

22 -years legacy teaching collaborative care



**The 22th Annual Dental Sleep Conference:
Transformative Advances in Dental Sleep Medicine:
Leading Innovations from the Womb to the Tomb**

April 23th-25th, 2026
Greenway Plaza Hilton DoubleTree,
Houston, Texas

The SEC web page for downloading the Syllabus
www.SleepEducation.net
Password = SEC26InfoCloud

WiFi = Hilton Meetings Password = hougwstandard

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LIVE

SEC Sleep Education Consortium

Friday Night Event
FEATURING THE PULMONAUTS

with Special Guests from the "Original Remnants" and Dr. Hal Stewart
Friday, April 24th

Event Ticket Included in Your Registration!
Purchase a Ticket for a Guest and Join Us for an Evening of Food, Drink and Music!

Friday April 24th 7 PM
RSVP today. --- Need head count for food etc. Guest (those not attending the conference) - \$75
Register at the registration desk.

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01:15 PM - 04:30 PM

Four Breakout Sessions – Each 45 Minutes (Click to Open and View Topics >)

By SEC Sleep Conference / 20th Floor – Breakout Session

1. **Making a Construction Bite, and Boil & Bite Appliances** – by *Ronald S. Prehn, ThM, DDS*
2. **Managing Oral Appliances from First Presentation Through the Titration and Making a Morning Re-Aligner** – *Rob Veis, DDS and Stephen Carstensen, DDS*
3. **Screening Airway Exam from Children to Adults** – by *Jerald H. Simmons, MD, Maggie Lavender, MSN, RN, FNP-C, and Kevin Boyd, DDS (Loria Nahatis, DDS*)*
4. **Pre-Appliance/TMD for Indications & Contradictions for Oral Appliances and Myofunctional Exams** – by *Bruno Frazao Gribel, DDS and Ahmet Keles, DDS, DMSc, and Samantha Weaver, M.S. CCC-SLP and Nicole Goldfarb M.A., CCC-SLP, COM*

Special instructions to follow.

** Special Thanks to those who assisted with the breakout sessions!*

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Breakout Sessions			
<p>Airway Screening Exam for Children and Adults</p> <p>This workshop will provide attendees an opportunity learn what features on the physical exam will help identify patients at risk of having compromised breathing during sleep. This will be broken down into two section.</p> <p>Pediatric Screening:</p> <p>-----</p> <p>This will cover measurements of a child's airway the are known to correspond with a narrow airway and associated with sleep related breathing disturbances. These are the same measurements being used in the C-GASP validation study. Kevin Boyd, DDS and Loria Nahatis, DDS</p> <p>-----</p> <p>Adult Screening:</p> <p>-----</p> <p>Chin Press / Tongue Curl Maneuver & Nasal Exam.</p> <p>This will cover a unique part of the exam that the dentist or hygienist can add to their routine assessment that asseses for risk of OSA. Jerald H. Simmons, MD Maggie Lavender, RN, FNP-C</p>	<p>Pre-Appliance/TMD for Indications & Contradictions for Oral Appliances and Myofunctional Exams</p> <p>This workshop will provide attendees an opportunity to learn and practice many components of the airway exam. This will be broken down into two sections.</p> <p>Adult oral exam and TMJ Dysfunction Exam This will cover main components of the oral exam and the TMJ and determine if mandibular advancement may be contraindicated along with other detailed aspects of the exam beyond screening.</p> <p>Ahmet Keles, DDS, DMSc Bruno Frazao Gribel, DDS</p> <p>-----</p> <p>Soft Tissue Compromises and Restriction of the oral airway.</p> <p>This part will cover how to assess the soft tissue of the oral cavity and how to grade different aspects such as tonsillar size, tongue restriction and vertical flexibility.</p> <p>Samantha Weaver, M.S. CCC-SLP Nicole Goldfarb M.A., CCC-SLP, COM</p>	<p>Managing Oral Appliances from the First Presentation Through the Titration and Making a Morning Re-Aligner.</p> <p>This workshop will provide attendees an opportunity to see actual appliances that have been made for this presentation and first presented to volunteer attendees.</p> <p>Rob Veis, DDS Steve Carstensen, DDS</p>	<p>Making a construction Bite and a boil & bite appliance</p> <p>This workshop will provide attendees an opportunity make a morning re-aligner that is used by patients who sleep with a mandibular advancing dental appliance, to mitigate potential side effects. Attendees will also make a boil & Bite appliance that can be used as a temporary appliance to treat patients with OSA.</p> <p>Ron Prehn, DDS (Susan Quaranta RDH, BS, COM)</p>

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**Sleep and breathing: The basics of
understanding Obstructive Sleep Apnea and its
relationship to dentistry**

by

Jerald H. Simmons, M.D.

**Director, Comprehensive Sleep Medicine Associates
Director, Sleep Education Consortium**

www.CSMA.Clinic

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Financial Relationship Disclosure

- No**, I do not have a financial interest, arrangement, or affiliation with a corporate organization offering financial support or grant monies for or related to the content of my presentation.
- Yes**, I do have a financial interest, arrangement, or affiliation with a corporate organization offering financial support or grant monies for or related to the content of my presentation..

Harmony Biosciences : Research funding for medication trial

Jazz Pharmaceuticals: Research funding for medication trial

Avadel Pharmaceuticals: Research funding for medication trial, Speaker Honorarium

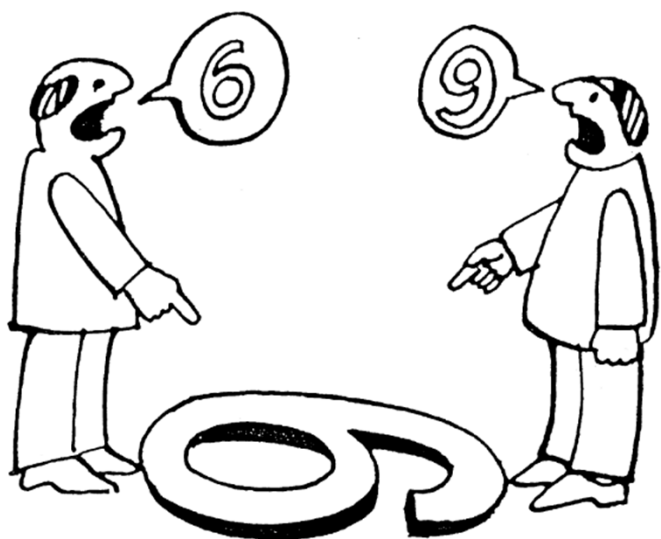
SleepArchITx: Advisory Board

REST Technologies, Inc: Owner, Developing Sleep Tracking Tools, Owner

Ely Lilly - Speaker Honorarium

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Understanding the world from others perspective



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SLEEP



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NIH Sleep Academic Award – 1997 grant submission

by Jerald H. Simmons, MD while at UCLA Department of Neurology and Co-director of the UCLA Sleep Disorders Center.

The UCLA Sleep Education Initiative to Raise the Standard of Care

- **NIH grant with one third of the effort focused on training dentists:** The grant defined dentists as part of the primary care facet of the health care system. The grant postulated that dentists can provide the role of screening patients for sleep disorders.
- **The grant proposal was rejected** — some reviewers comments :

“The principal investigator seems misguided, spending too much effort trying to educate dentists when his focus should be on educating physicians.”

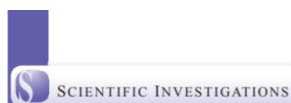
“Educating dentists is not something that is considered an objective to achieve the goals set out by the Sleep Academic Award and not clearly an effort worth pursuing.”

- however other reviewers comments were –

“Getting dentists involved is a brilliant idea that should be seriously considered.”

“It is novel to engage dentists to screen patient for OSA and this could identify many who would otherwise go undiagnosed.”

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JCSM
Journal of Clinical
Sleep Medicine

pii: jc-00375-14
<http://dx.doi.org/10.5664/jcsm.4602>

Frequency of Obstructive Sleep Apnea Syndrome in Dental Patients with Tooth Wear

Joaquin Durán-Cantolla, PhD^{1,2,3,4,5}; Mohammad Hamdan Alkhrasat, PhD²; Cristina Martínez-Null, BSc^{1,2,3,4}; Jose Javier Aguirre, MD⁵; Elena Rubio Guinea, DDS⁵; Eduardo Anitua, PhD^{1,3}

¹Sleep Disorders Unit, Clínica Eduardo Anitua, Vitoria, Spain; ²Sleep Disorders Unit, Hospital Universitario Araba, Vitoria, Spain; ³Research Service, BioAraba Project, Hospital Universitario Araba, Vitoria, Spain; ⁴Centro de Investigación Biomédica en Red Enfermedades Respiratorias, (CIBERES), ISCIII, Madrid, Spain; ⁵Eduardo Anitua Foundation, Vitoria, Spain; ⁶Faculty of Medicine, University of Pais Vasco UPV/EHU, Biscay, Spain

Study Objectives: To estimate the frequency of obstructive sleep apnea syndrome (OSAS) in dental patients with tooth wear, and to assess the role of dentists in the identification of patients at risk of OSAS.

Methods: Dental patients with tooth wear and treated with occlusal splint were prospectively recruited to perform sleep study. The severity of tooth wear was established by the treating dentist before patient referral to sleep disorders unit. Sleep questionnaires, anthropometric measurements, and validated respiratory polygraphy were performed.

Results: All patients with dental wear were offered a sleepiness analysis. Of 31 recruited patients, 30 (77% males) participated in this study. Patients' mean age was 58.5 ± 10.7 years (range: 35–90 years) and the body mass index was 27.9 ± 3.4 kg/m². Tooth wear was mild in 13 patients, moderate in 8

and severe in 9. The mean apnea-hypopnea index (AHI) was 32.4 ± 24.9. AHI < 5 was reported in 2 patients, AHI of 5–29 in 17, and AHI ≥ 30 in 11. A statistically significant association was found between AHI severity and tooth wear severity (Spearman R = 0.505; p = 0.004).

Conclusions: Tooth wear could be a tool to identify those patients at risk of having OSAS. This highlights the importance of dental professionals to identify and refer patients with OSAS.

Keywords: apnea-hypopnea index, AHI, obstructive sleep apnea, bruxism, tooth wear

Citation: Durán-Cantolla J, Alkhrasat MH, Martínez-Null C, Aguirre JJ, Guinea ER, Anitua E. Frequency of obstructive sleep apnea syndrome in dental patients with tooth wear. *J Clin Sleep Med* 2015;11(4):445–450.

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Policy on Obstructive Sleep Apnea (OSA)

Latest Revision

2021

How to Cite: American Academy of Pediatric Dentistry. Policy on obstructive sleep apnea (OSA). The Reference Manual of Pediatric Dentistry. Chicago, Ill.: American Academy of Pediatric Dentistry; 2022:135-8.

Policy statement

Recognizing that there may be consequences of untreated OSA, the AAPD encourages health care professionals to:

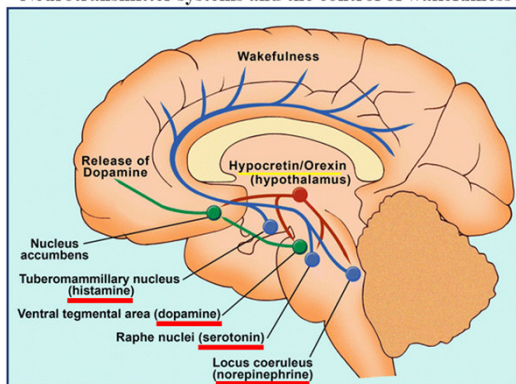
- screen patients for sleep-related breathing disorders such as OSA and primary snoring.
- assess the tonsillar pillar area for hypertrophy.
- assess tongue positioning as it may contribute to obstruction.
- recognize obesity may contribute to OSA.
- recognize craniofacial anomalies may be associated with OSA.
- refer to an appropriate medical provider (e.g., otolaryngologist, sleep medicine physician, pulmonologist) for diagnosis and treatment of any patient suspected of having OSA.
- consider nonsurgical intraoral appliances only after a complete orthodontic/craniofacial assessment of the patient's growth and development as part of a multidisciplinary approach.

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A constant balance between two competing processes determine if a person is awake or asleep

Wake

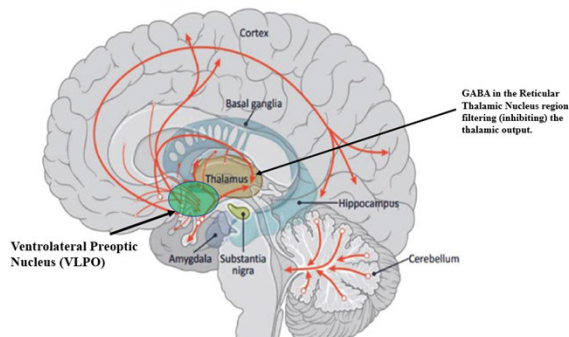
Neurotransmitter systems and the control of wakefulness



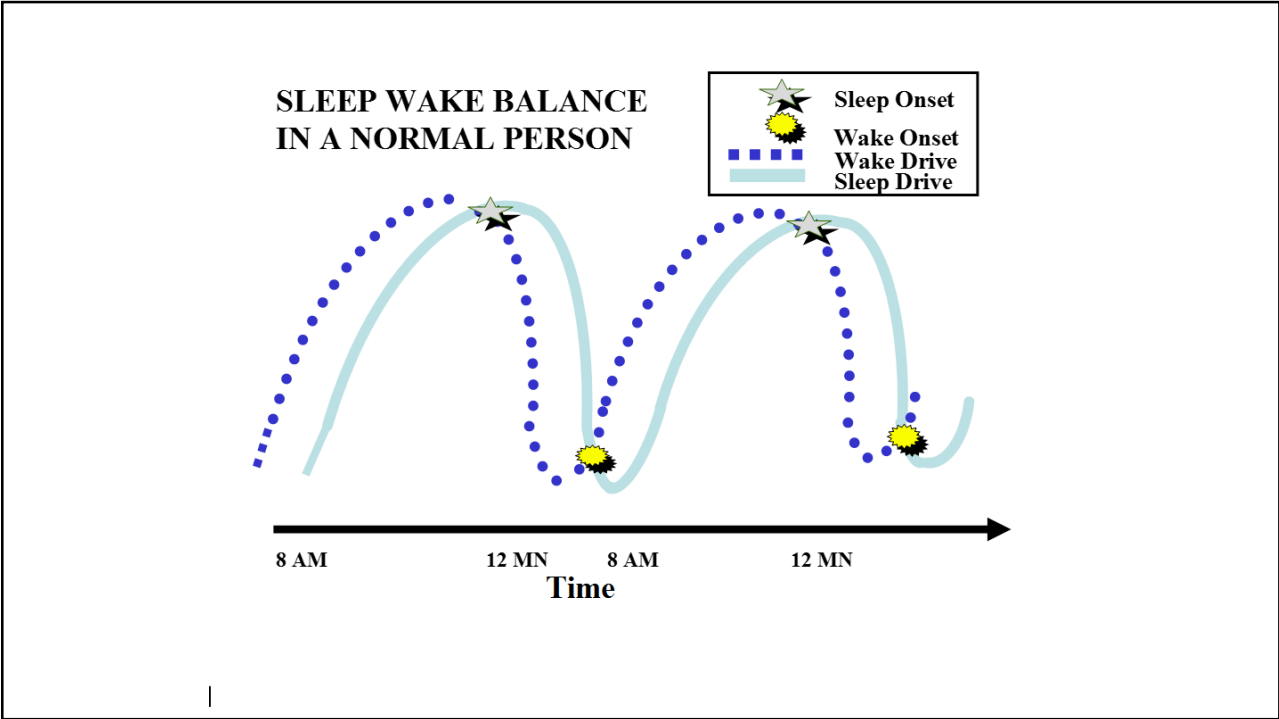
Sleep

Sleep is driven by a **gamma-aminobutyric acid (GABA)** system originating from the VLPO region

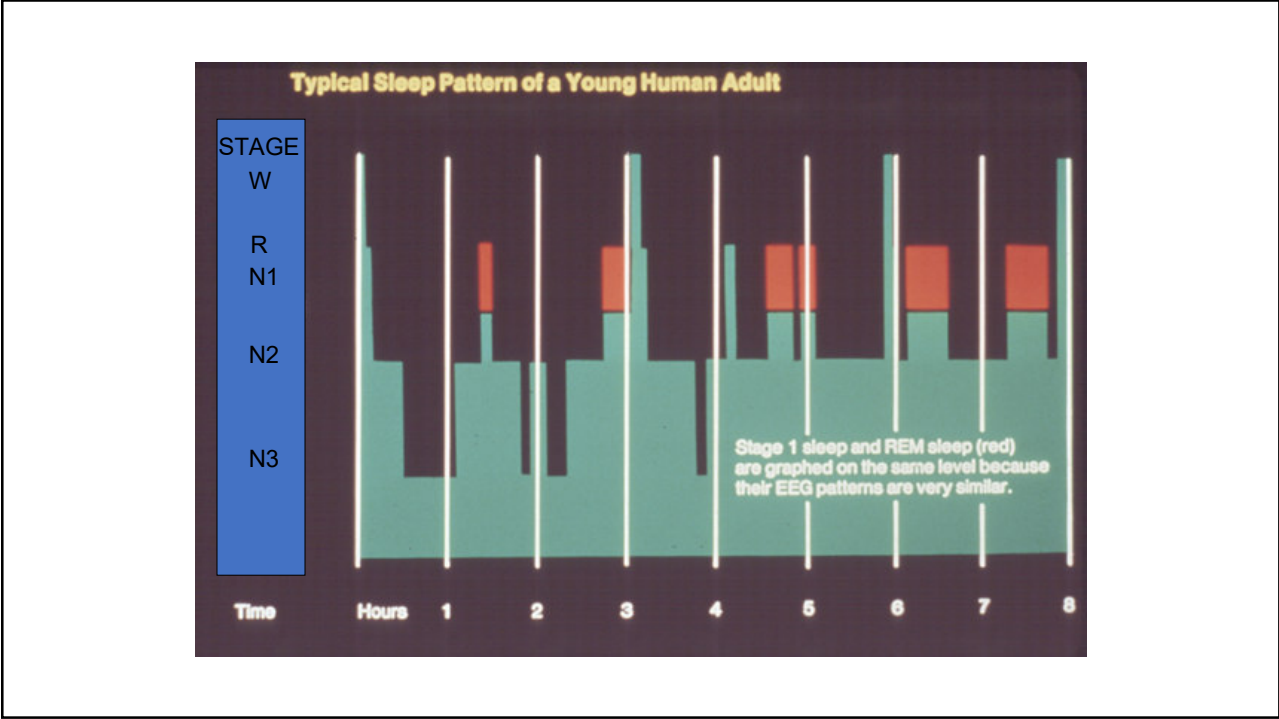
GABA pathways in the brain are shown below
Origination → Destination



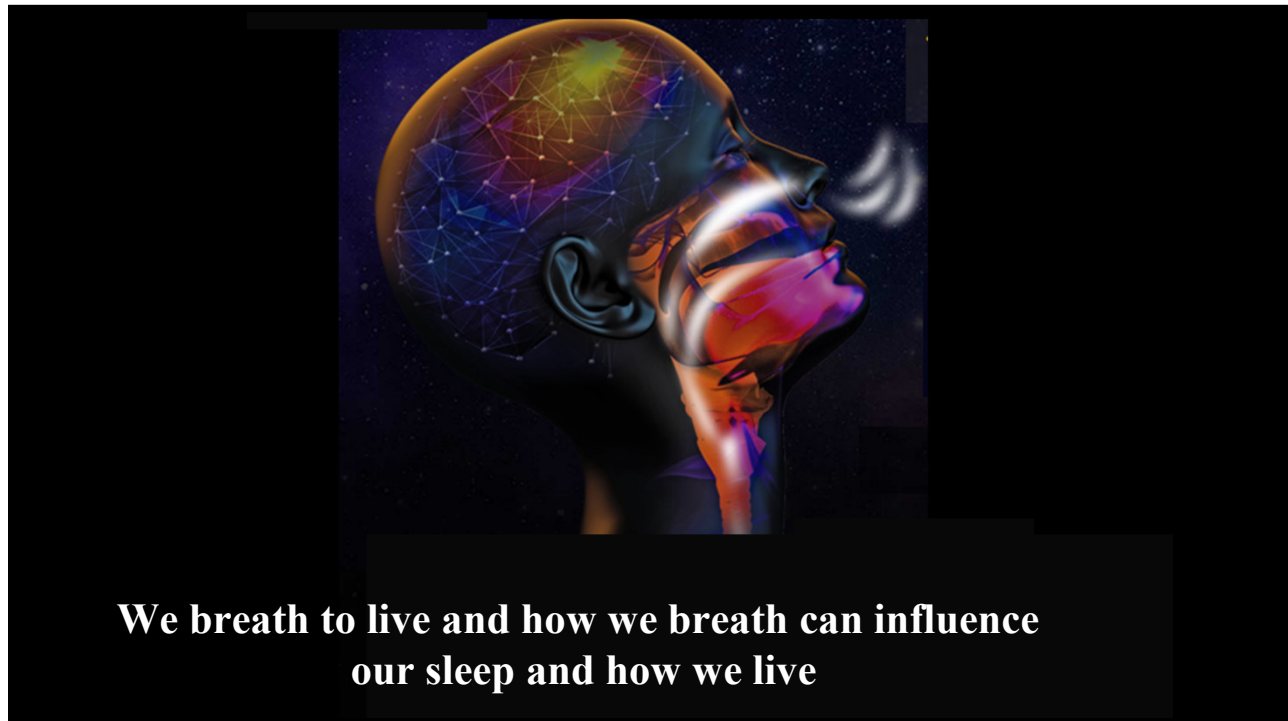
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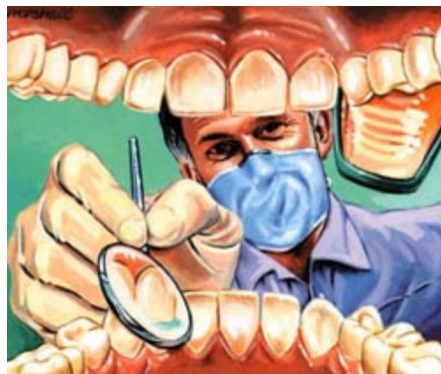


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Dentists are perfectly situated to be at the front line of the airway team because they look into the mouth of every one of their patients. The mouth is part of the airway. Dentists can easily do an airway exam on every patient.



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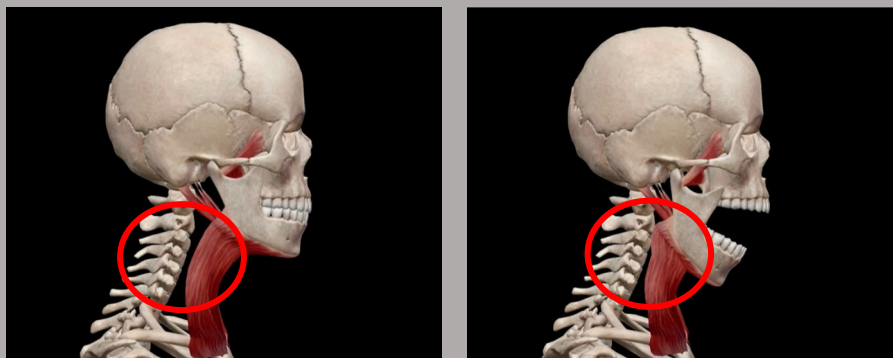
How do you explain OSA to your patients?

**Our explanations are based on our understanding.
This course is geared to enhance your understanding,
your practice and your patient care.**



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As the mandible opens and closes, the airway space changes




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What type of test to use?

What's the difference between a Nocturnal Polysomnogram vs a Home Sleep Apnea Test?



NPSG



HSAT

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Stages of Sleep

N Stages – Somatic Restoration
N3 is time in which there is the highest level of Growth Hormone
Fragmentation of N3 is recognized to be associated with a lower pain threshold and subsequently the development of chronic pain conditions such as Fibromyalgia.

R Stage – (REM) – Limbic Restoration ---
Consolidation of Short Term Memory into Long Term Memory

Active (vivid) Dreaming, Rapid Eye Movements
Muscle Atonia

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Nocturnal PolySomnoGraphy (NPSG)

In-Lab Sleep testing. It is the most reliable method to evaluate sleep. The most common parameters used for nocturnal polysomnograph testing include the following:

- Electroencephalograph, two to twenty separate channels
- Right and left eye movements or electro-oculograph
- Chin muscle activity, known as electromyography
- Electrocardiograph
- Leg electromyography, usually right to left anterior tibialis muscles
- Snoring or tracheal sounds, measured with a microphone taped to the throat
- Air flow through the nose and mouth
- Movement of the chest
- Movement of the abdomen
- Oxygen level, measured with a finger oximeter
- Body position
- Esophageal manometry -- in some laboratories.

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Types of Sleep Studies used to establish A Diagnosis of Obstructive Sleep Apnea

Type I : Polysomnography (PSG) : Fully attended by a trained technologist, providing EEG (2 or more), EOG (2), EMG, ECG/heart rate, airflow, respiratory effort (typically 2 or more channels) and oxygen saturation
In Lab Sleep Study

Type II : Home sleep study test (HST) with a portable monitor, unattended; minimum of 7 channels: EEG, EOG, EMG, ECG/heart rate, airflow, respiratory effort and oxygen saturation

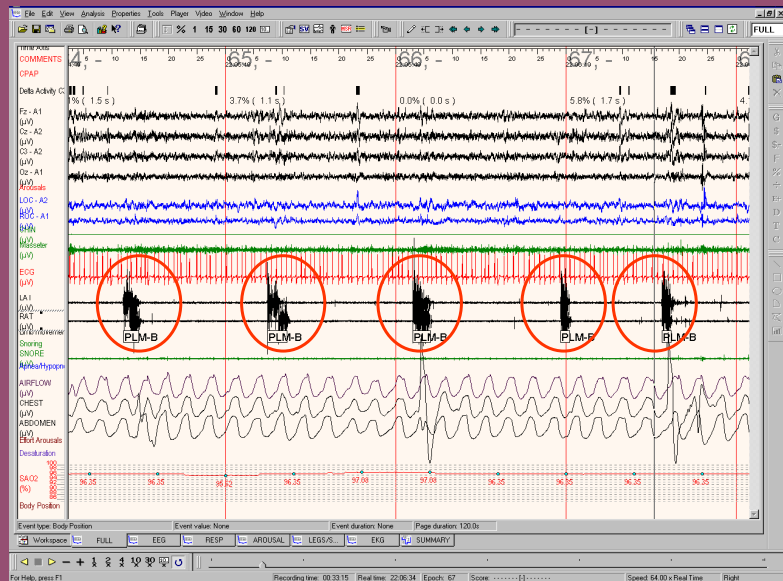
Type III : Home sleep test (HST) with a portable monitor, unattended; minimum of 4 channels: 2 respiratory movement/airflow, 1 ECG/heart rate and 1 oxygen saturation

Most Common Type Of Home Sleep Apnea Test (HSAT)

Type IV : Home sleep test (HST) with type IV portable monitor, unattended; minimum of 3 channels , one of which is air flow. (ex – flow, SaO2, position)

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Example finding on Type I – In Lab NPSG - Periodic Leg Movements of Sleep
This is NOT something identified on Home Sleep Apnea Test (HSAT) studies (Type III or IV)



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**SNORING
AND
SLEEP APNEA**

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OSA

Obstructive Sleep Apnea, a silent killer...


- Impacts over **30 M Americans (AASM, 2016)**
- Increases risk of:
 - Hypertension
 - Cognitive difficulties (ADHD / ADD, Dementia ..)
 - Stroke
 - Heart attack
 - Heart failure
 - and Death...
- **Current treatment pathways do not optimally manage OSA**
- **Tools for longitudinal tracking OSA are limited but could enhance treatment pathways**

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Most Popular Current Treatments For OSA

The Good and The Bad

Oral Appliance Therapy (OAT)

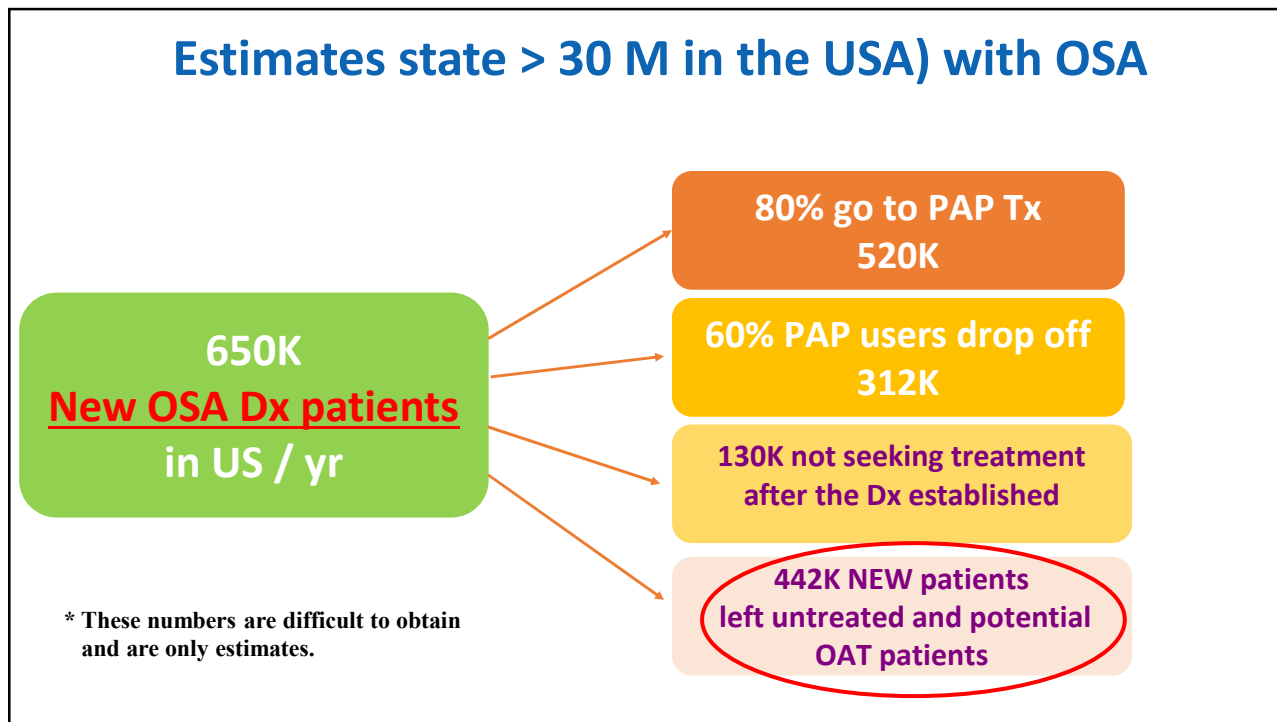


FACTS

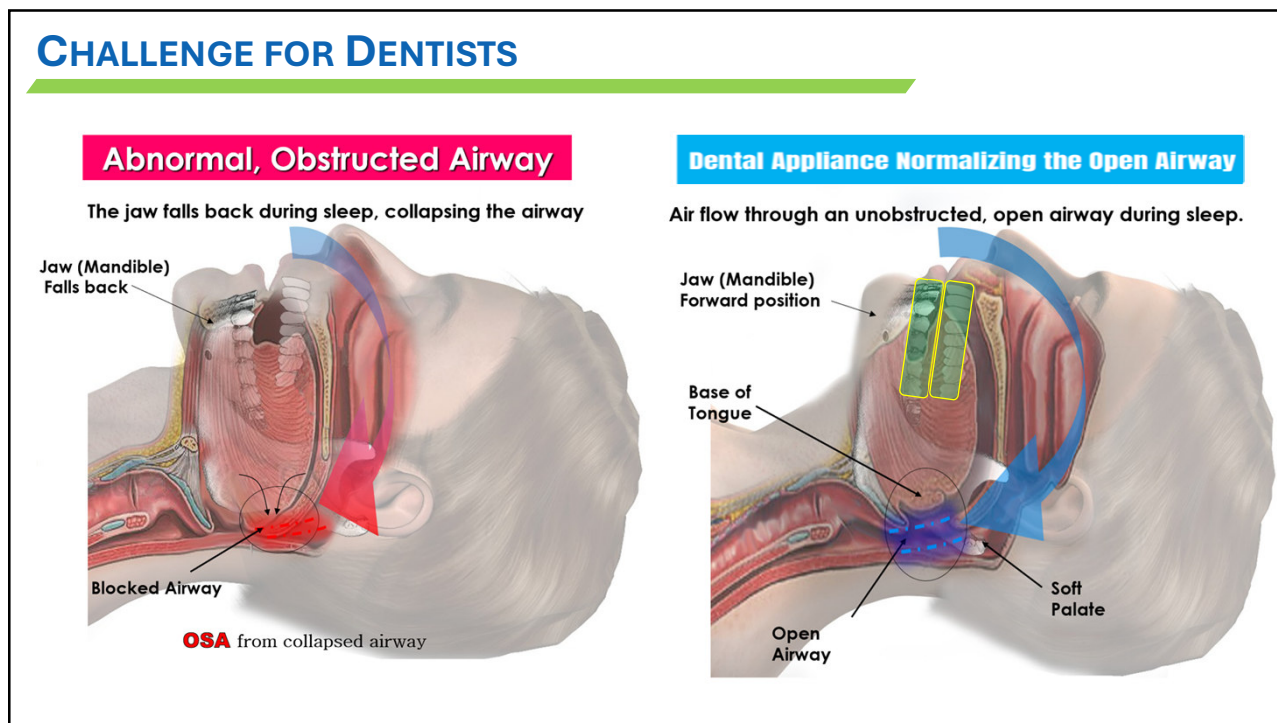
- 76% compliance with OAT after 1 yr¹
- Limited familiarity thus under-prescribed
- Reluctance to use in severe OSA cases
- No universally accepted guidelines for management
- Estimate 200k sleep appliance sold annually in the US, estimated growth to 300k by 2029²
- Mostly fee-for-service financial model

1. Sutherland K., et al., *Journal of Clinical Sleep Medicine* Volume 10, 2014
2. Projection based on calculation from numbers obtain from MarketsandMarkets Sep 2024 Sleep Apnea Oral Appliance Market: Growth, Size, Share, and Trend

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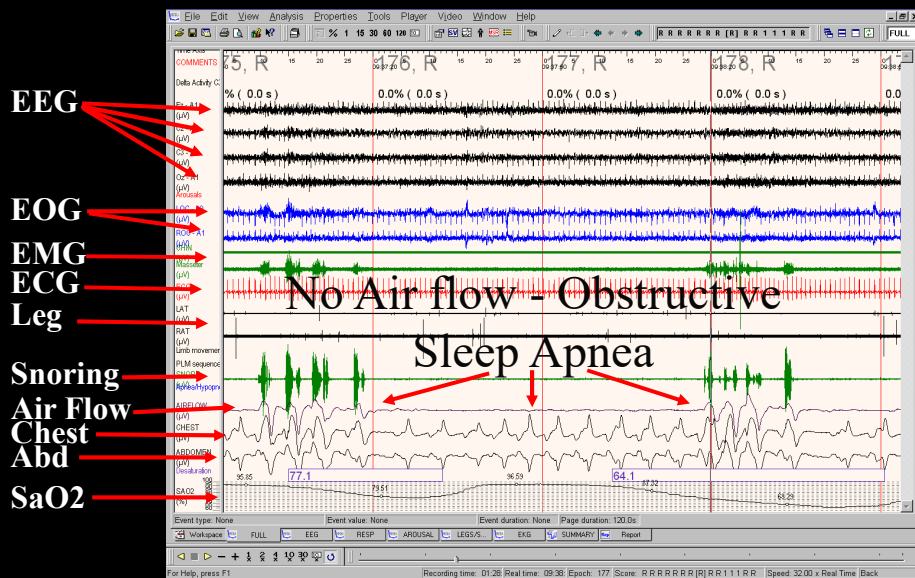
CHALLENGE FOR PATIENTS (CONT.)



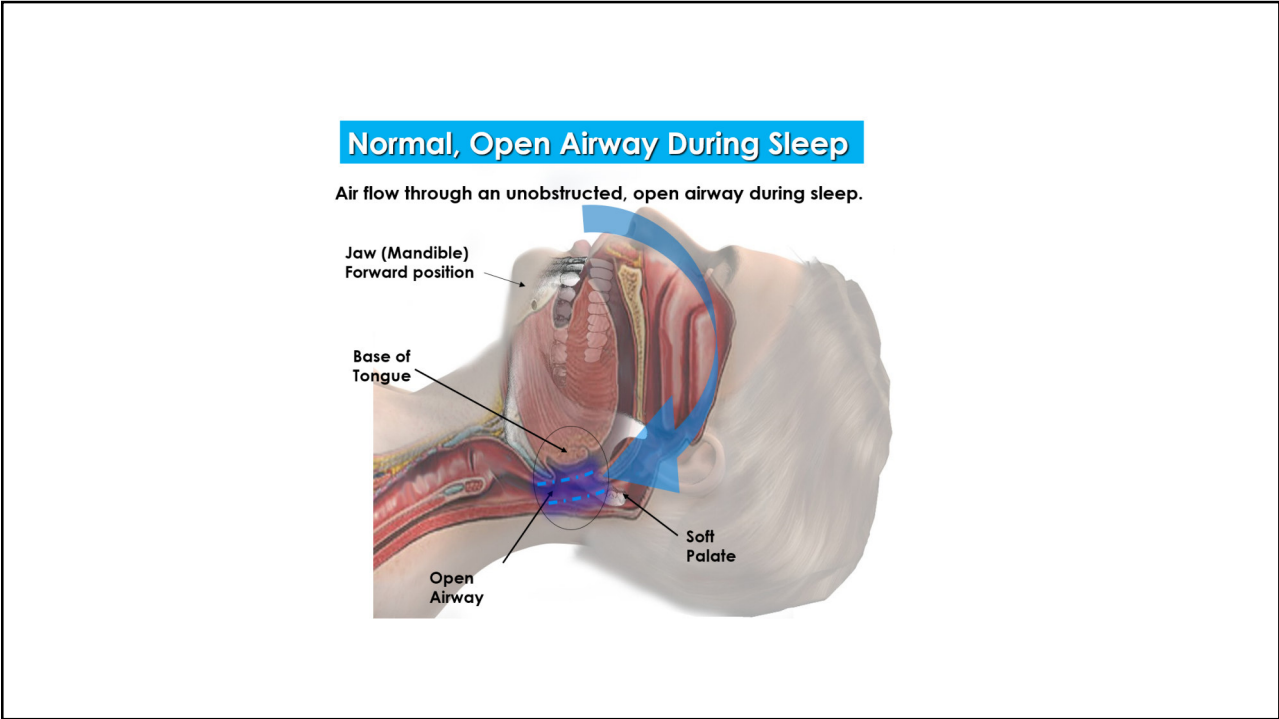
Patient adjusts a sleep oral appliance, without a proper efficacy monitoring plan or tool.

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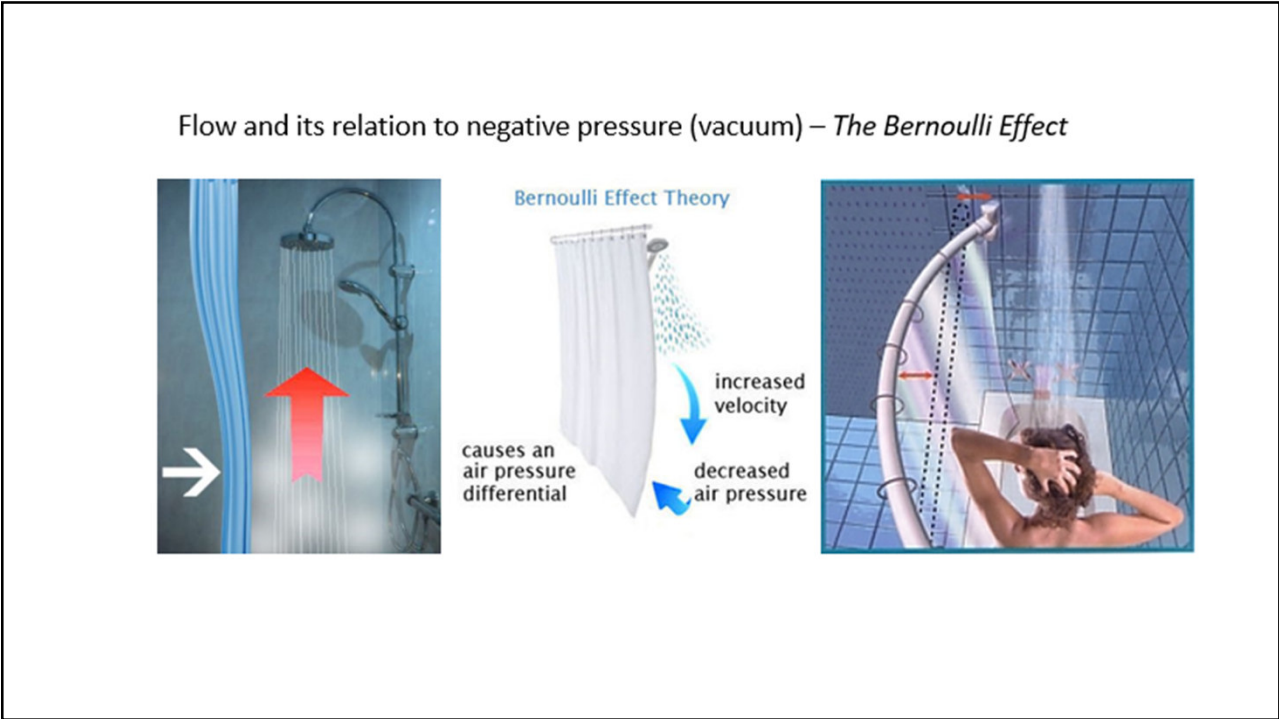
One minute of Obstructive Apnea



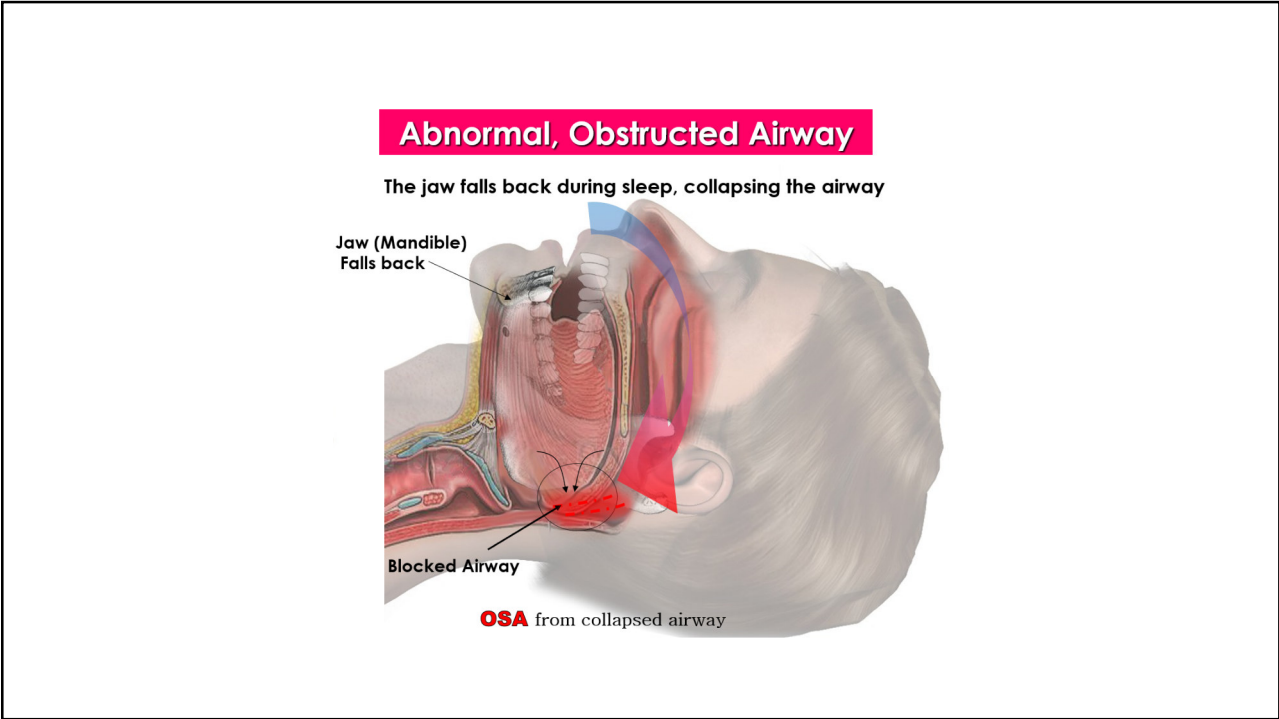
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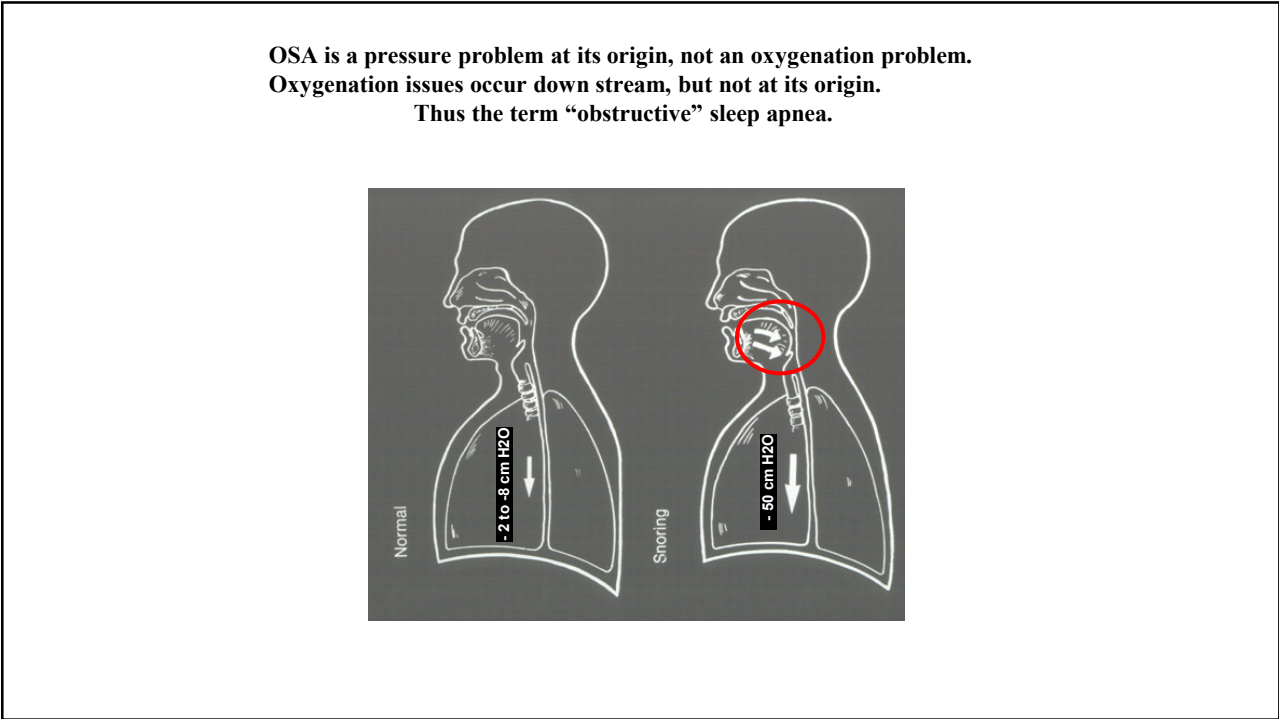
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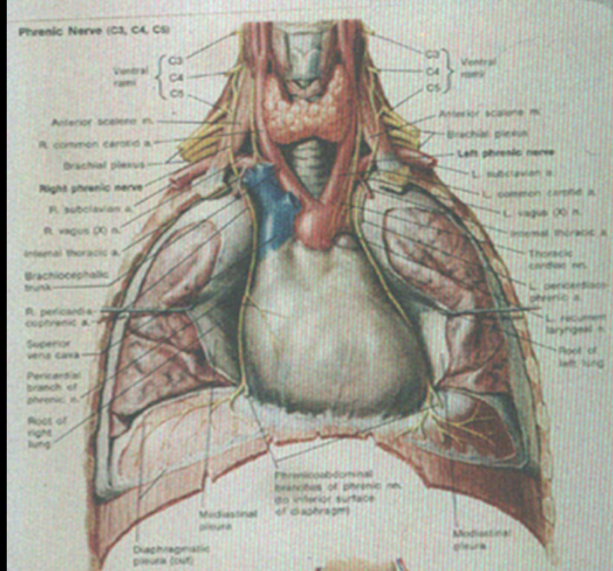


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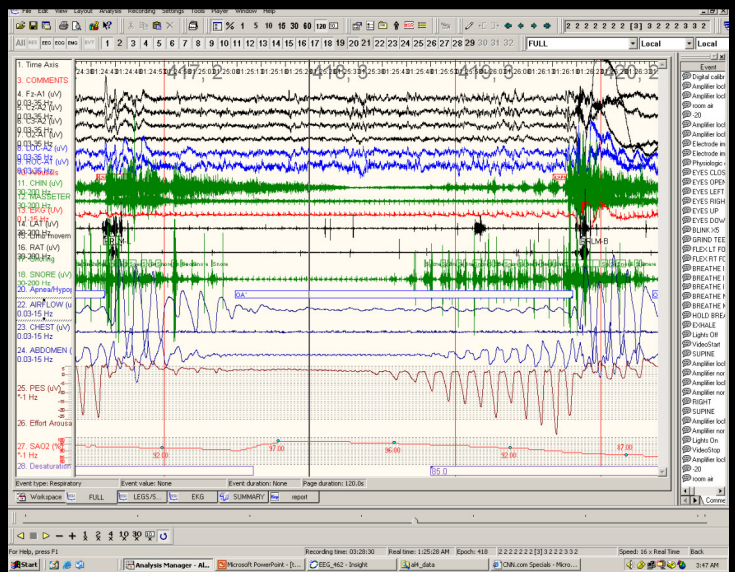


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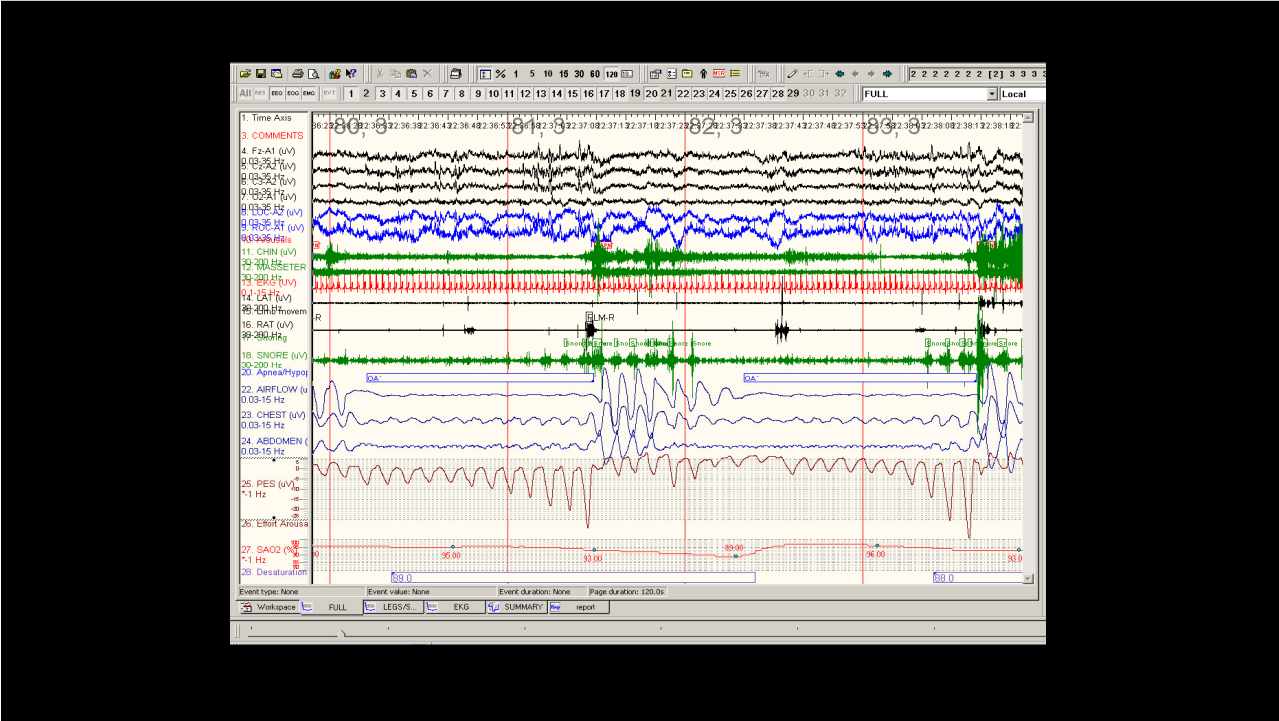
The heart has to function inside of a vacuum chamber in patients with OSA



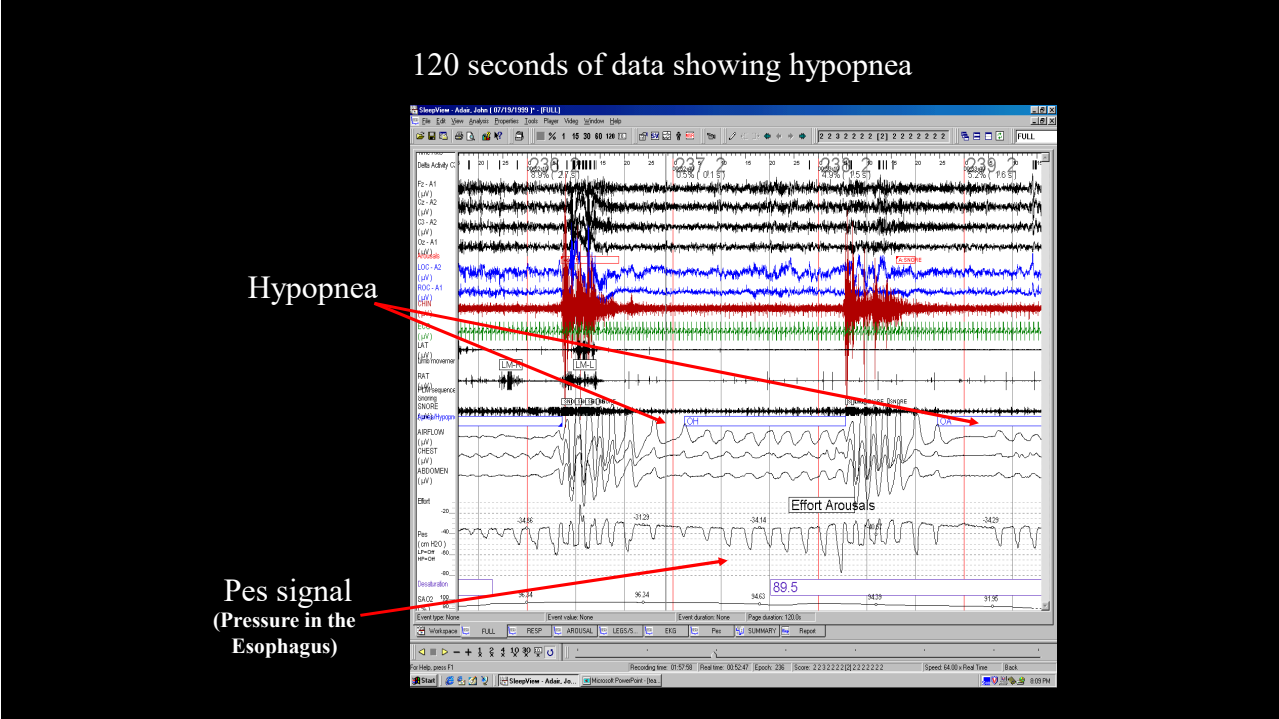
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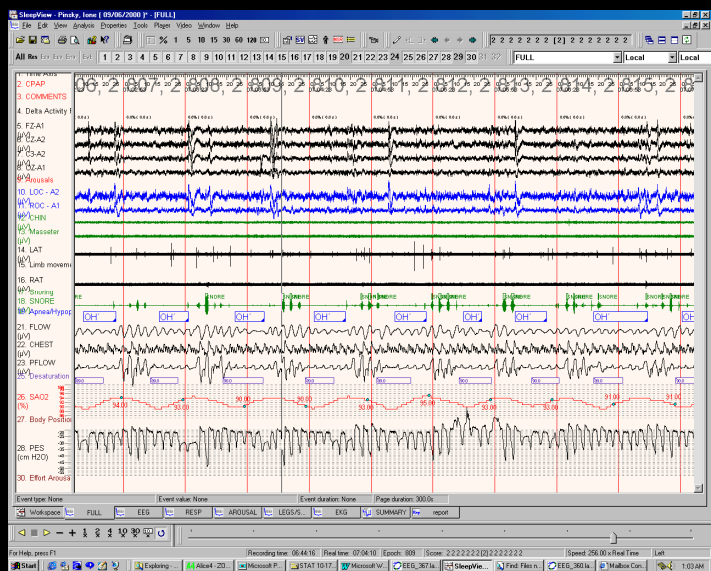


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Repetitive Hypopnea over a 5 minute period



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Hypopnea Scoring Rules implemented by the AASM in 2013

Two different scoring rules currently exist, causing confusion.

Rule 1A (Recommended rule)

Score a respiratory event as a hypopnea if ALL of the following criteria are met:

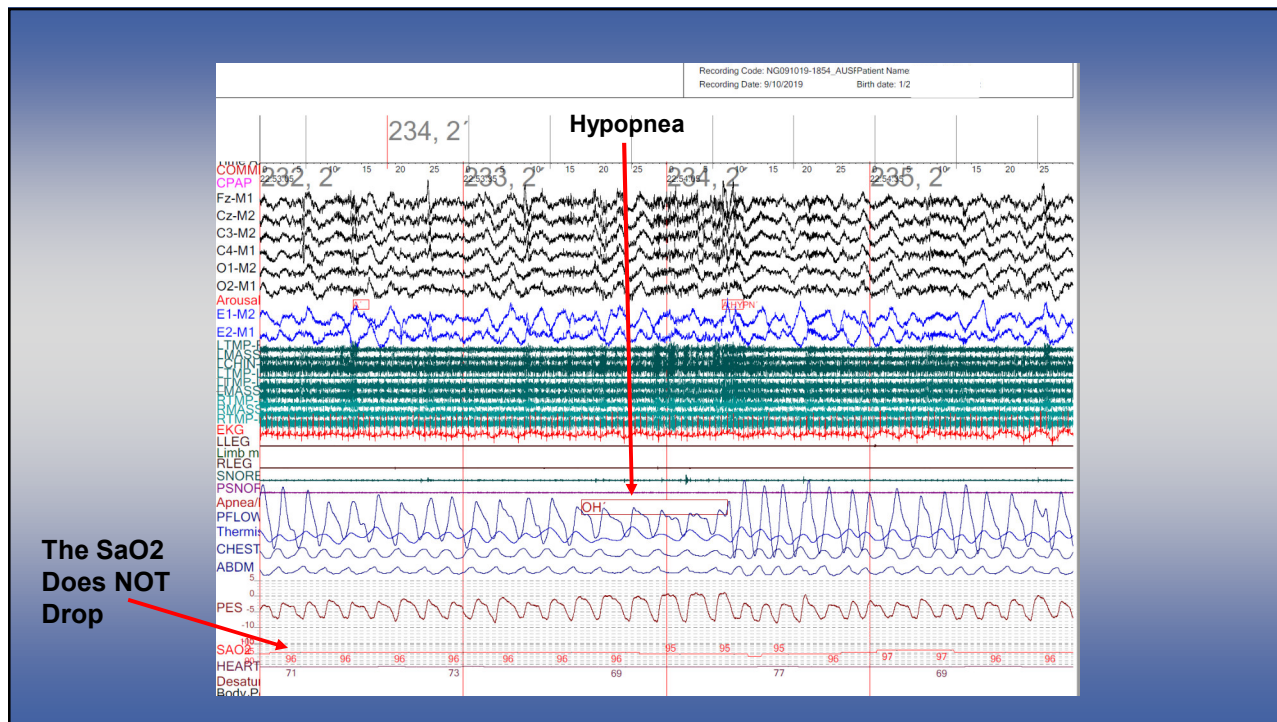
- a. The peak signal excursions drop by $\geq 30\%$ of pre-event baseline
- b. The duration of the $\geq 30\%$ drop in signal excursion is ≥ 10 seconds.
- c. There is a $\geq 3\%$ oxygen desaturation from pre-event baseline or the event is associated with an arousal. **Note: No SaO2 desaturation required.**

Rule 1B (Acceptable but not the recommended rule) Unfortunately many sleep facilities use this rule. Medicare only recognizes this rule.

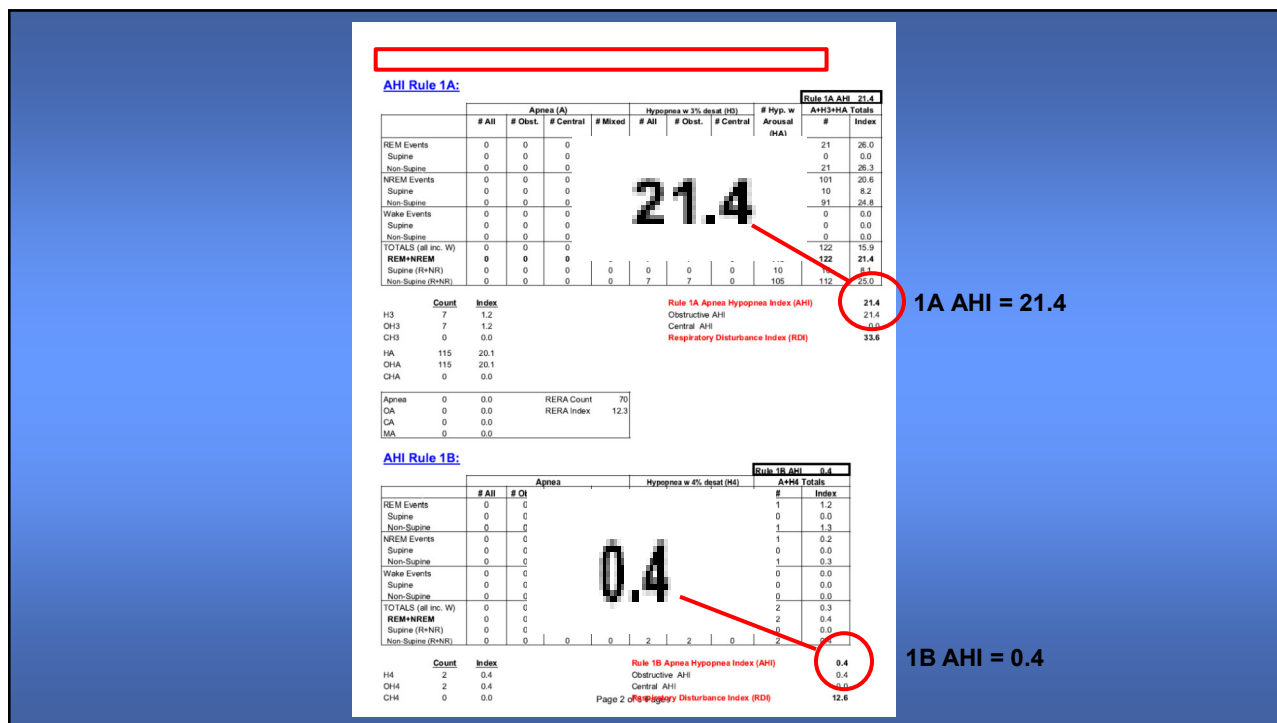
Score a respiratory event as a hypopnea if

- a. The peak signal excursions drop by $\geq 30\%$ of pre-event baseline
- b. The duration of the $\geq 30\%$ drop in signal excursion is ≥ 10 seconds.
- c. There is a $\geq 4\%$ oxygen desaturation from pre-event baseline **Note: No mention of arousals. Arousals are not part of 1B Hypopneas.**

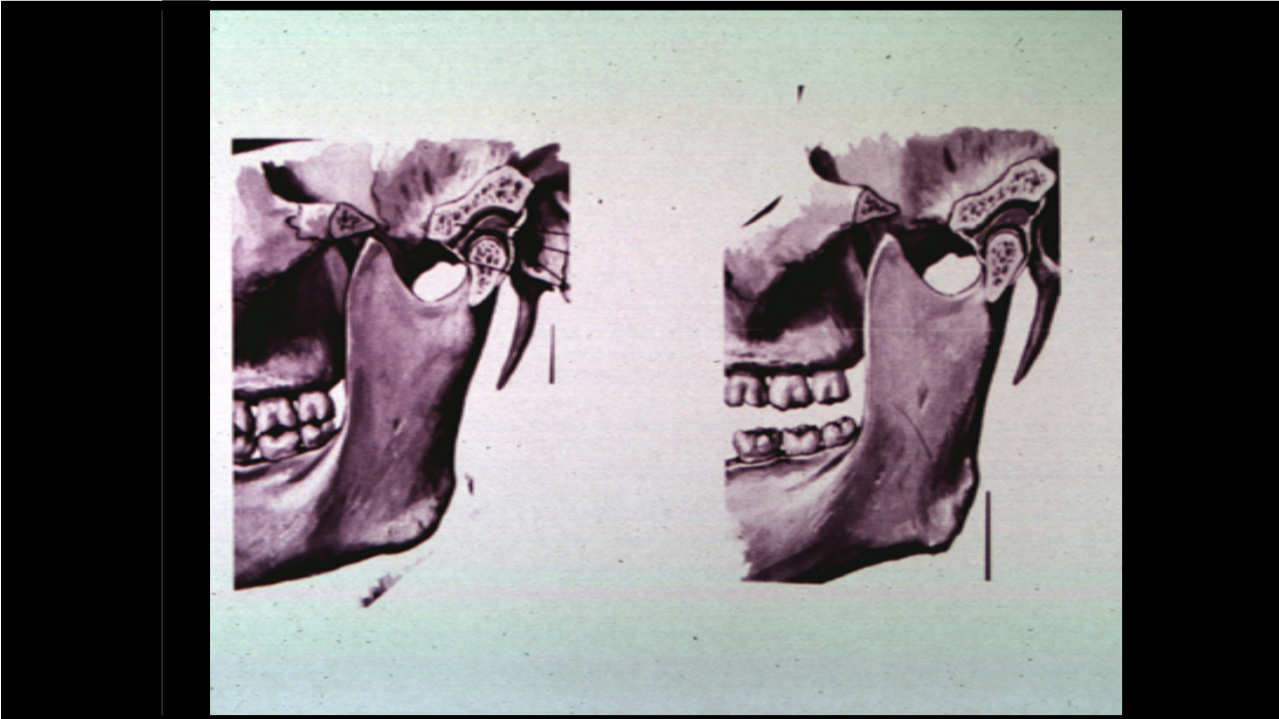
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Normal Airway

Open Airway
Base of Tongue
Soft Palate

Obstructive Sleep Apnea (OSA) occurs from the airway collapsing

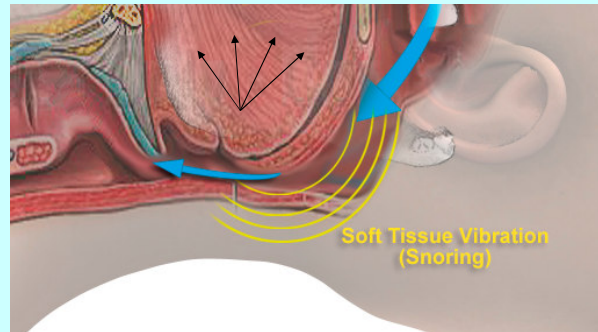
The Jaw falls back while asleep results in the Tongue and Soft Palate collapsing the airway

Collapsing Airway: Breathing through a collapsing airway causes a vacuum to be created in the throat. This pulls on the soft tissue making it vibrate, causing snoring and complete collapse in OSA.

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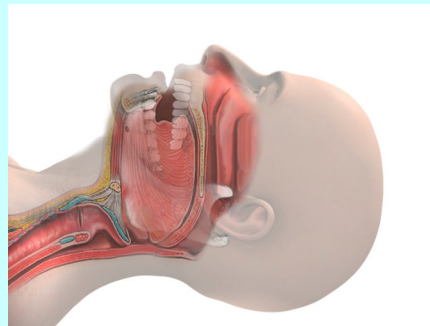
Tongue increase increases muscle tone with the increase in obstruction which helps prevent the obstruction. This can cause tongue thrusting.

Bringing the jaw forward decreases the magnitude of the negative pressure and thus decreases the muscle tone of the tongue. This can be achieved by Bruxing. .



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REM Sleep



In REM Sleep the natural reflex of increased tongue muscle tone that occurs under conditions of increase negative pressures in the airway are lost as part of the hypotonia of REM

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Examination of the Upper Airway in a Dynamic Fashion Chin-Press / Chin-Press Tongue-Curl Maneuver



Simmons, J.H., Mann, C.A., Gulliminault, C. "The Chin Press/Tongue Curl Maneuver as Part of the Physical Exam on Patients Suspected of Sleep Related Obstructive Respirations." *Somnologie* (1997) 1 (Suppl. 2), 1-56.

Simmons, J.H., Mann, C., Leiby, R. **The Chin Press Maneuver: A Method of Evaluating the Upper Airway During the Physical Exams**, *Sleep Research* Vol 26, 1997.

Simmons J., Mann C., Zuberi N., Leiby R., and Shellock F., Abstract - "Evaluating the Upper Airway During the Physical Exam with the Chin Press Maneuver". *Sleep Research*, 1996 Vol. 24 p. 269.

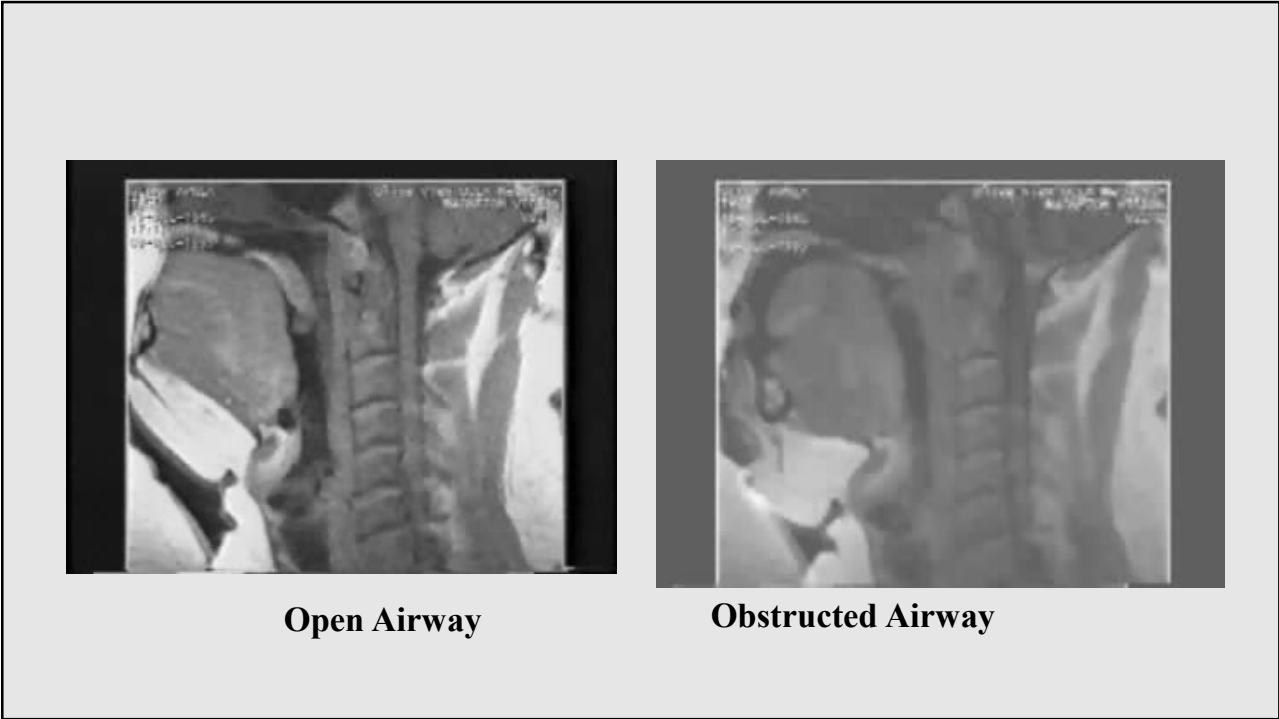
Meskill, G., Kincheloe, K., Simmons, J, Meskill, S. Abstract - **Simmons Chin Press and Tongue Curl (SCPTC) Maneuver is a Reproducible Objective Physical Exam Finding to Screen for Obstructive Sleep Apnea (OSA) Associated with Cardiovascular Morbidities and All-Cause Mortality** *Sleep* 2018 Vol. 41, 2018 p A187

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Examination of the Nasal Airway

- Collapse of the Nasal Bridge from the negative pressure
- Less than 10% of OSA patients resolve with Tx of the nasal anatomy alone
- Awakening with Nasal Congestion is a sign of obstructive respirations during sleep

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Risk Factors for OSA

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Obesity

body mass index (BMI) : >30 kg/m²

BMI FORMULA

USA BMI= 703x $\frac{\text{weight (lb)}}{\text{height}^2 (\text{in}^2)}$

METRIC BMI= $\frac{\text{weight (kg)}}{\text{height}^2 (\text{m}^2)}$

WEIGHT CATEGORIES			
UNDERWEIGHT	HEALTHY	OVERWEIGHT	OBESE
< 18.5	18.5-24.9	25.0-29.9	> 30.0

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Neck Circumference

An enlarged neck circumference highly associated with OSA
men: >43 cm [17 in];
women: >37 cm [15 in])



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OVERBITE Retrognathia or Micrognathia



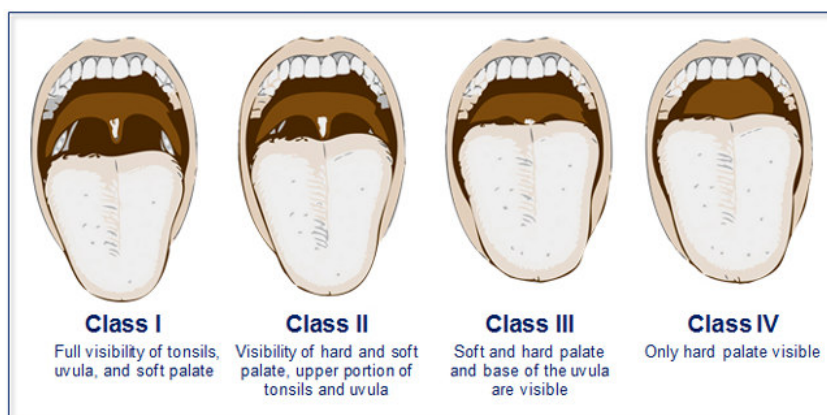
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Some of the signs of Bruxism at the time of presentation to the sleep center



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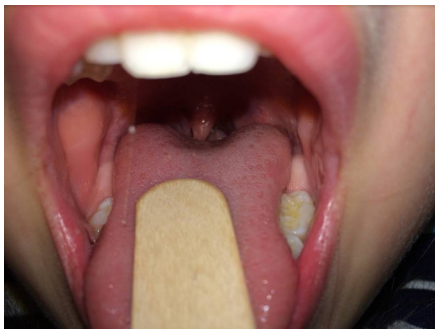
Mallampati Scale



Class II and Class IV are associated with more difficult intubations and higher chance of having OSA

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Mallampati class determination can change moment to moment in the same patient who is not maintaining consistent muscle tone of the soft palate and tongue base

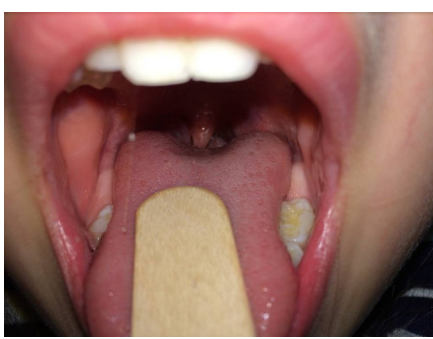


Mallampati Class II

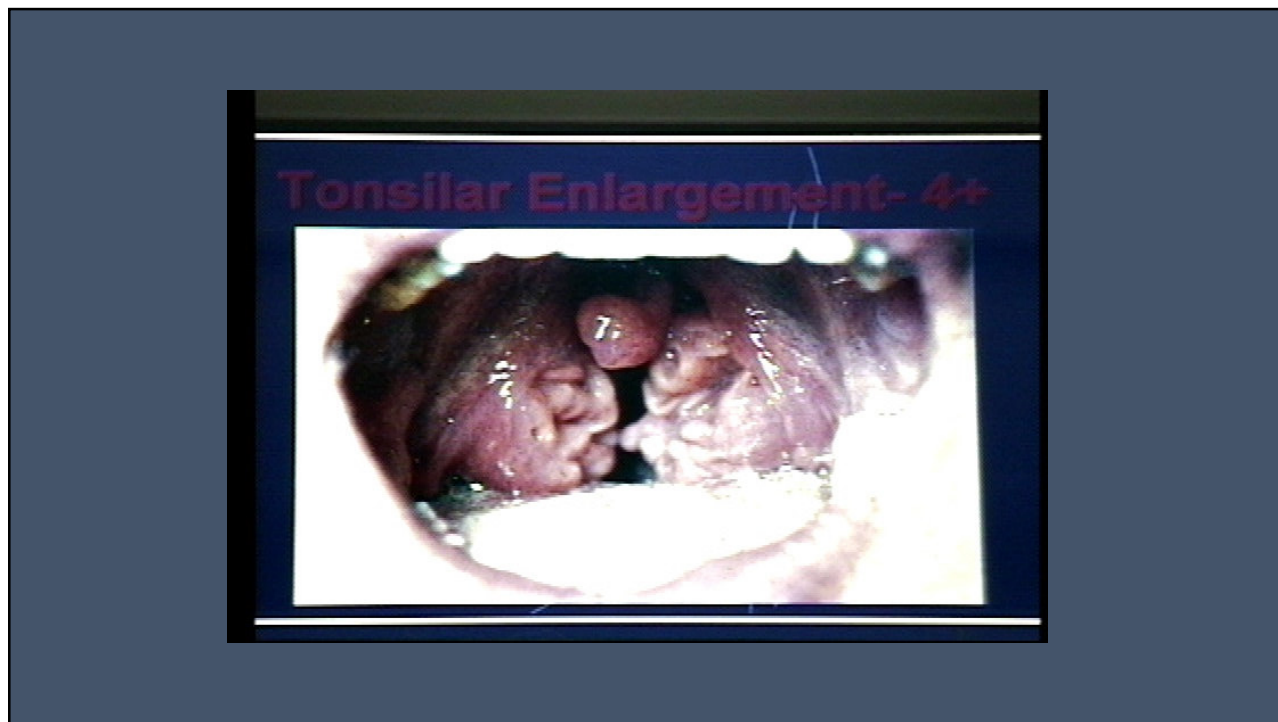


Mallampati Class III

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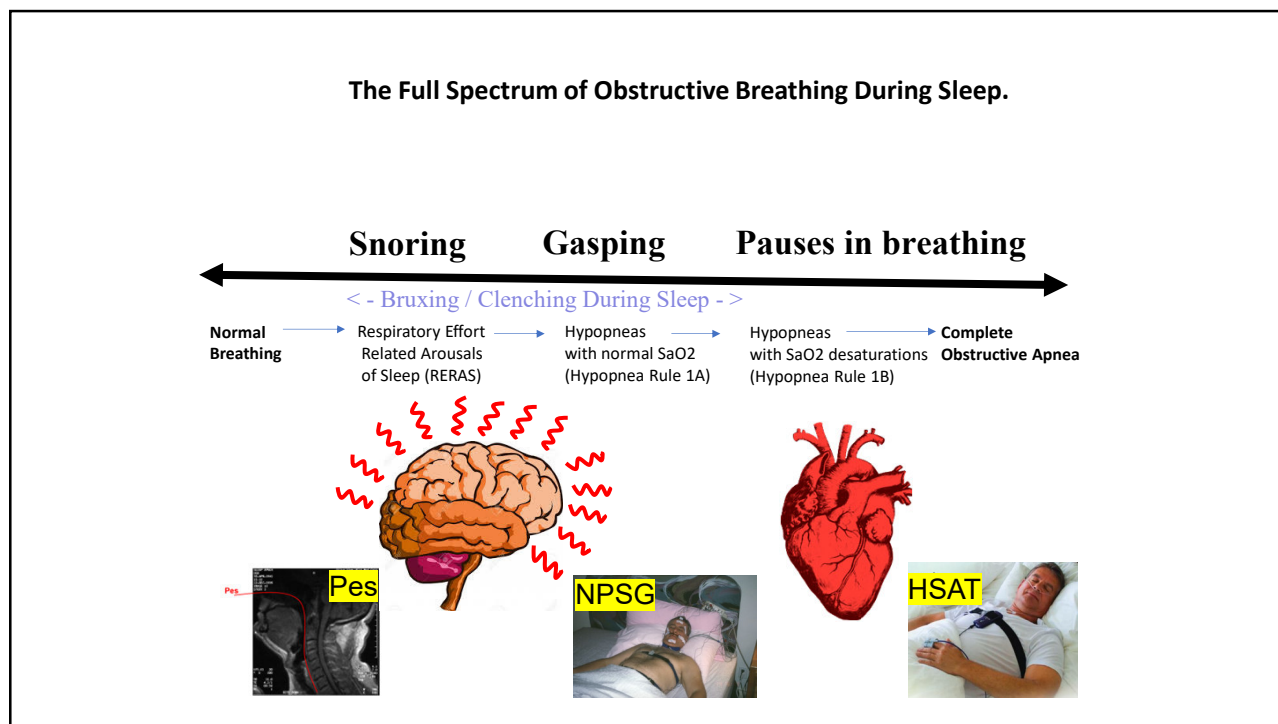


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Some of the findings on the examination or other medical conditions that should prompt you to clearly consider OSA in a patient:

- Abnormal (increased) Mallampati score: Identifies risk for difficult tracheal intubation and OSA
- Narrowing of the lateral airway walls: Independent predictor of the presence of obstructive sleep apnea in men but not women
- Enlarged (ie, "kissing") tonsils (3+ to 4+)
- Retrognathia or micrognathia
- Large degree of overjet
- High-arched hard palate
- Signs of Sleep Bruxism
- Systemic arterial hypertension: Present in about 50% of obstructive sleep apnea cases
- Congestive heart failure
- Pulmonary hypertension
- Stroke
- Metabolic syndrome
- Type 2 diabetes mellitus

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- ## Treatment Options
- CPAP / BiPAP
 - Oral Appliance Therapy (OAT)
 - Mandibular Advancing Dental Appliances
 - Tongue Retaining Appliances
 - Surgical Intervention
 - Soft tissue reduction (UPPP, Tongue base reduction .etc.
 - Sinus surgery
 - Maxilla Mandibular Advancement
 - Hypoglossal Nerve Stimulator (Inspire)
 - Weight loss in selected patients
 - Orthodontics / Restorative dentistry
 - Myofunctional Therapy
 - Changes in habits — improved sleep hygiene, alcohol reduction etc.

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CPAP (Continuous Positive Airway Pressure) in the treatment of obstructive respiration's during sleep



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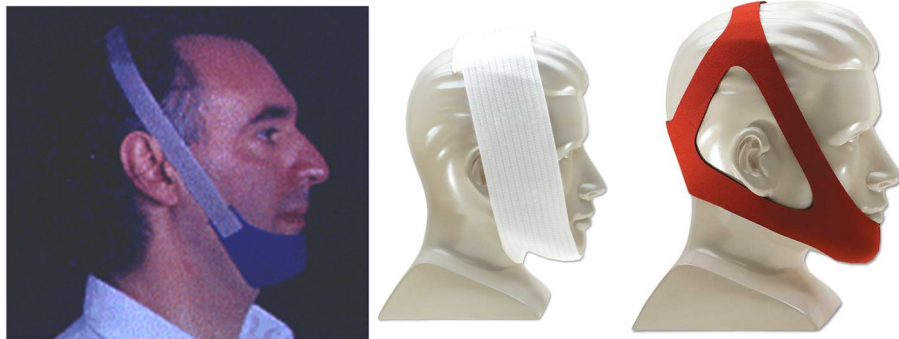
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New Mask Technologies Improve Patient Compliance



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A Chin Strap May Be Needed To Keep The Mouth Closed



Controlling the mandible is the key to success!

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Full Face Mask



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Terms use for describing different types of positive pressure treatments

The unit of measure is cm H2O. Typically, 4 – 25 cm H2O

Continuous Positive Airway Pressure = (CPAP)

BiLevel Positive Airway Pressure = (BPAP)

High pressure in inspiration (IPAP) / Low pressure on expiration (EPAP)

PAP = Either of these (Positive Airway Pressures)

APAP = Auto (adjusting) Positive Airway Pressure

This is the same as CPAP but the machine will adjust the pressures in response to OSA (if detected). The output is like CPAP not BiPAP


ERP = Expiratory Pressure Relief

(Used with CPAP or APAP. The pressure drops on expiration by either 1,2 or 3 cm H2O. Similar to BPAP but Max = 3)

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Saturday, April 5th Lecture

You will hear about combining PAP with dental appliances



09:45 AM - 10:30 AM

Oral Appliance Therapy Overview: Combination Therapy with PAP and the Use of Nightly Monitoring to Optimize Care ▼

By Rob Veis, DDS / Main Auditorium

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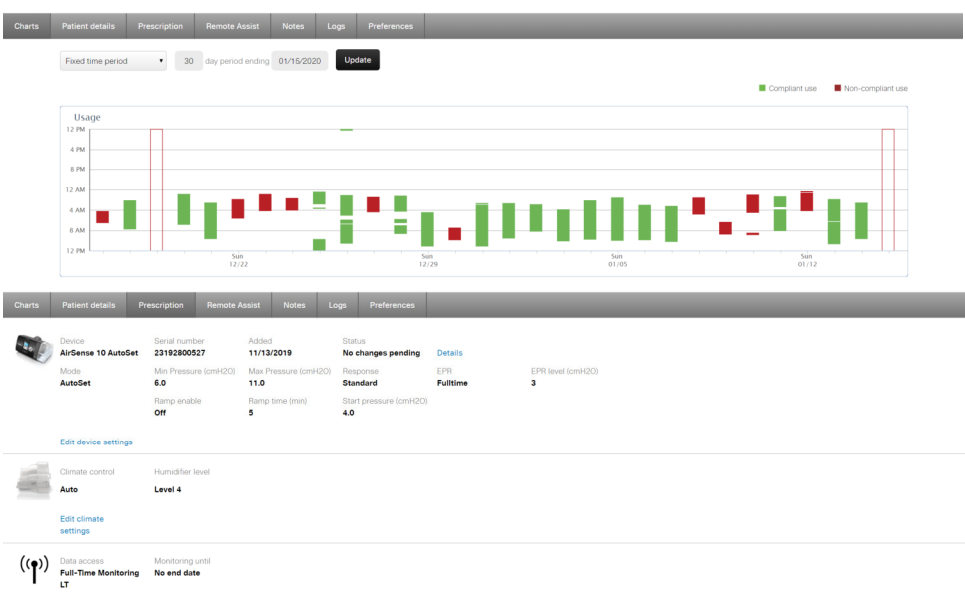
Adding CPAP back into the treatment plan in conjunction with a Mandibular Advancing Appliance



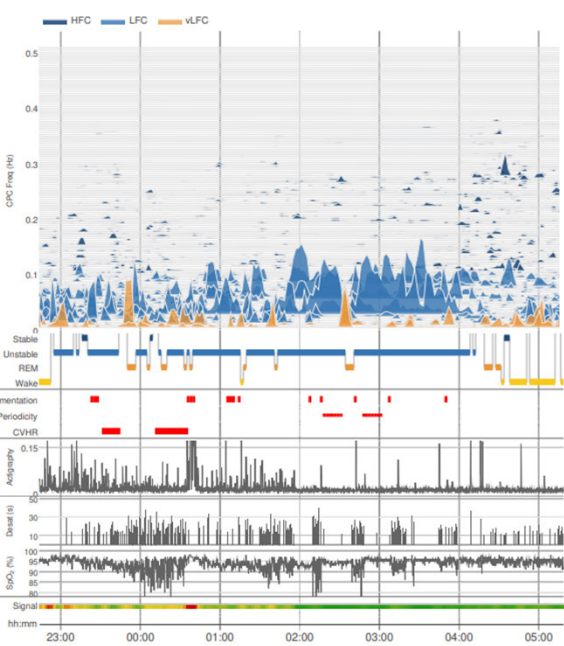
The image shows a man in profile, wearing a blue striped polo shirt. He is using a clear CPAP mask over his nose, connected to a white tube. He is also wearing a clear mandibular advancing appliance in his mouth. The background is a clinical setting with a white table holding colorful toys and a poster on the wall.

70

CPAP Compliance Data obtained remotely from the cloud.



71



Great example of when a HSAT result is without question showing OSA



	Desaturations	
	3%	4%
sAHI _{TOTAL}	51	38
ODI	38	26
Sleep Onset	10:54 PM	
Sleep Conclusion	4:38 AM	
TST	5h:13m	
WASO	0h:38m	
WAKE TRANSITIONS	#5	

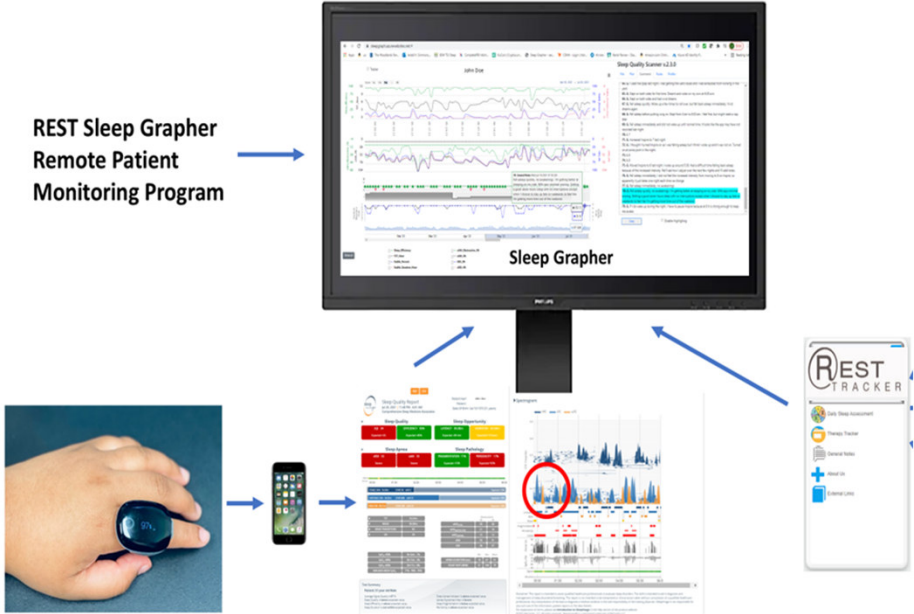
72

Remote Patient Monitoring using Cardiopulmonary Analysis from data obtained by wearing a Ring Oximeter



73

REST Sleep Grapher
Remote Patient
Monitoring Program



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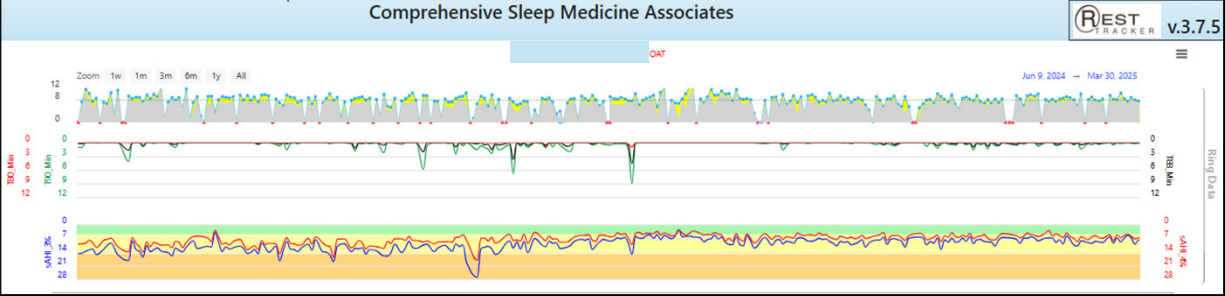


75



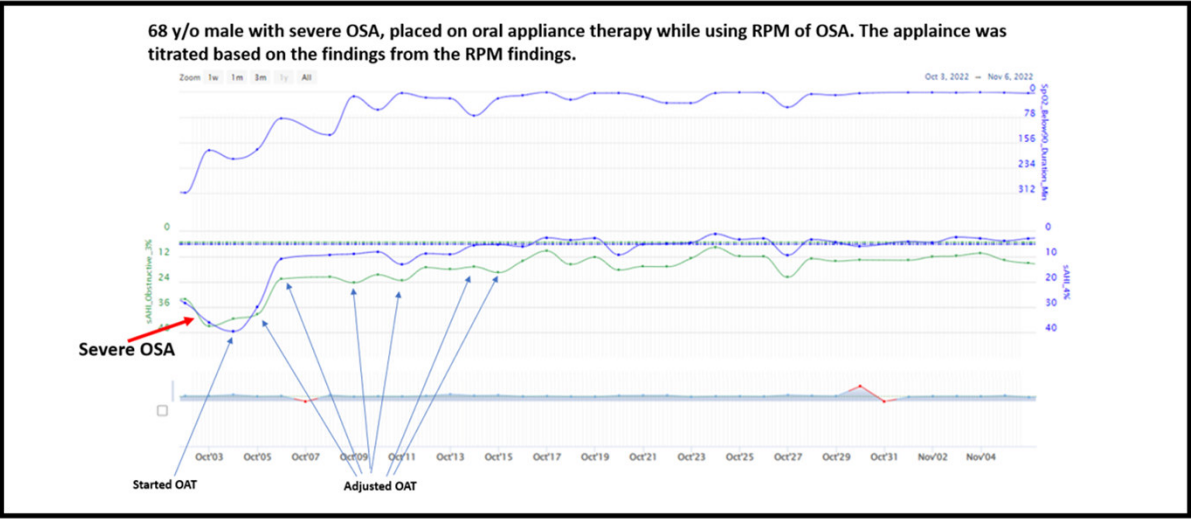
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OAT titrated between Oct 5th to Oct 29th

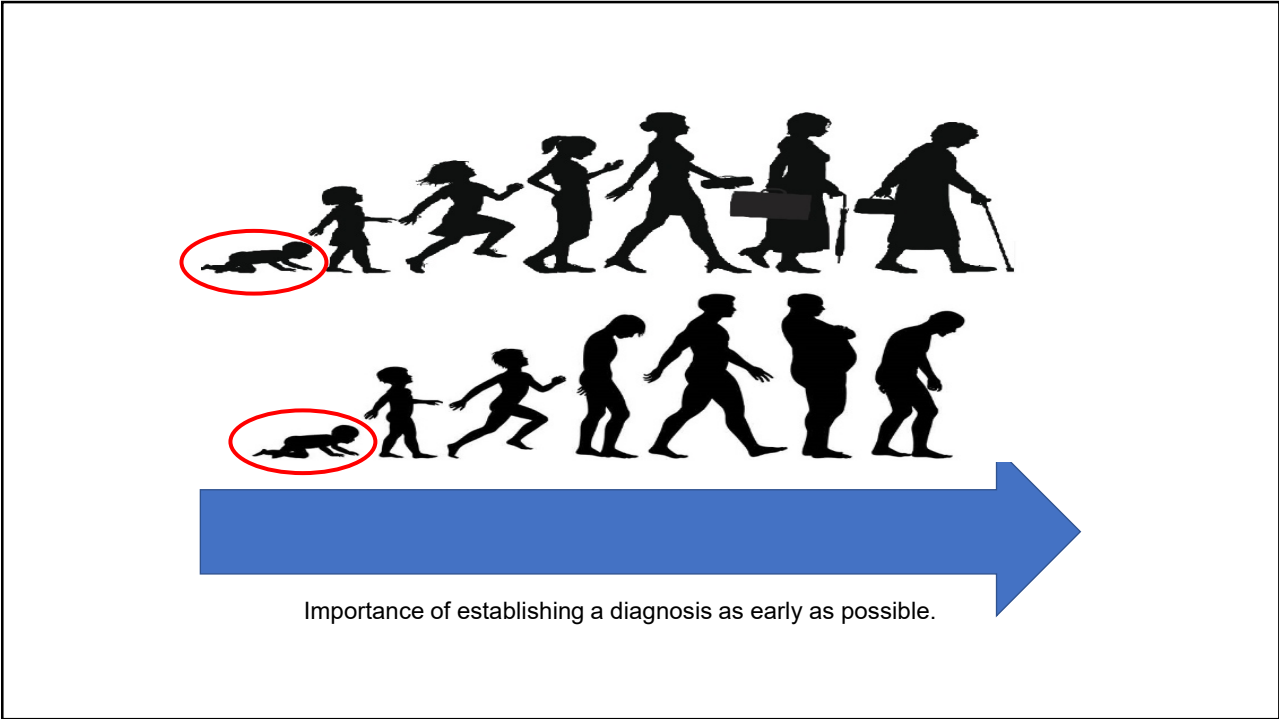


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OAT titrated between Oct 5th to Oct 29th



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**We will cover clues that suggest a child or adolescent may have sleep related breathing problems.
The goal is for early detection**

Profile of a Mouth Breather

- Tired eyes
- Crooked nose
- Receding chin
- Smaller airway
- Narrow face
- Bad posture

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Measurement Questionnaire

Subject Number: test1234321 C-GASP completion date: 03/31/2024


Dentition *

Primary Dentition


Mixed Dentition

Permanent Dentition


▼ **Deciduous (Primary) Molar Relationship (click an image): ***




Mesial Step(MS) (Normal)



Distal Step(DS) (CL II)



Edge to Edge/Flush Terminal Plane(FTP)



Excessive Mesial Step (CL III)

Measurement Questionnaire

Subject Number: test1234321 C-GASP completion date: 03/31/2024


Dentition *

Primary Dentition


Mixed Dentition

Permanent Dentition


▼ **Permanent Molar Relationship (click an image): ***




Class I



Edge-to-Edge



Class II



Class III

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Lower Anterior Crowding *

None

Yes (even slightly)

Posterior Dental Crossbite *

None


Unilateral

Bilateral

Horizontal Dental Relationship Overjet - OJ (Norm = 2-4 mm) *


Choose...

overjet




Overjet
Upper Incisal Edge to the most prominent surface on lower incisor


Vertical Dental Relationship Overbite - OB (Norm = 2-4 mm) Op / Mod / Deep *




Severe Deep Bite




Moderate Deep Bite




Normal




Edge To Edge




Anterior Open Bite - 1mm



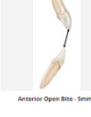
Anterior Open Bite - 2mm



Anterior Open Bite - 3mm



Anterior Open Bite - 4mm



Anterior Open Bite - 5mm

Upper Inter Canine Distance (cusp tip to cusp tip)

Primary Measurement # C to # H = ___mm *

Choose...

Permanent Measurement # 6 to # 11 = ___mm

Choose...

InterMolar Distance (see How to Measure)

Primary Measurement # A to # J (Bogue) = ___mm *

Choose...

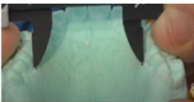
Permanent Measurement # 3 to # 14 = ___mm

Choose...

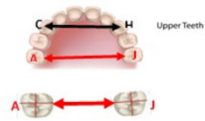
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How to measure InterMolar Distance

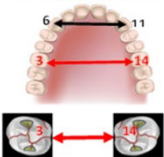
- **Primary Dentition:** Arrow measuring distance between maxillary 2nd primary inter-molar distance (Bogue) should measure the shortest at the gingival margin.
- **Permanent Dentition:** Arrow measuring distance between maxillary 1st permanent inter-molar distance (McNamara) should point to distal lingual groove (DLG) at the gingival margin.




Primary Dentition



Permanent Dentition



Vertical Facial Proportions



Credits: Images used with permission and courtesy of Dr. Tom Goffis, DMD - www.goffis.com, Communication and Training (ACT), Birmingham, Alabama

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Summary

Obstructive breathing during sleep results from many factors that influence the upper airway (mandibular anatomy, soft tissue structures, weight, neck circumference)

There is a spectrum of obstructive breathing disturbances ranging from mild snoring to severe obstructive pauses in breathing.

Patients with the Upper Airway Resistance Syndrome (UARS - now considered part of OSA with the new hypopnea scoring rules of 2013) **may not have any desaturation in the SaO2 signal during sleep.**

Some cases of OSA can not be diagnosed with HSAT. Important to remember that HSAT have many limitations and can not rule out OSA.

Treatment with PAP therapy eliminates the negative pressure within the airway if set correctly and is recognized as the gold standard for treatment.

Other treatments besides PAP therapy are recognized to work well in many patients. Sometimes combination treatment is necessary.

Early detection of OSA in children and early interventions to expand the airway are the future of this field and dentists are a key to this success

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