nurse practitioners and physician assistants in sleep medicine.

DAVID GOZAL, MD is currently the Herbert T. Abelson Professor in the Department of Pediatrics at the University of Chicago and Physician in Chief of the Comer Children’s Hospital in Chicago, where he also holds the title of Pritzker Scholar. He received his MD from the Hebrew University of Jerusalem, completed his pediatric residency at the Haifa Medical Center in Israel, and then spent 2 years in Cameroon, West Africa. He is the current Vice-President of the American Thoracic Society (slated to become President in 2016), deputy editor for the journals Sleep and Frontiers in Neurology, past associate editor of the American Journal of Respiratory and Critical Care Medicine, and a regular member of the NNRS study section at NIH, as well as serving on the editorial boards of several journals in the field.

JAMES HOGG, DDS received his doctor of dental surgery degree from the University of Illinois College of Dentistry. He was a clinical instructor at the school in the fixed prosthodontics department. He practiced general dentistry in his own dental office for 25 years and entered into the field of dental sleep medicine in 2007. He became a Diplomate of the American Board of Dental Sleep Medicine in 2010. Dr. Hogg joined Midwest Dental Sleep Center in 2009, where his practice is limited to the treatment of patients diagnosed with sleep disordered breathing. He is a frequent speaker for the AADSM and has presented lectures on dental sleep medicine nationally to dentists, physicians and the general public.

SHERI KATZ, DDS received her dental degree from Emory University in Georgia. She has developed a special interest in and has limited her practice to the field of dental sleep medicine. Dr. Katz is a Diplomate of the American Board of Dental Sleep Medicine and is a past president of the AADSM. Dr. Katz was an active participant in the development of two position papers: the 2012 Joint Policy Statement on the Diagnosis and Treatment of OSA (AADSM and AASM) and the AADSM Treatment Protocol: Oral Appliance Therapy for Sleep Disordered Breathing: An Update for 2013.

SAMUEL KUNA, MD is an Associate Professor of Medicine at the University of Pennsylvania and Chief of the Sleep Medicine Section at the Philadelphia Veterans Affairs Medical Center where he is the medical director of the VISN 4 Eastern Regional Sleep Center. He is a board certified pulmonologist and sleep specialist with a primary research interest in evaluating the effectiveness of clinical management of patients with obstructive sleep apnea (OSA). Dr. Kuna has a long standing interest in the ambulatory management of patients with OSA. He was co-leader of the Veterans Sleep Apnea Treatment Trial that compared clinical outcomes in of veterans with OSA evaluated with home sleep testing versus in-laboratory polysomnography. Dr. Kuna led a 5 site project comparing different criteria scoring polysomnograms and collaborated on projects evaluating the effectiveness of oral mandibular advancement devices. He served as the PI of the University of Pennsylvania clinical center of the 4-site Sleep AHEAD project that evaluated the effect of weight loss on the severity of OSA in obese adults with type 2 diabetes. In that project, Dr. Kuna directed the PSG Reading Laboratory – supervising performance by the sites of the home unattended polysomnograms.
STEVEN LAMBERG, DDS has been practicing dentistry for over 30 years with an emphasis on cosmetic, reconstructive and implant dentistry. Dr. Lamberg is the founder of the Long Island Center for Dental Esthetics and Occlusion. In addition to developing and presenting hands on clinical dentistry programs on the latest and most effective methods of cosmetic, reconstructive and implant dentistry. Dr. Lamberg was appointed to the Faculty of the Department of Dental Sleep Medicine at NYU’s College of Dental Medicine. He is a Diplomate of the American Board of Dental Sleep Medicine and the Academy of Clinical Sleep Disorders Disciplines. He served as the President of the New York Chapter of the American Academy of Cosmetic Dentistry, and was active in the organization for over 10 years. Dr. Lamberg served as Chief of Staff at the Jewish Home and Hospital in NYC; Associate Clinical Professor at SUNY Stony Brook Dental School and presented lectures and clinical courses on Occlusion at the University of the Pacific for PAC live. He attended NYU Dental School after he completed his Undergraduate Degree in Biology and Psychology at Washington University in St. Louis.

GILLES LAVIGNE, DMD, PHD completed his postdoctoral training on the neurobiology of pain at NIH, Bethesda, MD. He received a Doctor honoris causa from the Faculty of Medicine, University of Zurich, Switzerland. He holds a Canada Research Chair in Pain, Sleep & Trauma and is Dean of the Faculty of Dental Medicine at the Université de Montréal, Canada. He was President of the Canadian Sleep Society and is currently President of the Canadian Pain Society (2014–2016). He is co-founder and past Director of the three research networks for Oral Health, Pain and Placebo Mechanisms under the Fonds de la Recherche en Santé du Quebec and the Canadian Institutes of Health Research (CIHR). Dr. Lavigne is internationally recognized for his experimental and clinical research projects on sleep bruxism and the interactions between sleep, pain, and breathing disorders.

ALAN LOWE, DMD, PHD is currently Professor and Chair of the Division of Orthodontics and Director of the Frontier Clinical Research Centre at the University of British Columbia, has maintained a private orthodontic specialty practice in Vancouver, Canada for 35 years. He has lectured extensively both nationally and internationally in the areas of neurophysiology and orthodontics with a particular emphasis on the etiology and treatment of snoring and Obstructive Sleep Apnea. His research activities have been funded by both provincial and federal governments and he has published over 120 papers, 150 abstracts and 15 book chapters. In addition, he has successfully filed Canadian, U.S. and international patents for each of three inventions.

JAN PALMER has been in the dental field for over 30 and started learning dental sleep medicine insurance in 1999, learning how to maximize insurance benefits for Dental Sleep Medicine. In 2005, Ms. Palmer formed a training/consulting business for dental offices on how to understand the medical insurance world for treatment of OSA with oral appliance therapy to maximize the patient’s benefits. She has worked with dental offices all over the country. Ms. Palmer has presented for the AADSM annual meetings and Essentials course along with being a facilitator for the AADSM study club focusing on insurance reimbursement for oral appliance therapy and also published in Dialogue. She has been a member of the American Academy of Dental Office Managers since 2005 and am eligible to earn fellowship status in the fall of 2015.

JONATHAN PARKER, DDS received his DDS from the University of Minnesota School of Dentistry and currently focuses his practice exclusively on dental sleep medicine. Dr. Parker is a Diplomate of the American Board of Dental Sleep Medicine and American Board of Orofacial Pain and is a charter member of the American Academy of Dental Sleep Medicine. He was the recipient of the Academy’s prestigious Distinguished Service Award in 2003.

KATHERINE PHILLIPS, DDS received her undergraduate degree from the University of Michigan and her dental degree from the University of Detroit Mercy School of Dentistry. Following her graduation from UDM in 2008, she practiced general dentistry for a short period of time before joining a practice dedicated solely to Dental Sleep Medicine. Dr. Phillips became a Diplomate of the American Board of Dental Sleep Medicine in 2010. She has facilitated study club courses to teach the principles of Dental Sleep Medicine, serves as Chair of the Essentials of Dental Sleep Medicine Course offered by the AADSM, participated in the Consensus Conference to develop a formal definition for an Oral Appliance, is a co-writer of the accompanying support paper, has lectured to multiple sleep physicians and participated in a Dental Sleep Medicine shadowing program for Sleep Physician Fellows at Northwestern University in Chicago, IL.
BENJAMIN PLISKA, DDS is an assistant professor in the Division of Orthodontics at the University of British Columbia, and an orthodontic consultant at BC Children’s Hospital, while also maintaining a private practice in orthodontics in Vancouver, British Columbia. Dr. Pliska obtained his doctor of dental surgery degree from the University of Western Ontario and both his master’s degree and orthodontic certificate from the University of Minnesota. A Fellow of the Royal College of Dentists of Canada, Dr. Pliska also holds a graduate certificate in pediatric sleep science from the University of Western Australia. Dr. Pliska’s research interests include dentofacial imaging and the orthodontic and orthopedic treatment of pediatric sleep disorders, while being an active member of UBC’s sleep research team.

KEVIN POSTOL, DDS received his dental degree from the University of Missouri-Kansas City in 1991 and completed a GPR at the University of Iowa. He has practiced general dentistry since 1992. In 2007, he entered the field of dental sleep medicine and became a Diplomate of the ABDSM in 2011. He presently serves on the Board of Directors of the AADSM and is a past chairman of the Essentials of Dental Sleep Medicine course. He has also served on numerous committees for the AADSM. Dr. Postol maintains a combination of a general dental practice and dental sleep medicine practice simultaneously in St. Louis MO.

TIMOTHY QUINNELL, MBBS works in the Respiratory Support and Sleep Centre, Papworth Hospital, Cambridge, where he is lead clinician for one of the UK’s 2 accredited sleep laboratories. He entered sleep medicine as a pulmonology trainee in Australia before joining Papworth Hospital as a senior trainee and then research fellow, gaining consultancy in 2004. He specializes in both respiratory and non-respiratory sleep disorders, alongside domiciliary noninvasive ventilation (NIV) and weaning from invasive ventilation. The unit in which he works has around 1,000 patients maintained on domiciliary NIV and over 10,000 patients on CPAP. He was Chief Investigator for the recently completed NIHR Trial of Mandibular Advancement Devices in Obstructive Sleep Apnea (TOMADO). Other research interests include REM sleep behavior disorder and cardiac arrhythmias in OSA. He sits on the British Sleep Society Executive Committee.

THOMAS SCHELL, DMD practices general dentistry in New Hampshire where he also acts as the dental director of an AADSM accredited facility. Board certified through the ABDSM he holds a position as an Adjunctive Asst. Professor at Geisel School of Medicine at Dartmouth. He serves on the AADSM board of directors. He received his BS and DMD and postdoctoral degrees from from St Bonaventure University, Fairleigh S. Dickinson College of Dental Medicine and Columbia College of Physicians and Surgeons.

COLIN SHAPIRO, PHD is Professor of Psychiatry and Ophtalmology at the University of Toronto and Director of the Youthdale Child & Adolescent Sleep Clinic in Toronto. He has been involved in sleep research for over twenty-five years. He trained in medicine in South Africa subsequently doing his PhD in sleep physiology at the University of Edinburgh. He came to Canada approximately eighteen years ago as a Full Professor in the Department of Psychiatry. He is Director of the Neuropsychiatry Program at the Toronto Western Hospital and Director of the Sleep and Alertness Clinic. Dr. Shapiro has over 200 publications in this field and a dozen books including a book on forensic aspects of sleep and several books for the lay public the most recent of which is titled “Fighting Fatigue and Sleepiness”. He also co-authored “Working the Shift” and a children’s book “Who needs to sleep anyway”. Three years ago he opened the first independent child and adolescent sleep clinic in Canada.

AIJU THEVATHERIL focuses his practice in the defense of medical negligence claims. Aiju is involved in all aspects of the defense of medical malpractice cases, from discovery through trial and appeal. He has jury trial experience in complex cases involving various medical specialties including family medicine, pediatrics, internal medicine, obstetrics and gynecology, general surgery, orthopedic surgery, neurosurgery, radiology, pathology, gastroenterology, oral surgery and dentistry, hematology, psychiatry, anesthesiology, neonatology, emergency medicine, infectious disease and physical medicine and rehabilitation. Aiju represents various healthcare practitioners, such as doctors (both allopathic and osteopathic), surgeons, nurses, dentists and physician assistants. He has represented both the individual healthcare provider and the healthcare institution. Aiju currently represents numerous hospitals and medical centers. Aiju has been an invited guest speaker teaching residents at LaGrange Memorial Hospital and Rush-Copley Medical Center. He has also lectured to medical staff at Resurrection Healthcare. In February 2008, Chicago Lawyer magazine featured him on their cover as a “Top Ten Trial Lawyers on the Rise.”
HIROLO TSUDA, DDS, PHD received her Doctor of Dental Surgery degree from the University of Kyushu University, Japan, in 2003. She is an alumnus of Kyushu Dental College, where she completed her Doctor of Philosophy in 2007. She worked as postdoctoral fellow and clinical assistant professor at the University of British Columbia, Canada from 2007 to 2010. Dr. Tsuda has been involved in oral appliance research and the treatment of patients with obstructive sleep apnea since 2003, and her research is focused on pathogenesis of sleep apnea, treatment outcome, oral appliance side effects, titration modalities, and imaging. She is also a research member of international multicenter database projects ‘ORANGE’ supported by AADSM. Dr. Tsuda works as assistant professor for the dental fellow programs at Kyushu University. She is also an editorial board member of ‘Sleep and Breathing’ and an international certificant of American Board of Dental Sleep Medicine.

SATORU TSUIKI, DDS, PHD has been enrolled as a Research Scientist in the Japan Somnology Center, Neuropsychiatric Research Institute, Tokyo. His research projects involve assessments of upper airway function and anatomy and of oral appliance effectiveness for the treatment of obstructive sleep apnea. He also participates in the sleep apnea dental clinics to provide oral appliance therapy and teaches dental sleep medicine for postgraduate and undergraduate students as a Visiting Associate Professor, Tokyo Medical University. Dr. Tsuki has received Best Abstract in Dental Sleep Medicine Award (2007), Best Oral Presentation Award (2009), and the Pierre Robin Award (2014) from the AADSM. Currently, he acts as the Vice President of the Japanese Academy of Dental Sleep Medicine, a board member of the Japanese Sleep Research Society, and the editorial board member of Sleep and Breathing and Journal of Dental Sleep Medicine.

OLIVIER VANDERVEKEN, MD, PHD is a full-time senior staff member ENT, Head and Neck Surgeon at the Antwerp University Hospital in Belgium. He is also appointed as Assistant Professor at the Faculty of Medicine of the University of Antwerp. Dr. Vanderveken received his medical degree from University of Antwerp in 2001 and completed an ENT, Head and Neck Surgery residency at the Antwerp University Hospitals. In 2007, he obtained a PhD in Medical Sciences on the topic of the fundamental and multidisciplinary approach to upper airway collapse during sleep-disordered breathing. Dr. Vanderveken has co-authored several professional scientific publications in high-impact peer reviewed journals. He is the Deputy Editor of the ‘Journal of Dental Sleep Medicine’ and is on the editorial board of the journal Sleep and Breathing. In the past, Olivier Vanderveken has been awarded several national and international scientific awards including the “AADSM Clinical Research Award” in 2011, the “AADSM Clinical Excellence Award” in 2011 and the “Pierre Robin Academic Award” of AADSM in 2012.

CATHERINE VENA, PHD, RN, CNE is Associate Clinical Professor at the Nell Hodgson Woodruff School of Nursing at Emory University. She received her undergraduate degree in nursing from Brenau University, a master’s degree in nursing from Clemson University, and her PhD from Emory University. She completed her postdoctoral training in sleep at the Emory Program in Sleep Medicine. Dr. Vena’s research interests evolved from her 25 years of clinical practice, which included oncology and palliative care. Her research focuses on sleep disturbances in people with cancer. She is particularly interested in the bidirectional interaction between sleep and cancer disease/treatment processes and their influence on patient outcomes. Dr. Vena is a member of the Sleep Research Society, the Oncology Nursing Society, and the Council for the Advancement of Nursing Science. She is a reviewer for several journals including the Oncology Nursing Forum, the Journal of Pain and Symptom Management, and the Journal of Palliative Care.

NATHANIEL WATSON, MD, MS is Professor of Neurology at the University of Washington (UW), Director of the Harborview Medical Center Sleep Clinic and Co-director of the UW Medicine Sleep Center. He is Board Certified in sleep medicine and neurology. He is President-Elect of the American Academy of Sleep Medicine. His research interests are diverse, but mainly focused on investigating the untoward impact of sleep curtailment through gene-environment interactions in twin studies. He is a passionate advocate for sleep reprioritization in society and has appeared in numerous media including print, television, and radio pressing this issue. His policy work focuses on fatigue in transportation safety.

EDWARD WEAVER, MD is a staff surgeon on the surgery service of the Seattle Veterans Affairs Medical Center, and he is a professor of otolaryngology, chief of sleep surgery, and co-director of the Sleep Center at the University of Washington. He obtained his medical degree at Yale and completed his otolaryngology residency at Yale. He obtained his masters degree
in public health and completed a clinical research fellowship at the University of Washington. He is board certified in otolaryngology/head & 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.

DEBORAH ZIWOT, DMD is a licensed dentist with graduate degrees in both dentistry and health policy. Dr. Ziwot is a graduate of Wellesley College (BA), Washington University School of Dental Medicine in St. Louis, MO (DMD), and New York University Robert F. Wagner School of Public Service where she earned an MS degree in Health Policy and Management with a concentration in finance. For the past 5 years, Dr. Ziwot has been a member of a development team for a sleep center chain in Texas and Alaska. In this role, she has been actively involved in setting up and operating newly acquired as well as de novo facilities, achieving accredited status for all facilities (AASM, Joint Commission, and/or HQAA accreditation), and ensuring that all facilities are in full compliance with federal, state, and local laws and regulations. Each sleep center is a full-service facility providing diagnostic testing and treatment for sleep disorders, most notably sleep apnea. Prior to her work on this business development team, Dr. Ziwot was a health care research analyst in the brokerage/banking industry providing due diligence for the investor community on health care companies and their respective technologies and services.
AADSM CONGRATULATES 2014 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:

» Darin Bach, DDS
» Maryam Bakhtiyari, DDS
» James Berley, DDS
» Alan Blanton, DDS, MS
» Warren Boardman, DMD, MAGD
» Robert Booher, DDS
» Daniel Bruce, DDS
» Michelle Cantwell, DMD
» Thomas Corwin, DDS
» Kevin Dileo, DDS
» Anthony Dioguardi, DMD
» Nazila Doroodian, DMD
» Matthew Eaton, DDS
» Jeffrey Goldberg, DDS
» Lindsey Graf, DDS
» Bernard Greenbaum, DDS
» Jarrett Grosdidier, DDS
» Ronald Hart, DDS
» Michael Hnat, DMD
» Alex Johnson, DMD, MS
» Alice Kaniff, DDS
» John Kim, DDS
» Nahmjee Lee Skarada, DMD
» Todd Levine, DDS
» Mitchell Levine, DMD
» Roschelle Major-Banks, DDS
» Erika Mason, DDS
» Michael McMunn, DDS
» Tina Meisami, DDS
» Sharnell Muir, DMD
» Wendy Shorr, DDS
» Beth Snyder, DMD
» James Stewart, DDS
» David Sweeney, DDS
» Lance Timmerman, DMD
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» Thomas Walker, DMD
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• raises the profile of dental sleep medicine

PLUS, AADSM members who earn facility accreditation are acknowledged in the Find-a-Dentist directory on the AADSM website with a listing above members of non-accredited facilities!

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The Journal of Dental Sleep Medicine (JDSM) is looking for expert contributors to provide clinical insight and new research. The Journal accepts a wide variety of editorial content, including original articles, case reports, brief descriptions of interesting findings (JDSM Pearls), book reviews and letters to the editor, among others. Visit the JDSM Author Center at http://www.jdsm.org/Authors.aspx to learn more and submit your content.
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