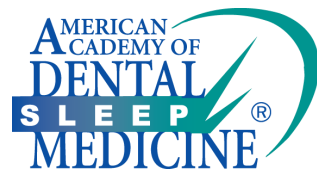


# Examining the Connection Between Sleep and Oral Health

CareQuest Institute Continuing Education Webinar

May 23, 2024



# Housekeeping

- We will keep all lines muted to avoid background noise.
- We will send a copy of the slides and a link to the recording via email after the live program.
- We'll also make the slides and recording available on [carequest.org](https://carequest.org).

## To receive CE Credits:

- Look for the evaluation form, which we'll send via email within 24 hours.
- Complete the evaluation by **Friday, May 31**.
- Eligible participants will receive a certificate soon after via email.

**We appreciate your feedback to help us improve future programs!**



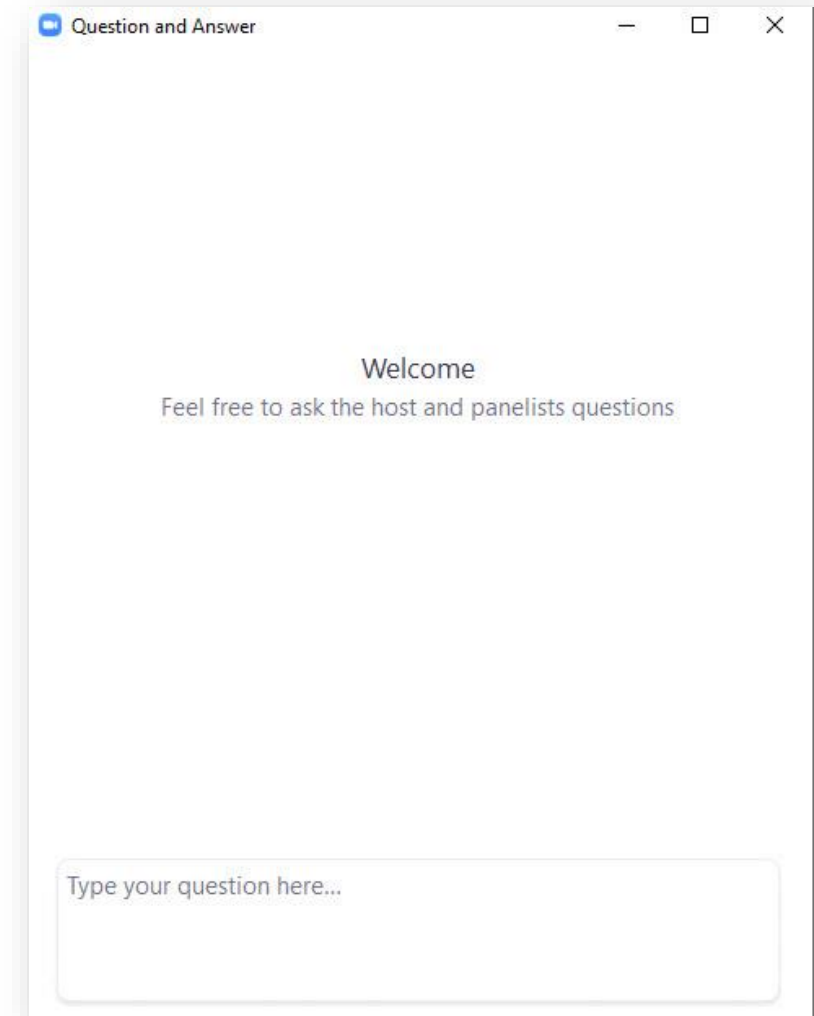
The CareQuest Institute for Oral Health is an ADA CER-P Recognized Provider. This presentation has been planned and implemented in accordance with the standards of the ADA CER-P.

\*Full disclosures available upon request

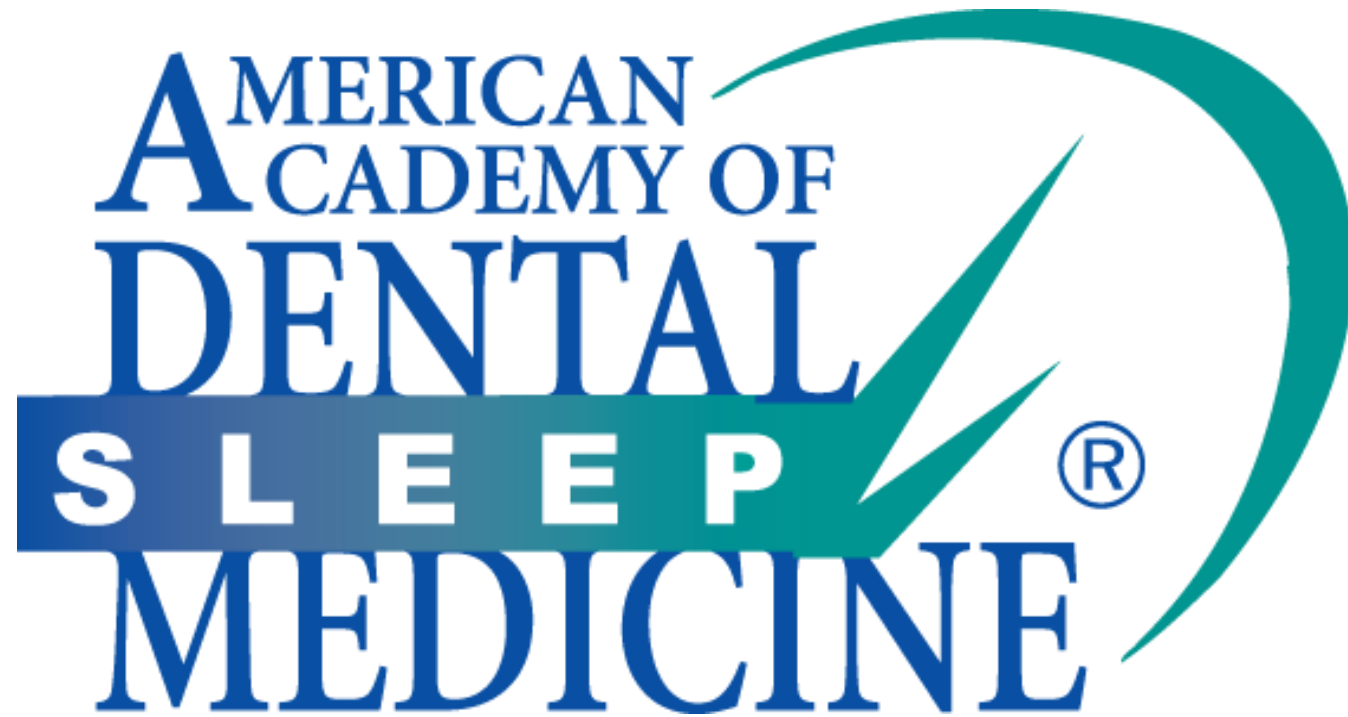


# Question & Answer Logistics

- Feel free to enter your questions into the **Question & Answer box** throughout the presentations.
- We will turn to your questions and comments toward the end of the hour.



Thank You!



# Learning Objectives

- Recognize sleep health issues in dental patients using insights from oral evaluations.
- Explain the impact of sleep health on overall well-being and the importance of related preventive measures.
- Develop strategies to recommend appropriate follow-up actions, including referrals to specialists, for patients showing signs of sleep health issues.

# Examining the Connection Between Sleep and Oral Health



**WEBINAR | Thursday, May 23, 2024 | 7–8 p.m. ET | ADA CERP Credits: 1**

**MODERATOR**



**Rubina Nguyen,  
DDS, D-ABDSM**

Founder, Suburban Dental Sleep  
Medicine, Co-founder, Sudden  
Cardiac-death Awareness  
Research Foundation

**PRESENTER**



**Kelly L. Schroeder,  
RDH, MS**

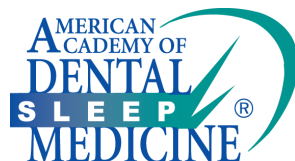
Program Evaluation Specialist,  
CareQuest Institute for  
Oral Health

**PRESENTER**

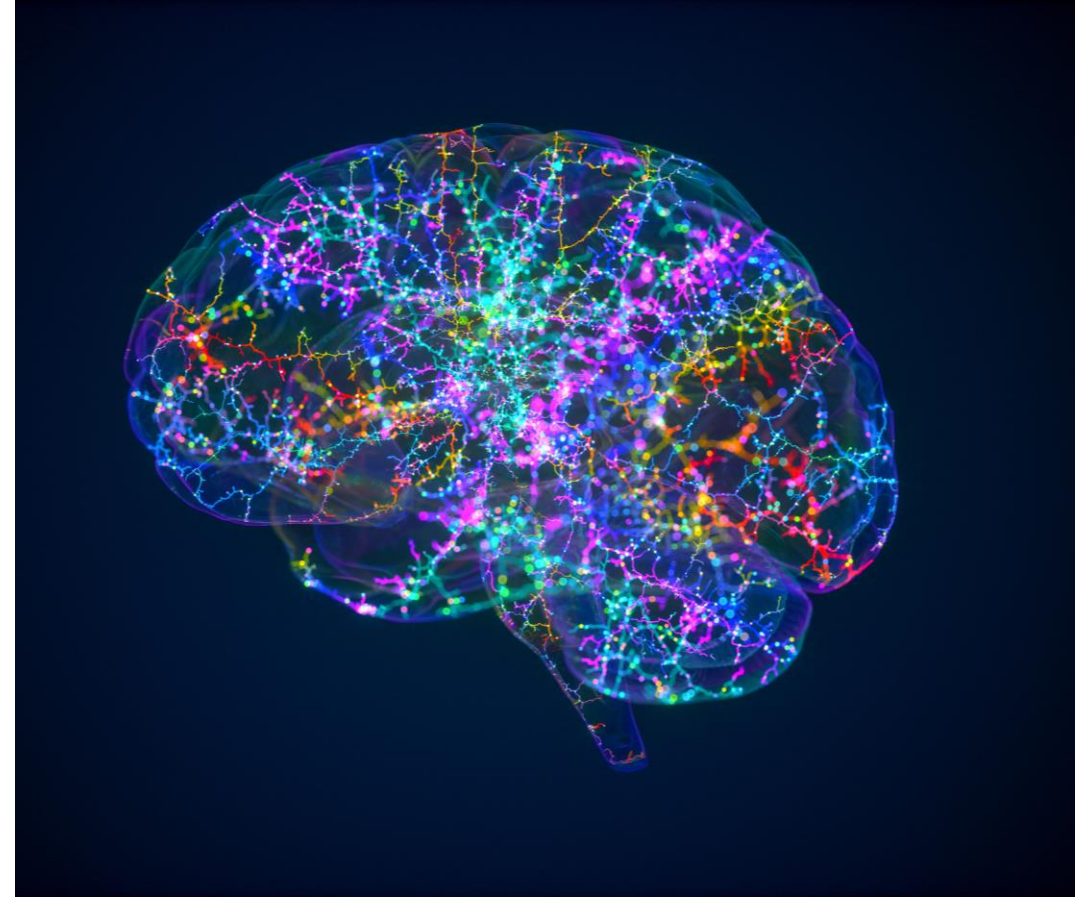
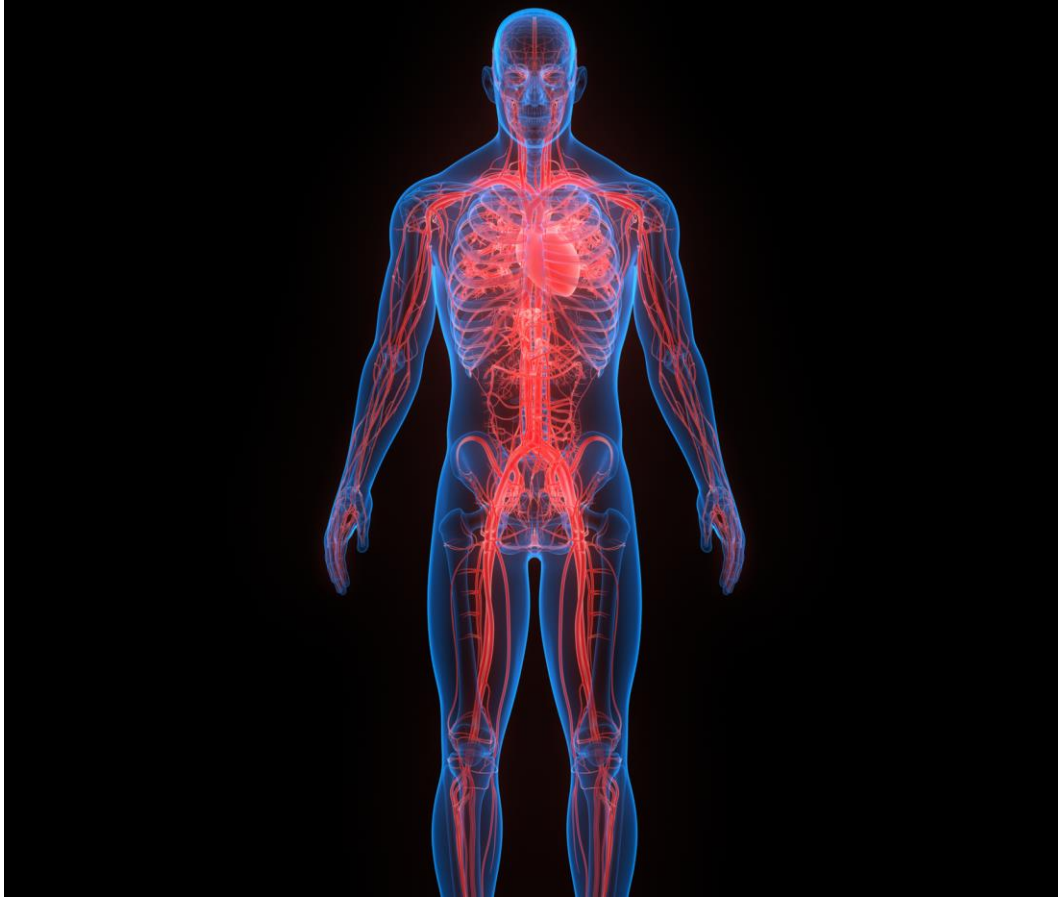


**David Schwartz,  
BA, BS, DDS, DABDSM**

Doctor, American Academy  
of Dental Sleep Medicine



# What is sleep? And why is it important?



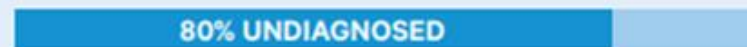
# The State of Sleep and Obstructive Sleep Apnea: Myths and Facts



According to estimates, **nearly 30 million** adults in the United States, or **12% of the US adult population, have OSA.**<sup>2</sup> OSA is more commonly diagnosed in adults **ages 60 and above** and in **individuals who are obese.**<sup>3</sup>



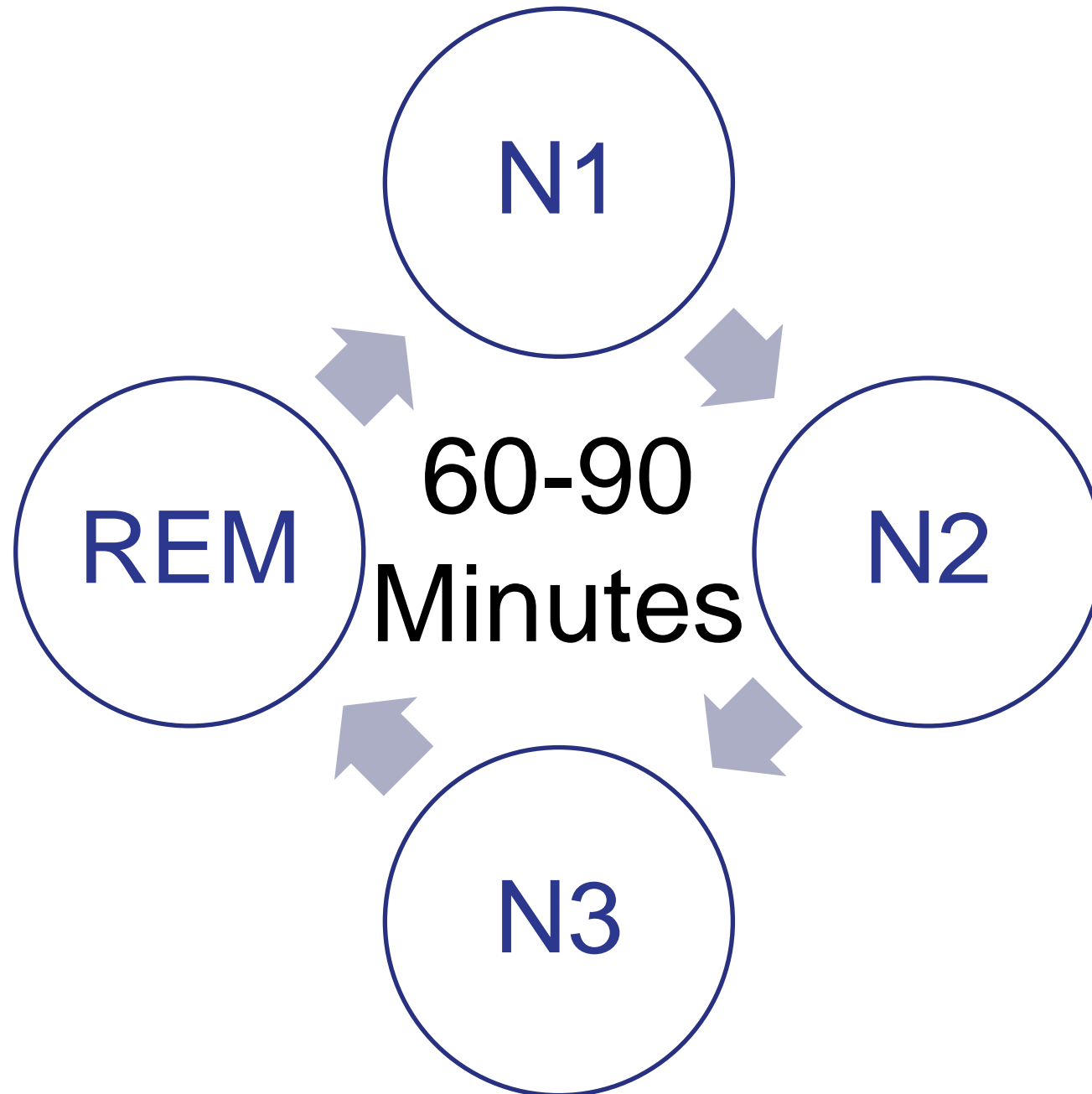
**More than 1 in 10** adults have been diagnosed with OSA, but **nearly 80% of adults who have OSA are undiagnosed.**<sup>2</sup>



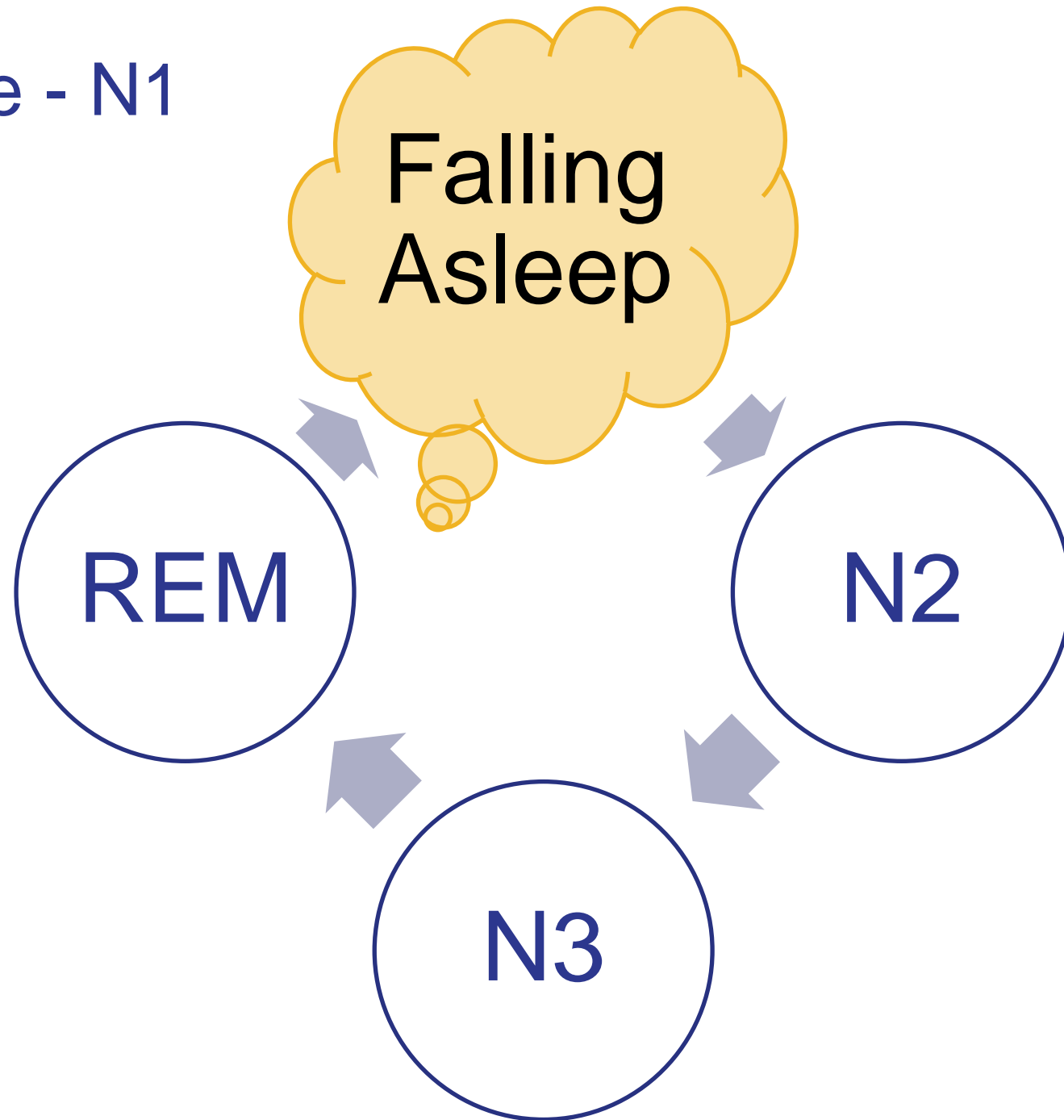
While OSA is **more commonly diagnosed in men,**<sup>3</sup> compelling evidence suggests that **OSA is underdiagnosed and undertreated in women** due to **differences in OSA presentation** and the fact that **screening instruments are based on symptoms most commonly reported by men.**<sup>4,5</sup>



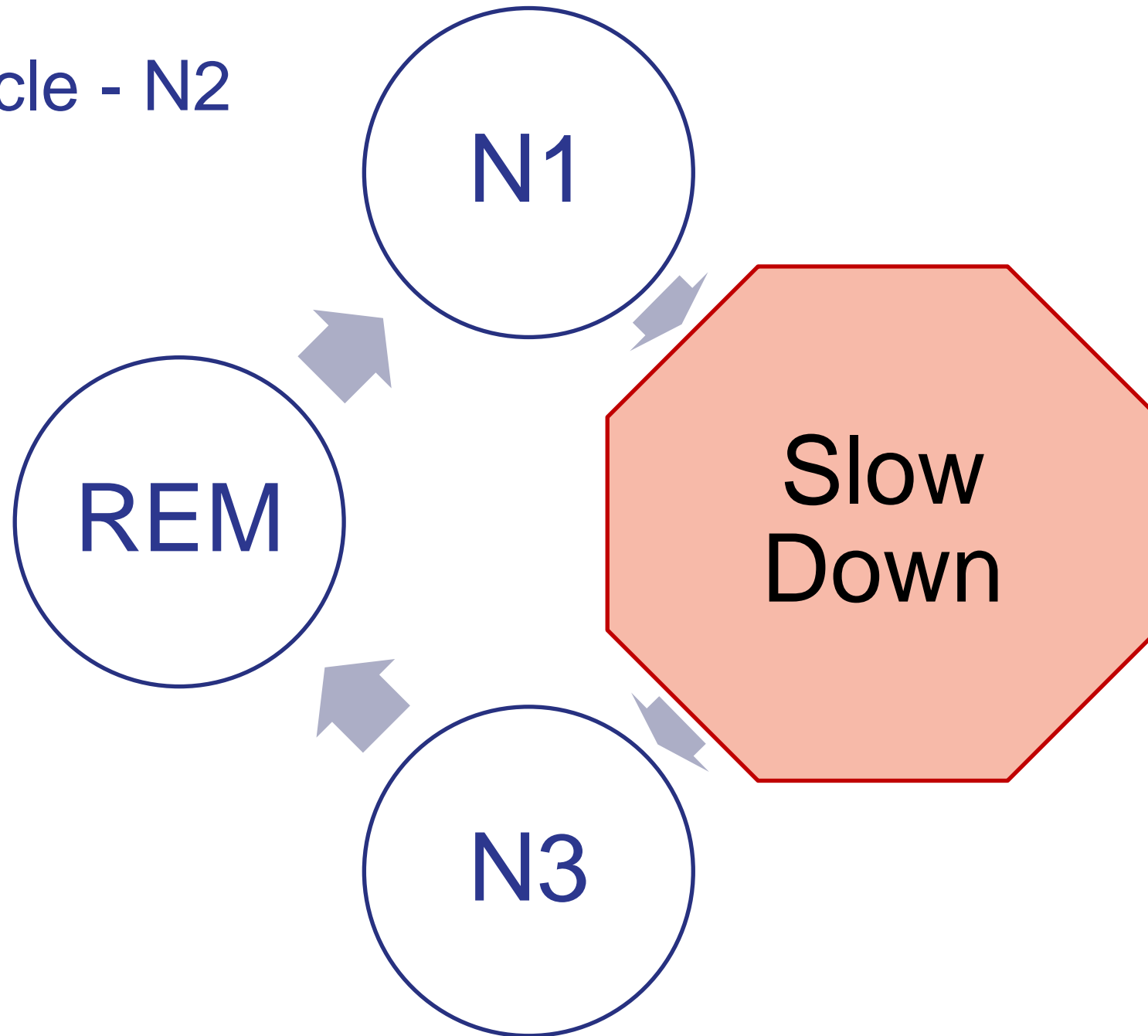
# Sleep Cycle



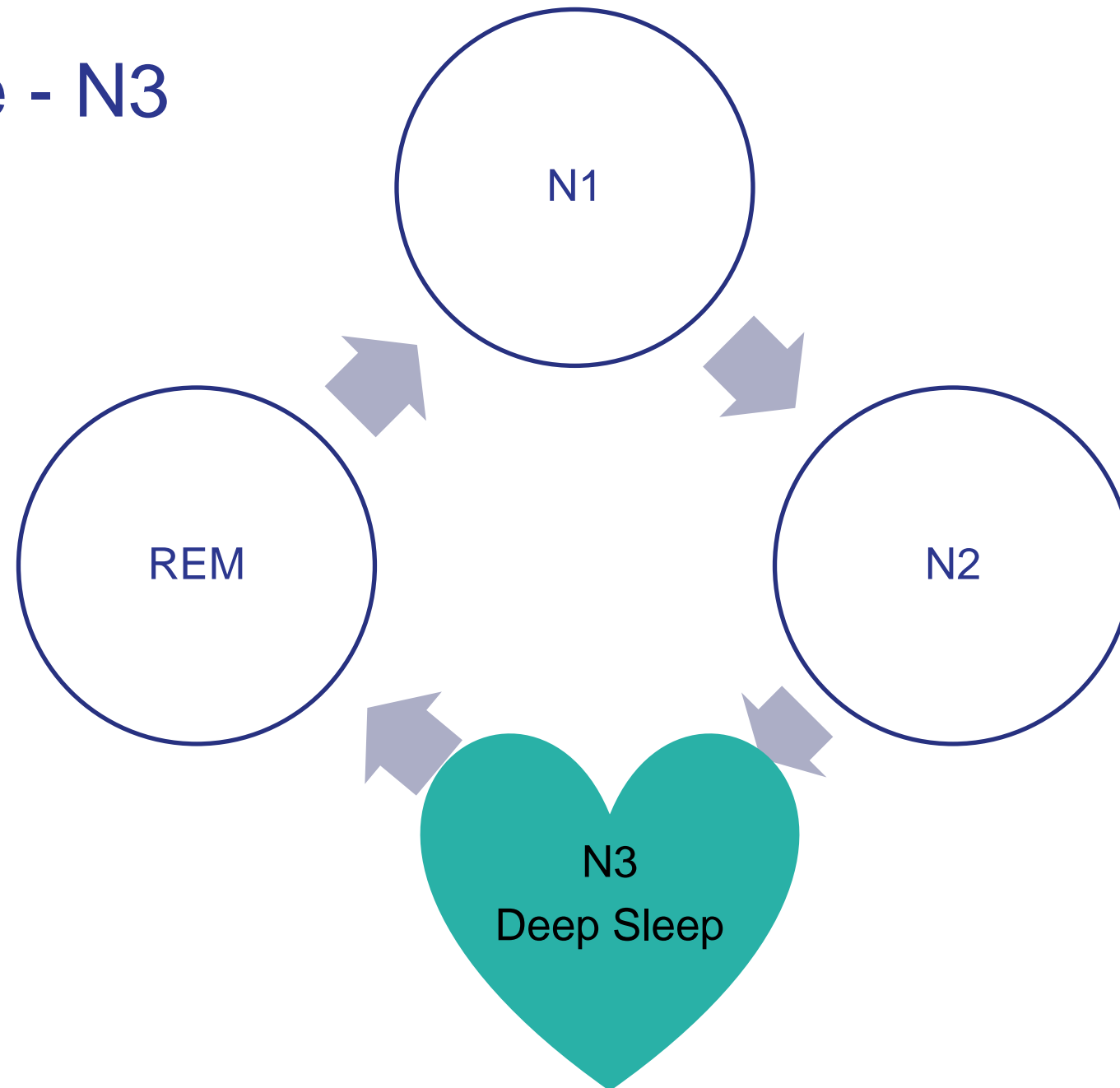
# Sleep Cycle - N1



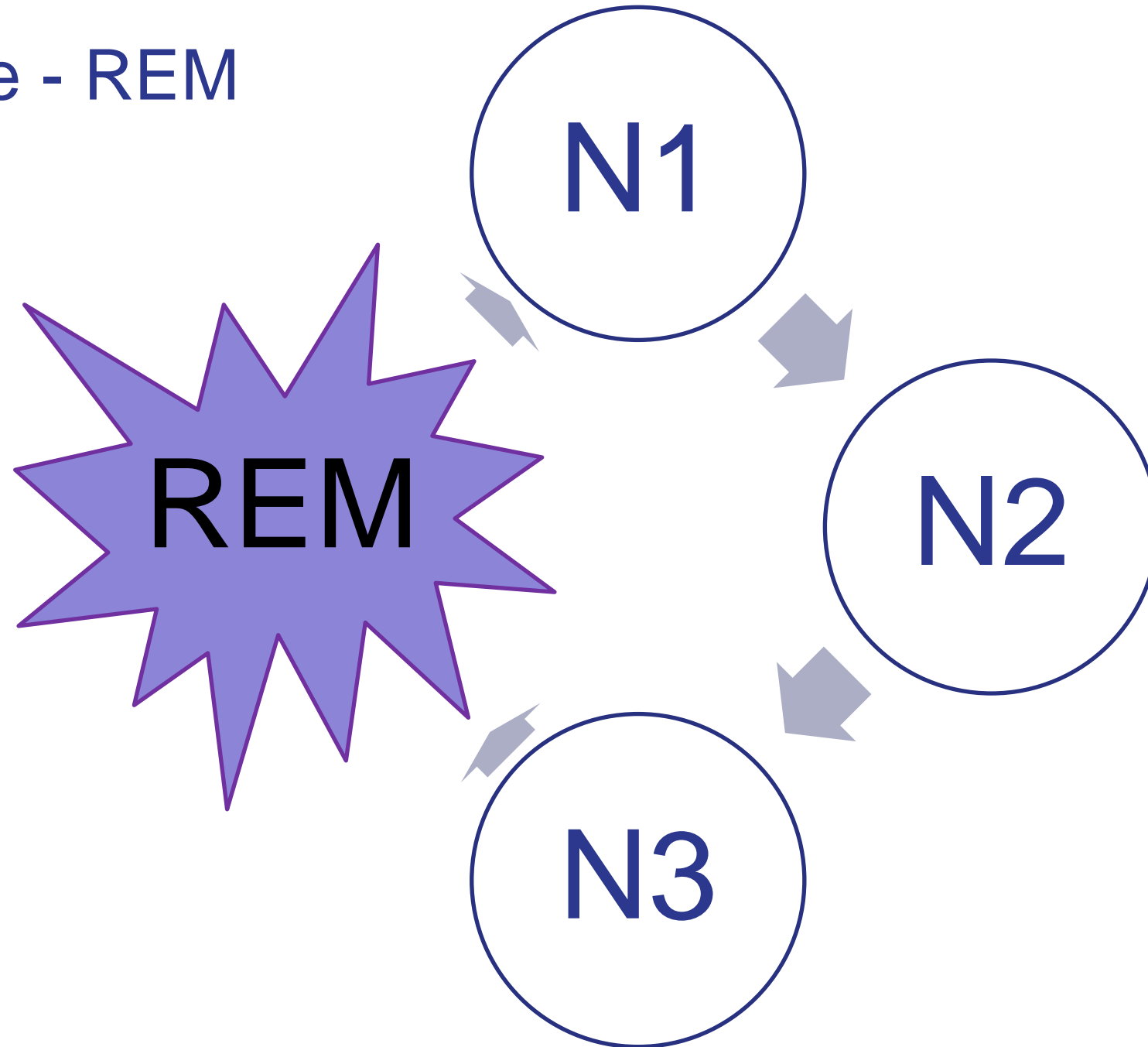
# Sleep Cycle - N2



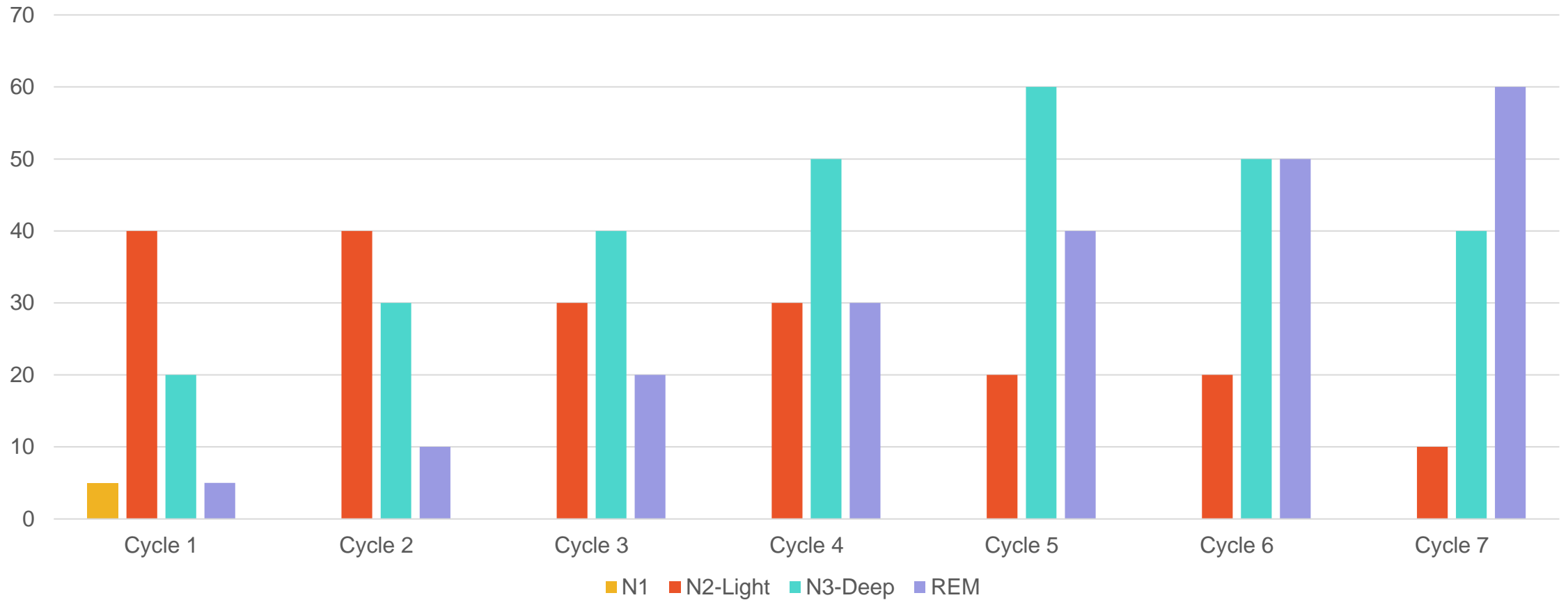
# Sleep Cycle - N3



# Sleep Cycle - REM



# One Sleep “Event” (7-9 Hours)



# Sleep Disruptors

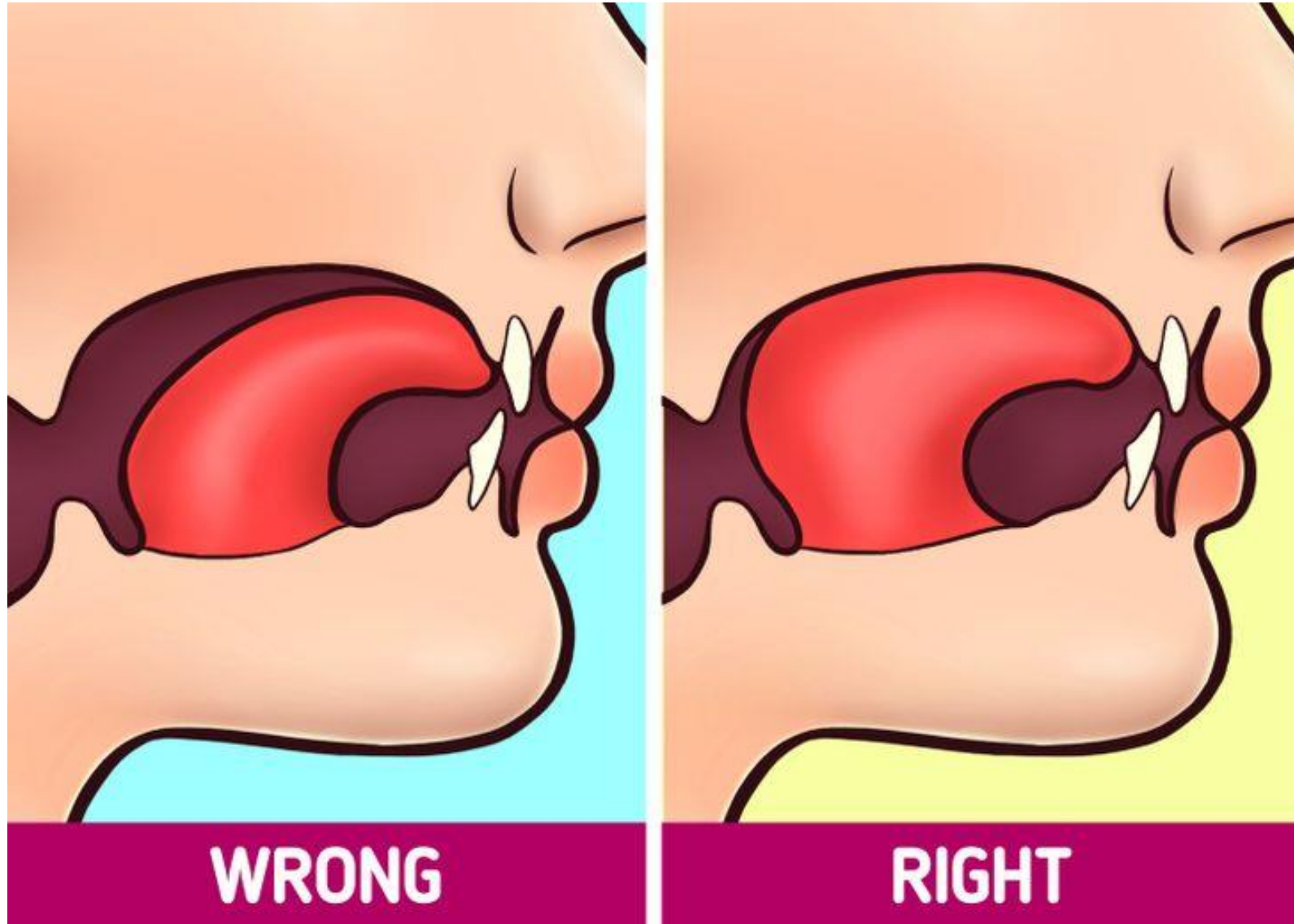


# Sleep, Breathing, and Oral Health





# Sleep Mechanics



# Dental Hygiene Clinical Standards

Dental Hygienists **Are the Key**  
for Sleep Health Interventions

# Sleep Assessment Begins in the Waiting Room



# Patient Lifestyle Factors



# Health History

- Allergies
- Medications
- Chronic Conditions
- Age
- Menopause
- Weight
- Blood Pressure
- Reports of excessive sleep
- Reports of frequent waking
- Acid reflux



# Health History - Medications

- Corticosteroids
- Stimulants
- Nicotine patch
- ADHD medications
- Diuretics
- Antidepressants
- Antihistamines
- Decongestants
- Statins
- Asthma medications
- Sleep medications
- Beta blockers
- Antiarrhythmics
- Dopamine agonist
- ACE inhibitors
- Cholinesterase inhibitors



# Extraoral Assessment



# Intraoral Assessment



- High vaulted palate
- Narrow maxilla
- Flared anterior teeth
- Large tongue, scalloped tongue
- Large tonsils/adenoids
- Bad breath
- Red, inflamed gingivae (6-11)
- Food in corners of mouth
- Short frenum attachment
- Moderate to severe gag reflex
- Moderate to high caries experience
- Signs of bruxism (wear/ TMJ/ TMD soreness)
- Enamel erosion from acid reflux



# Oral Presentation of Chronic Open Mouth Breathing



# Oral Presentation of Chronic Open Mouth Breathing



# Patient Education - Sleep Evaluations



# Screening Patients for Sleep Health

## Sleep Questionnaires

- Epworth Sleepiness Scale
- Berlin Questionnaire
- STOP BANG
- OSA50
- Self-efficacy in sleep apnea (SEMSA)
- Pediatric Sleep Questionnaire

## Sleep Screening Questions

- Tell me about how well you sleep.
- Do you feel like you give yourself enough time to sleep?
- Do you feel well rested when you wake up?
- Do you fall asleep easily when sitting quietly?
- Has anyone ever told you that you snore?

# Screening Patients for Sleep Health



## Sleep Screeners & Tests

- Sleep Apps
- Wearable Devices
- At home sleep test
- Clinical sleep test

# Sleep Health Mediators/ Interventions

## Sleep Hygiene

- Temperature
- Comfort
- Bed partners
- Electronics
- Consistent schedule
- Eliminate stimulants
  - Caffeine
  - Nicotine
- Reduce/ eliminate alcohol

## Medical Interventions

- Allergy interventions
- Medication review
- Mental/ behavioral health interventions
- Sleep health intervention
- Chronic disease management

## Physical Interventions

- Oral myofunctional therapy
- Sleep appliance
- restore oral function/ occlusion
- CPAP
- Surgical interventions



**Kelly L. Schroeder, RDH, MS**  
Program Evaluation Specialist  
CareQuest Institute for Oral Health  
[kschroeder@carequest.org](mailto:kschroeder@carequest.org)

# Where Do We Go From Here?





# Who We Are and What the Perception Is . . .



# Sleep Disorders Are Common

- **≈ 70 million** adult Americans
- **9-10%** - insomnia
- **5%** - restless legs syndrome
- **5-10%** - sleep walking
- **5-10%** - sleep apnea
- **5-10%** - shift work sleep disorder

**Majority of us have 'sleep issues'**



# Sleep Disorders Are Common

- **74%** of Americans get inadequate sleep
- **2/3** of US adults are married to or live with someone who snores
- **24 hours** of sleep deprivation impairs performance as much as 0.08% blood alcohol level



# Sleep Disorders Are Serious

- Accidents
- Cardiovascular
  - High blood pressure
  - Stroke
  - Heart attack
- Diabetes
- Obesity
- Depression
- Impaired productivity



# Sleep Disorders Are Underdiagnosed

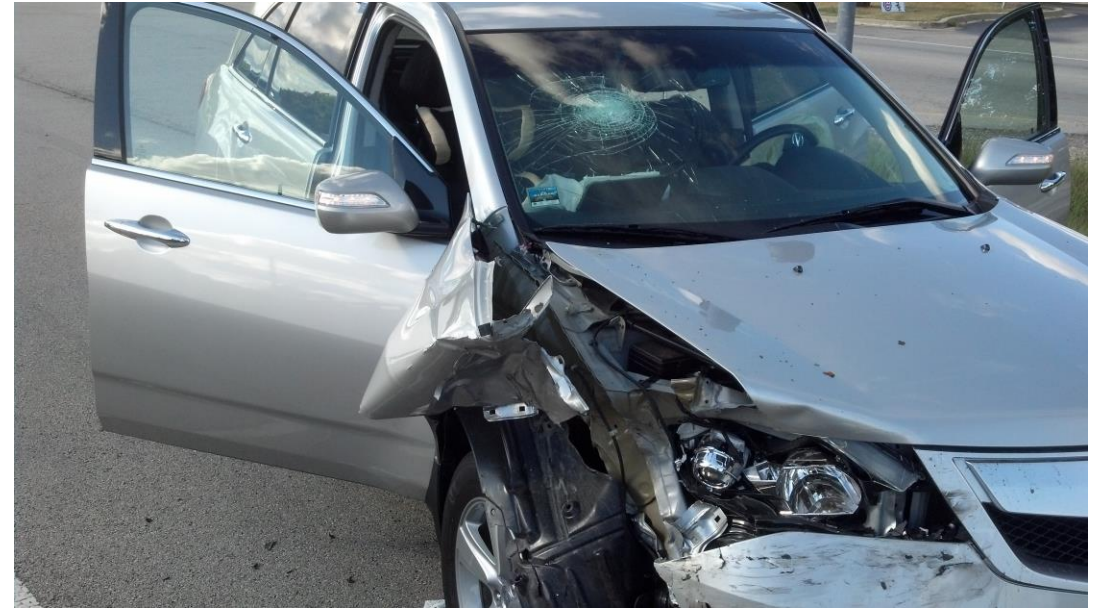
- **85-90%** undiagnosed
- **Few** health care providers have been educated in sleep disorders



- How many of you routinely **screen for apnea**?
- Do you see **signs of grinding, clenching, or mouth breathing**?
- What about **acid erosion**? What's the connection?



# Why This Should Be Important to You!



# The Other Guy!





# Drowsy Driving



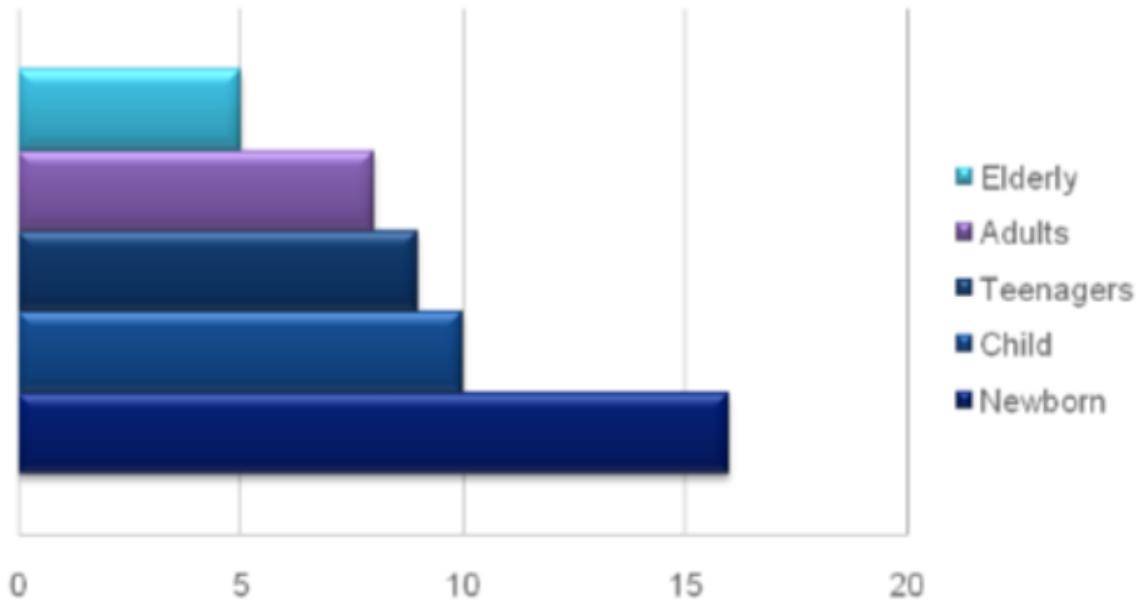
# Did you know . . . **SLEEP** occupies approximately **one-third** of the **adult life**?

## Possible functions:

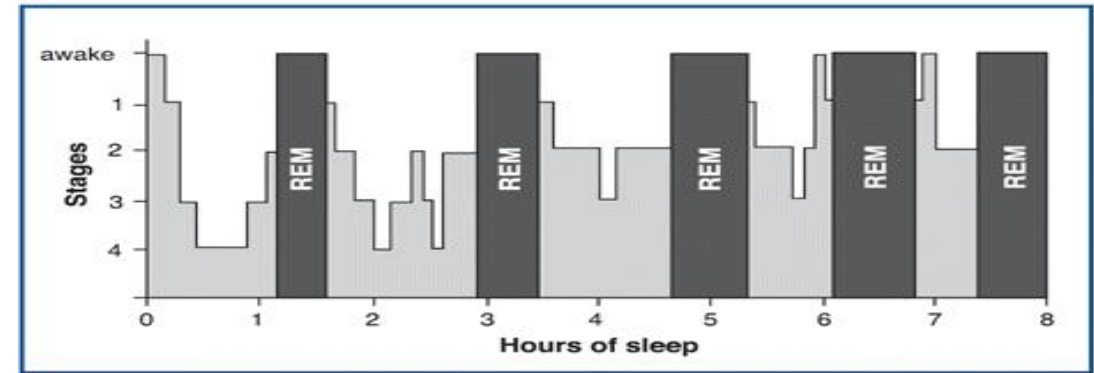
- Growth hormone production
- Restore brain cell function
- Processing of learned information is consolidated
  - Increases energy
  - Improves immune system functions
  - Improves CNS functions (memory)
  - Increased anabolic activity
  - Safe discharge of emotions



## Sleep Time



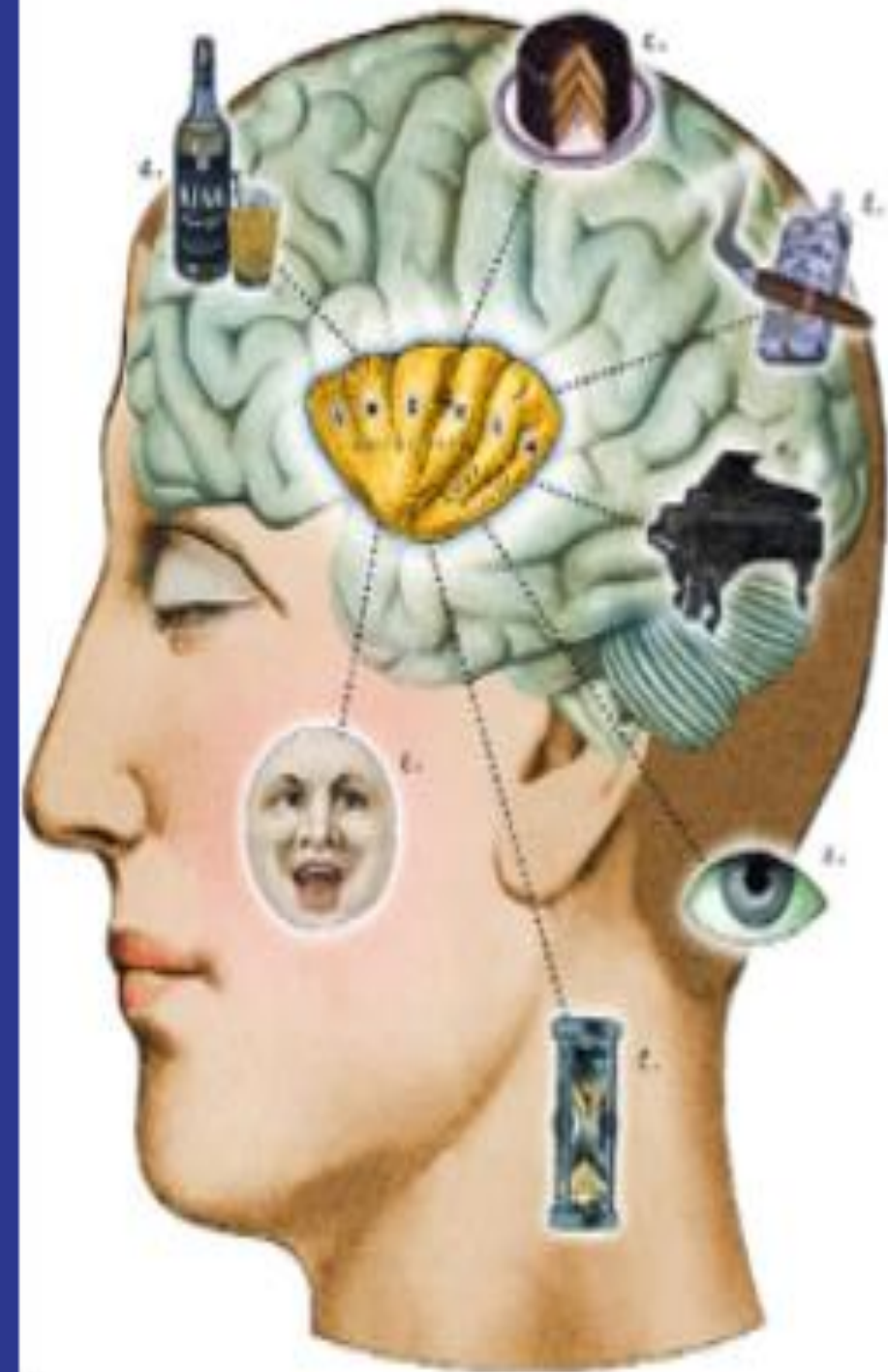
- **Elderly people** may only need **6 hours** per night
- **Adults** need **7-8 hours** per night
- **Teenagers** need about **9 hours**
- A **newborn infant** may require up to **16 hours** of sleep per day



- **5%** stage-N 1
- **50%** stage-N 2
- **15-25%** stages N-3
- **25%** REM

# Stage REM

- Rapid eye movements
- Rapid low voltage EEG
- Vivid dreams
- Muscle atonia
- Memories of skills consolidated
- Penile erections



# REM vs. NREM

## REM

- “Paradoxical” sleep
- Rapid Eye Movement
- Highly active brain
- Body is essentially paralyzed
- Two muscles work: eyes and diaphragm
- Vivid dreams that may help form long-term memories
- **50%** of infant sleep
- **20%** of adult sleep
- **15%** of elderly sleep

## NREM

- “Slow wave” or “Quiet” sleep
- **Four** stages
- Occupies **75%** of night
- Typically, a lot of body movement but an idling brain
- Decrease in body temp, BP, breathing rate & most physiologic functions
- **50%** of infant sleep
- **80%** of adult sleep
- **85%** of elderly sleep

# Why a Sleep Study?



PSG

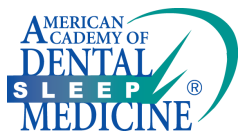
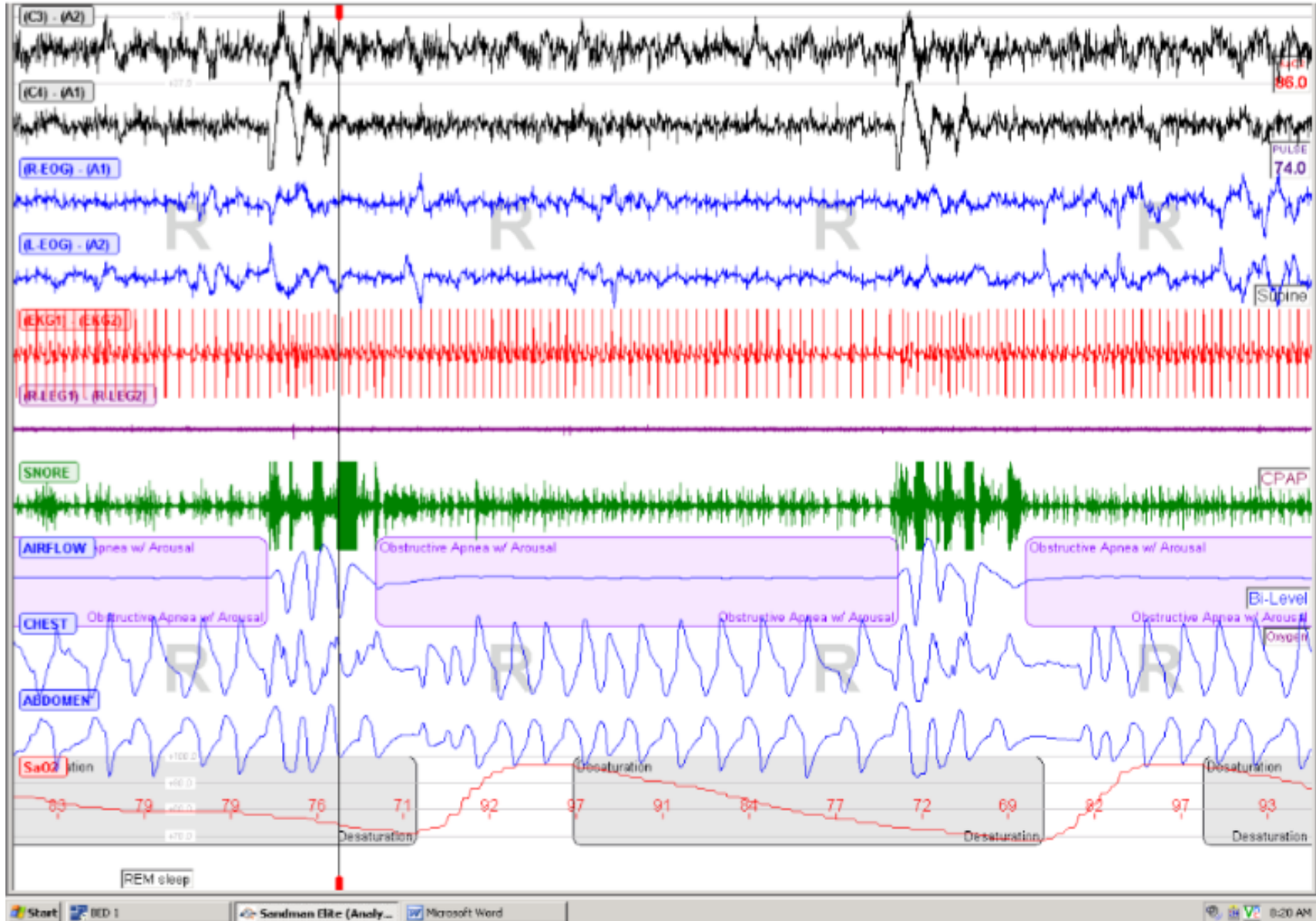


HST

# Definitions

- ✓ **Apnea** – Stoppage of breathing for at least 10 seconds
- ✓ **Hypopnea** – Decreased air flow causing dip in oxygen level
- ✓ **RERA/UARS** – Inspiratory flow limitation (Respiratory effort related arousal)
- ✓ **Sleep latency** – Time it takes to fall asleep
- ✓ **Sleep efficiency** – Amount of time asleep when in bed
- ✓ **RDI** – Respiratory disturbance index (apneas, hypopneas and RERAs)
- ✓ **Minimum oxygen saturation** – the lowest oxygen level

# Obstructive Apnea





# Obstructive Sleep Apnea + Syndrome

A sleep related breathing disorder that involves repeated episodes of hypopnea (50% reduction in airflow) and apnea.

**OR**

(10-second cessation in airflow) despite an ongoing respiratory effort. It occurs when the muscles relax during sleep, causing soft tissue in the back of the throat to collapse and block the upper airway.



# Definitions

**AHI** – An index of severity that combines apneas and hypopneas.

Combining them both gives an overall severity of sleep apnea including sleep disruptions and desaturations. This is calculated by dividing the number of apneas and hypopneas by the number of hours of sleep.



Mild



Moderate



Severe

**Sleep Center Orange County, Inc.**  
 4980 Barranca Parkway,  
 Suite 170  
 Irvine, CA 92604-8652  
 Phone: 949-679-5510  
 Fax: 949-679-1080

Name: xxxxxx  
 MR #: 17934  
 D.O.B: 03/19/1945  
 Age: 66  
 Height: 5'6"  
 Weight: 200.0 lbs.  
 B.M.I: 32.3 kg/m<sup>2</sup>  
 Date: 07/26/2011  
 Test #: 110864

Procedure: **Split-Night Polysomnogram**  
 Physician requesting evaluation: **W. Elon Fleming, M.D.**

Indication: 10-year history of sleep onset insomnia, use of sleeping medication, insufficient sleep, irregular sleep patterns; evaluate for sleep disordered breathing and others.

**Study Description:** This was a diagnostic polysomnogram followed by a continuous/bi-level positive airway pressure (CPAP/BiPAP) titration study. Central and occipital EEG, EOG, chin EMG, airflow (thermocouple and nasal pressure), EKG, thoracoabdominal motion, leg EMG, snoring and pulse oximetry were monitored overnight by a technician. The tracing was scored in 30-second epochs. The physician below participated in the review, interpretation, and in the preparation of this report.

<u>EEG and Sleep Stage Analysis for Entire Night:</u>		Minutes	% TST	
Recording Time:	415.9 min.	Wake Time (after sleep onset):	90.0	-
Total Sleep Time:	308.6 min.	Stage 1 sleep:	62.0	20.1
Latency to Sleep:	17.3 min.	Stage 2 sleep:	182.0	59.0
REM Latency:	234.5 min.	Slow Wave Sleep (Stages 3 / 4):	0.0	0.0
Arousal Index:	4.5 /hr.	REM sleep:	64.5	20.9
Sleep Efficiency:	74.2 %	Sleep Time of Diagnostic Portion:	110.0	35.6

Respiratory Analysis of Diagnostic Portion:

# of Apneas and Hypopneas (TST):	49	Number of Events	NREM	REM
<b>AHI (# of Apneas and Hypopneas per hour; Index):</b>	<b>26.7 /hr.</b>	Obstructive Apneas:	25	0
NREM AHI:	26.7 /hr.	Mixed Apneas:	0	0
REM AHI:	0.0 /hr.	Central Apneas:	0	0
All Respiratory Events:	52	Hypopneas:	24	0
RDI (# of all scored respiratory events per hour; Index):	28.4 /hr.	RERAs:	3	0
<b>Min. SaO<sub>2</sub>% (TST):</b>	<b>91.0 %</b>	Wake Apneas:	0	-
Mean SaO <sub>2</sub> % (TST):	95.2 %			

<u>Body-Position Analysis of Diagnostic Portion:</u>	Prone	Supine	Left	Right
# of events:	0	24	28	0
Time spent asleep (hours):	0.0	0.3	1.5	0.0
# of events per hour; Index:	0.0	75.8	18.5	0.0

**ECG Analysis:** The heart rate ranged between 53.0 – 67.0 bpm in NREM sleep and 51.0 – 73.0 bpm in REM sleep.

**Limb Movement Analysis:** There were 50 periodic limb movements during sleep, of which 18 were associated with arousals. This represents a total index of 9.7 events per hour, with an associated arousal index of 3.5.

**INTERPRETATION:** The diagnostic portion of this sleep study demonstrated significant obstructive sleep apnea, associated with loud snoring, pronounced while sleeping supine.

Continuous positive airway pressure (CPAP) therapy was then tested at settings of 5, 6, and 7 cm. The best results were observed on the CPAP setting of 7 cm, which was tested briefly while sleeping supine and in stage REM sleep. No obstructive respiratory events were observed on the CPAP setting of 7 cm. Overall, the patient responded very well to CPAP therapy.

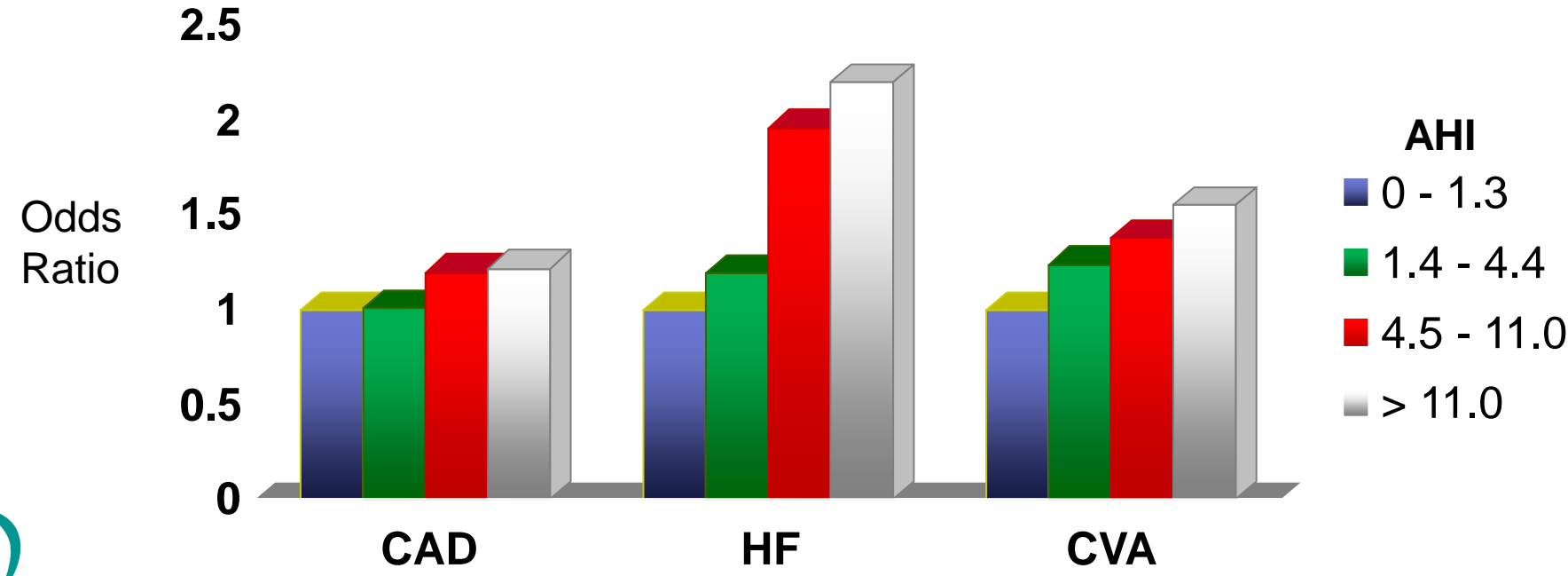
**PLAN:**

1. CPAP therapy will be offered at 7 cm using a medium Resprionics Comfort Gel Blue nasal mask with a heated humidifier attachment.



# Consequences: Cardiovascular Disease

## Cross Sectional Study of Association Between OSA and CVD



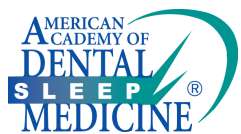
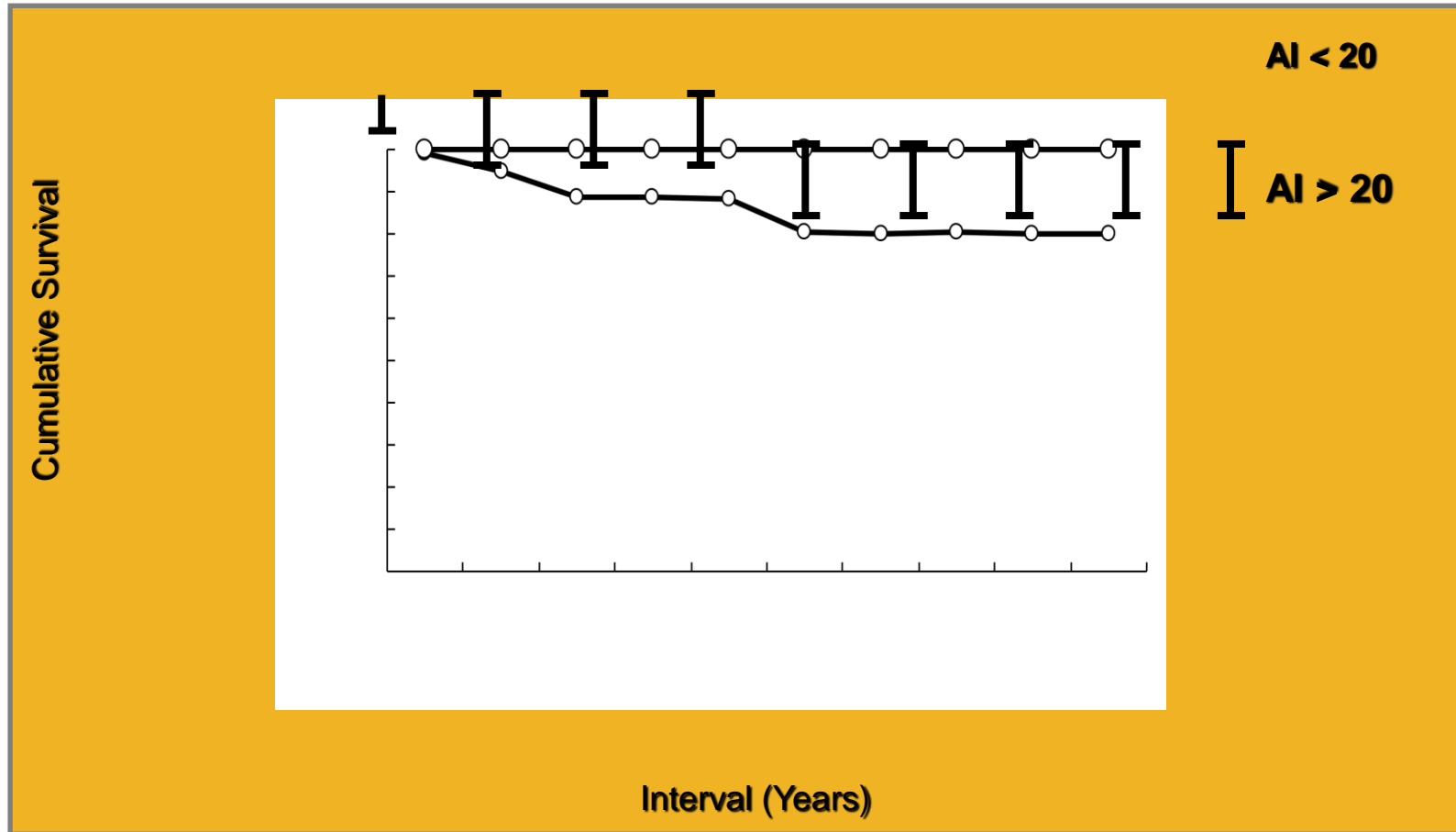
Adjusted for age, sex, race, BMI, Htn, cigs., chol.



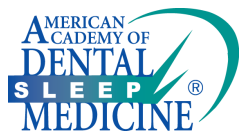
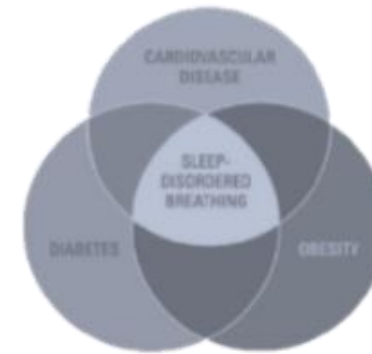
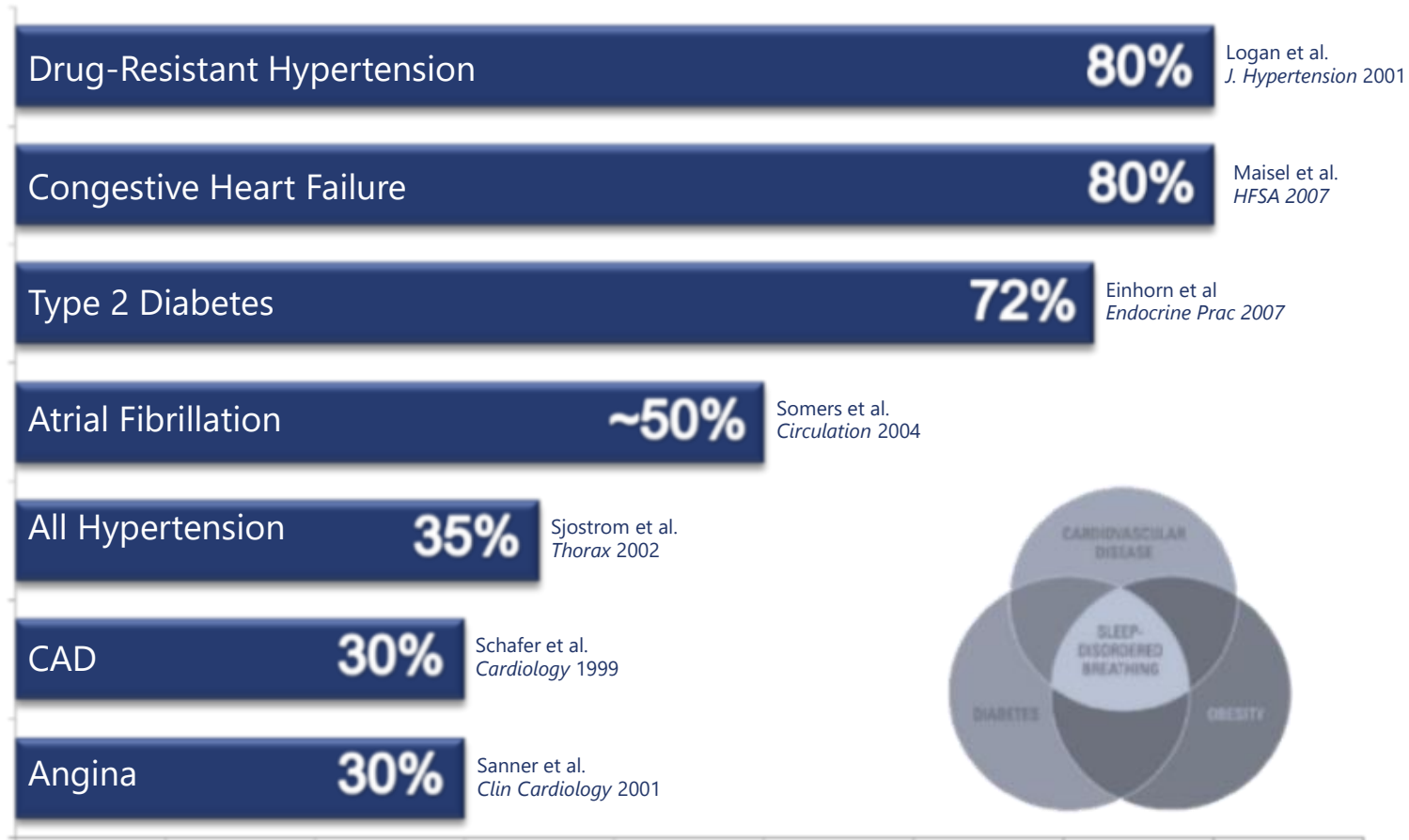
Adapted from Shahar E et al. , Am J Respir Crit Care Med 2001;163.

# Consequences: Mortality

## Effect of AI on Mortality

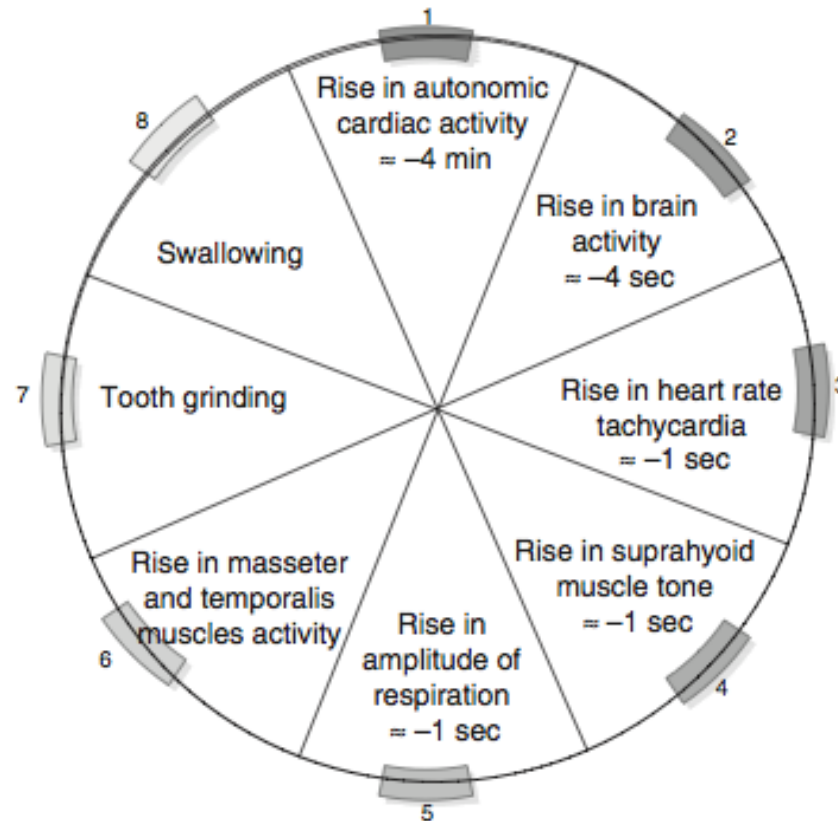


# Prevalence of OSA in Patients with ...



# Bruxism As It Relates to Sleep Apnea

486 G. J. LAVIGNE *et al.*



**Fig. 4.** The 'wheel' of sleep bruxism pathophysiology in relation to repetitive sleep arousals.

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t  
c

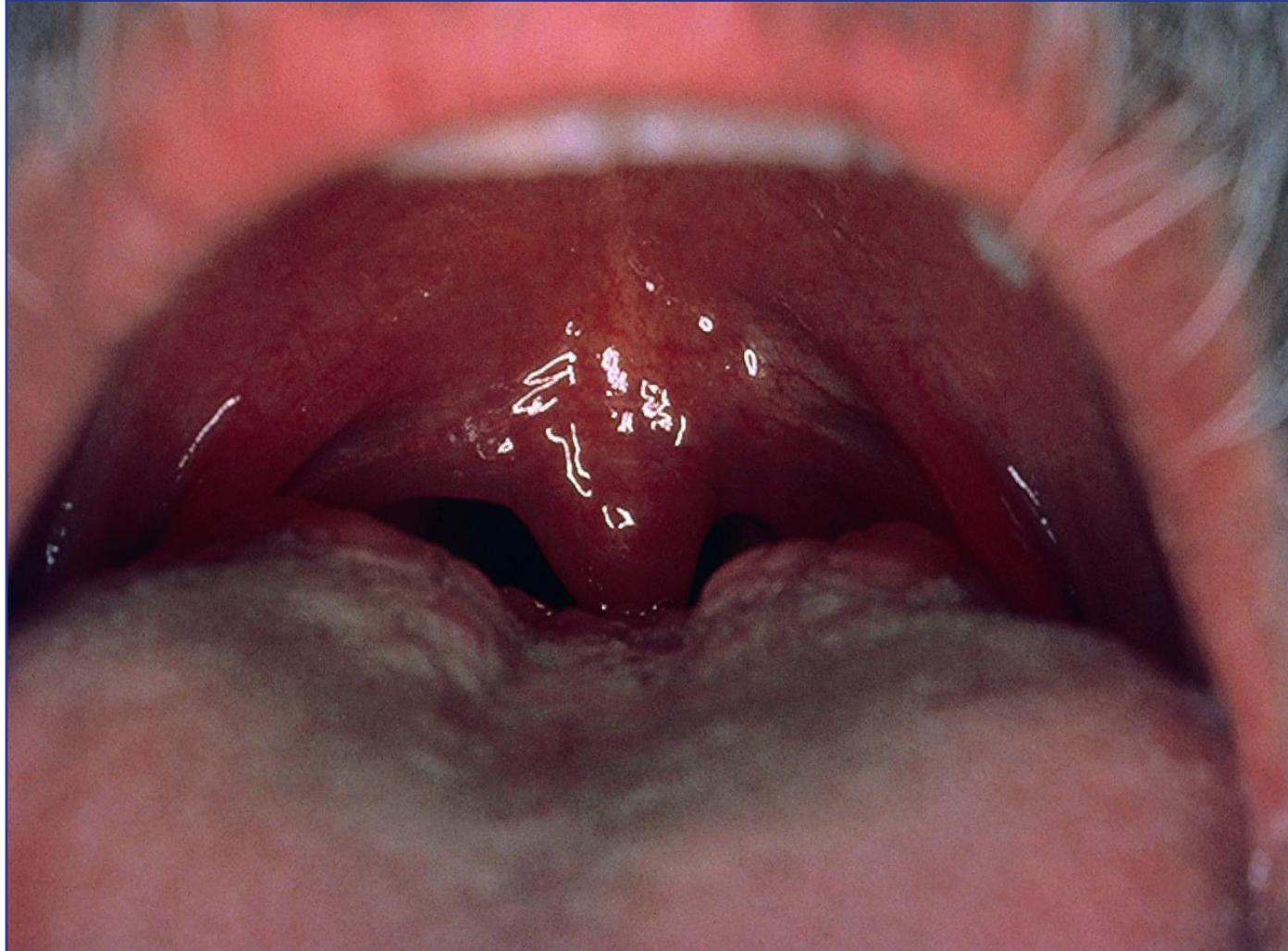
# Diagnosis: History

- Snoring (loud, chronic)
- Nocturnal gasping and choking
- Ask bed partner (witnessed apneas)
- Automobile or work-related accidents
- Personality changes or cognitive problems
- Risk factors
- Excessive daytime sleepiness





# Exam: Oropharynx



# Physical Exam







**Enlarged tongue**

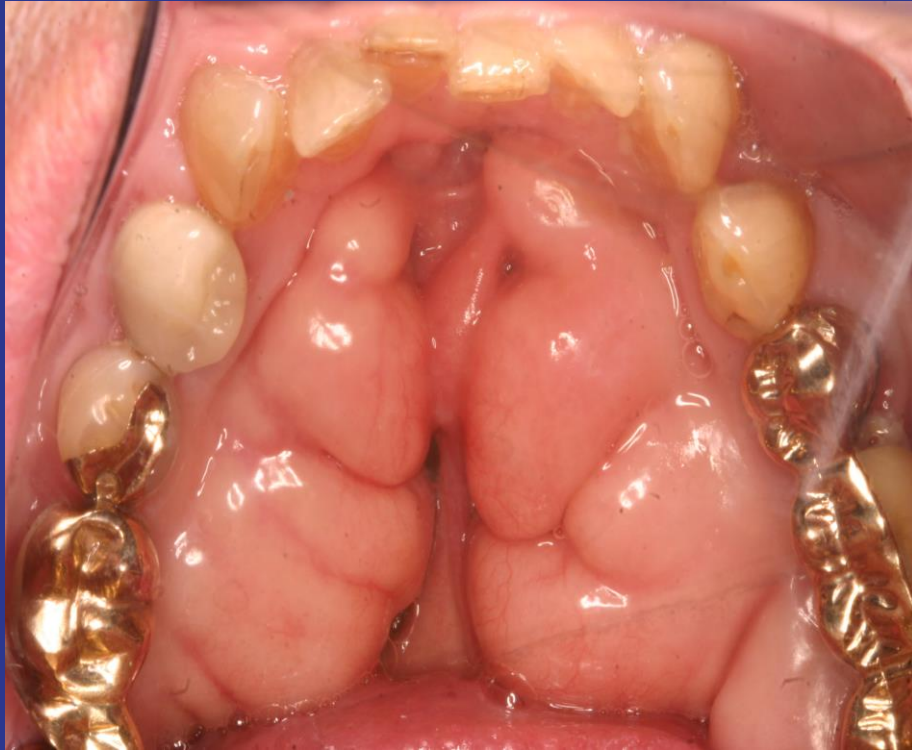


**Scalloping of the tongue**



**Enlarged tonsils**

# Anatomic Abnormalities



Bilateral Lingual Tori Do these affect the airway?

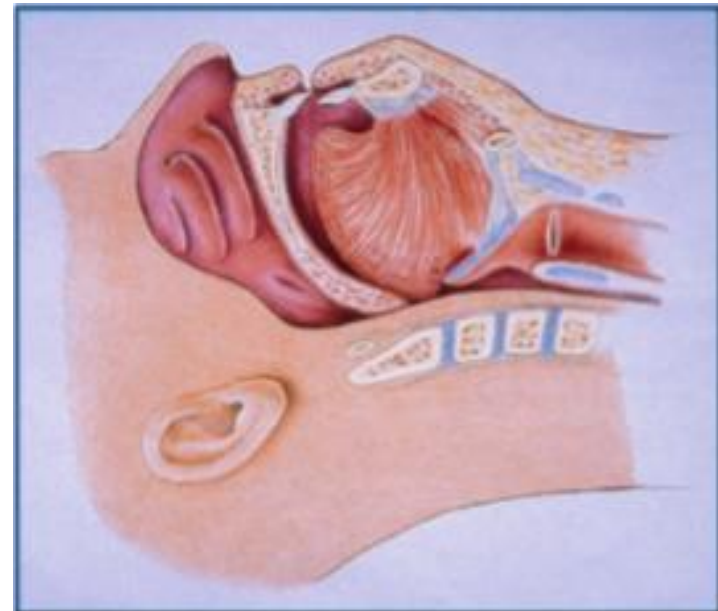
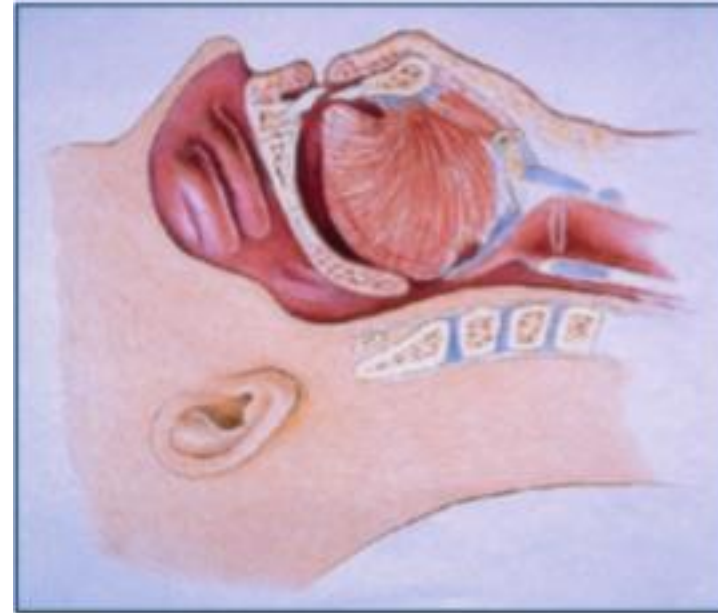
These patients have a greater amount of apnea compared to those without Tori

# Anatomic Abnormalities, Cont.

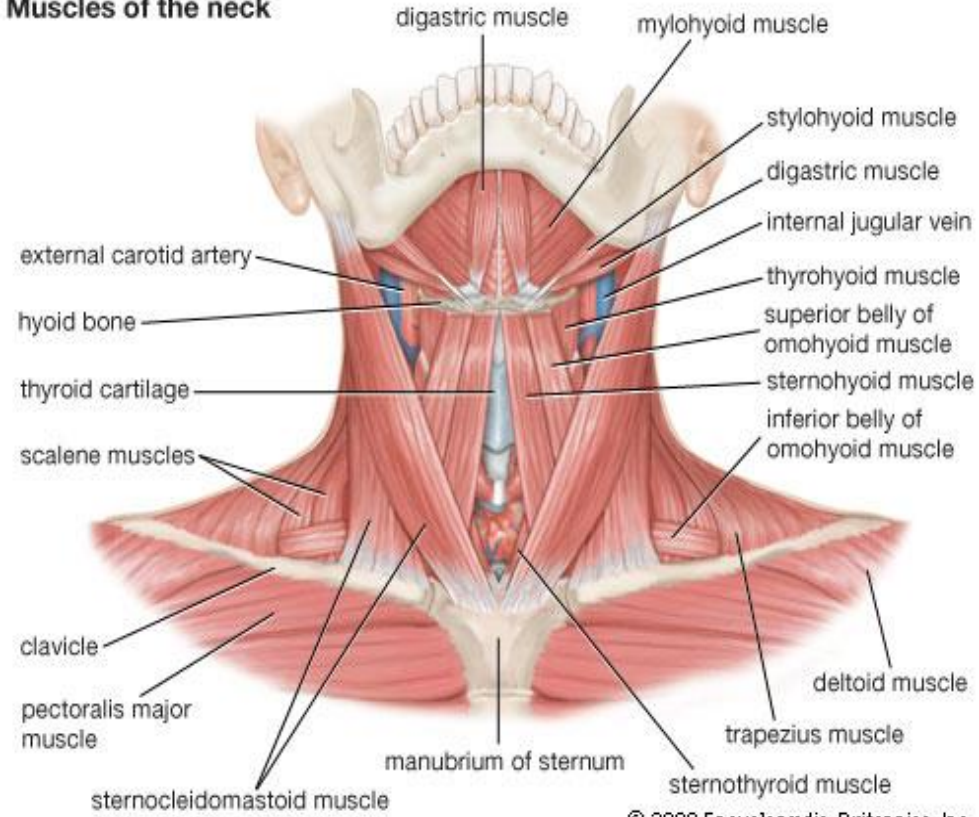


# Snoring

- Air passing through a narrow, collapsible airway.
- Tissues vibrate making the ‘snoring’ sound.
- Someone who ‘just snores’ and gains a few pounds or has a few alcoholic drinks could become someone with apnea.



### Muscles of the neck



© 2008 Encyclopædia Britannica, Inc.





# OSA Risk Factors

- Obesity
- Thick neck ( $\geq 17$  inches in men,  $\geq 16$  inches in women)
- Male gender
- Snoring
- Craniofacial abnormalities
- Nasal obstruction/redundant soft palate
- Hypothyroidism
- Family History
- Polycystic Ovarian Syndrome
- Older age

## Impact of Untreated OSA

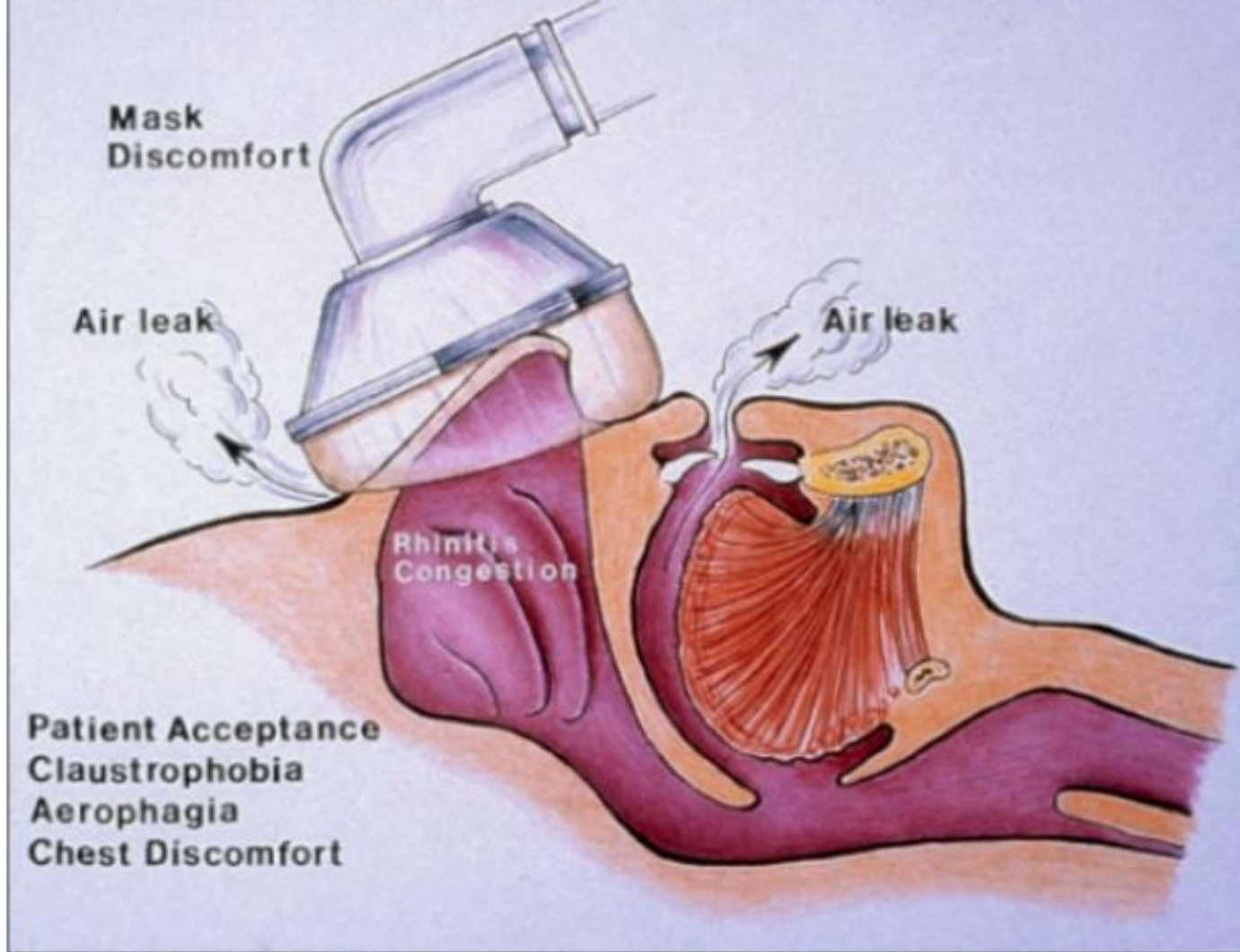
- Cardiovascular
- Accidents (MVA and work related)
- Psychiatric and behavioral
- Quality of life and productivity
- Endocrine
- Neurocognitive

# Overall Options

- CPAP/BiPAP Therapy
- Oral Appliance Therapy
- Surgical options
- Weight reduction
- Implantable devices



## POSITIVE AIRWAY PRESSURE: PROBLEMS



# Tonsillectomy & Adenoidectomy

Therapeutic for **~90%** of pre-pubertal OSA cases

Therapeutic for selected post-pubertal OSA cases with “kissing” tonsils – often cryptic due to chronic or recurrent infections

Risks: Pain, Hemorrhage, Post-op edema of airway



# How many times have you seen this?

- Teenager with “Kissing Tonsils”
- Extended uvula
- Excessive daytime sleepiness
- Loud snoring
- Disrupted sleep
- Tongue forward position
- We have to get out of our boxes to treat



The initial treatment should have been at a much earlier time in her life.



# CPAP Compliance

- Problem is with follow-up
- Compliance statistics vary depending who is asked
- Range from **10% - 60%** long term
- The primary care physician, sleep physician, and DME (Durable Medical Equipment) provider are all involved in getting the patient CPAP
- Work with physicians in your area as they've prescribed thousands of CPAPs over the years
- Most do not know of OAT and how appealing an alternative it could be



# CPAP Masks



Nasal



Full Face



Nasal Pillow



Nasal Prong



Hybrid



Oral

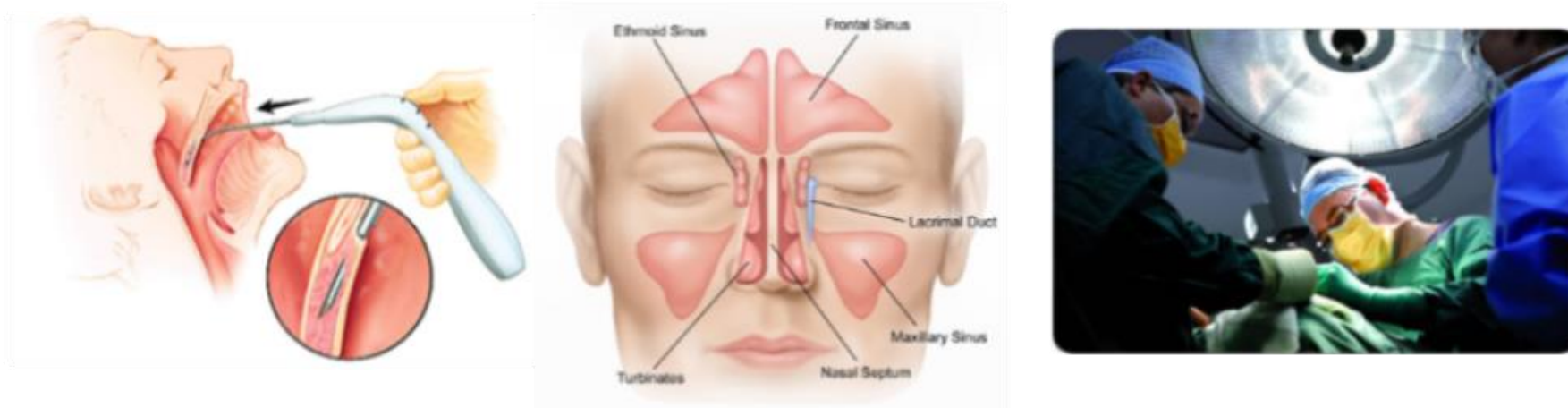


Total Face



# Surgery

Surgery can be done to physically open up the airways by removing tissue within the airways.



# Indications for Oral Appliances



AASM Practice Parameters



AADSM Dental Medicine Standards for Screening, Treatment, and Management



“Oral appliances (OAs) are indicated for use in patients with mild to moderate OSA who prefer them to continuous positive airway pressure (CPAP) therapy, or who do not respond to, are not appropriate candidates for, or who fail treatment attempts with CPAP.

For mild to moderate sleep apnea – Oral appliances are equally considered with CPAP therapy

For severe sleep apnea – CPAP is first line therapy.  
Oral appliances only considered if CPAP intolerance

# Contraindications for Oral Appliances

- If patient cannot protrude jaw (limited ROM)
- Severe nasal obstruction -??
- Very significant TMJ symptoms
- Poor dental status
- Active periodontal disease
- Physical limitations - amputee, arthritis, stroke, etc.
- Anatomic abnormalities

# Side Effects

- Changes in occlusion
- Thickening of the posterior attachments in the joint, not allowing the condyle to fully seat
- Edema in joint spaces
- Retrieval of disk
- Muscles of mastication lengthen, adapting to forward jaw position (lateral pterygoid shortens after a few months, and enjoys its new home)
- Even if they get back to home base in the morning, their mandible may posture forward as the day progresses
- Tooth movement related to use of appliance (occlusal changes do not appear to be directly correlated to the degree of protrusion, age, gender, or skeletal type)

# Side Effects, Cont.

- Salivation
- Sore teeth
- Dry mouth
- Drooling
- Removal of crowns
- Lip ulcers
- TMJ symptoms
  - Inflammation in the TMJ
  - Referred pain from the muscles of mastication (most common)
  - George gauge must be lined up correctly – could get unilateral TM pain

# Treatment of OSA - What Else?

- Position Therapy
- Weight Loss
- ENT & Nasal Decongestants



# With 6mm Slider Inserted





# TAP II-Unique Use Maxillary Edentulous



# Somnomed MAS





Pre-op PSG had an AHI of 33  
Post-op PSG had an AHI of 1.6

This patient became a dental patient in the office.

This is how he looks today!



# OSA and Cognition

Bubu OM Sleep Med Rev 2020 Apr;50

- Review article and meta-analysis
- OSA associated with impaired attention memory and exec function in middle aged adults (not older adults)
- OSA associated with mild cognitive impairment (MCI) and Alzheimer's Disease (AD)
- Likely link between OSA and AD biomarkers of neurodegeneration

# OSA and Mood

Kim JAMA Otolaryngol Head Neck Surg 2019;145(11)1020-1026

- Observational study assessing likelihood of affective disorder (depression or anxiety)
- 985 patients followed for 9 years
- OR for depression and anxiety was 2.90 and 1.75 respectively.
- More robust in women

# Dentists See the Clues...

## Clues we see during exam

Falling asleep in chair

Mallampati score

Tongue fat

Tonsils

Bruxism

Scalloped tongue

Age

Gender

## Clues from medical history

BMI

Neck circumference

Hx of hypertension

Hx of GERD

## Clues from family history

Hx of SRBD in parents or siblings

## Clues from the bed partner's report

Snoring

Witnessed apneic events

Sleepiness

# What should we be looking for?

- Increasing Age
- Obesity
- Male Gender
- Women peri-menopausal, menopausal
- Anatomic abnormalities of upper airway
- Family history
- Alcohol or sedative Use
- Smoking
- Associated conditions
- Class 2, Div 2, or Class 1 dental with skeletal retrognathic jaw
- 4 bicuspid extractions
- Evidence of GERD, crowding, erosion, abfraction
- Tongue postured above the occlusal plane
- Tongue retrudes into the airway





# What should we be looking for?, cont.

- Extended soft palate
- Vaulted hard palate
- Narrowed maxilla and mandibular arch form
- Short mandible-immediate retrusion upon opening
- Deviated septum and more oral breathing
- Reports of snoring
- Anterior open bite
- Co-morbid health history for example;
- Hypertension, MI history, TIA, stroke, morning headaches

## New in 2021

### ADA Statement on Screening Introduces:

- Use of HSAT for screening purposes
- “Order and administrating” HSAT within dentist’s scope of practice law or regulation
- Introduces new wording in-line with Levine 2022: the MD provides a “recommendation via referral” not a “prescription” for OAT

# ADA 2017 Statement on Screening

- Dentists are encouraged to screen patients for SRBD
- Only physicians diagnose OSA
- Only dentists have the training needed for OAT
- OAT is an appropriate treatment for mild and moderate sleep apnea, plus severe in some circumstances
- Dentists treating SRBD with OAT should be capable of recognizing and managing side effects
- Oas should be monitored and adjusted at least annually
- Follow-up sleep testing by a physician should be conducted to confirm treatment efficacy

# Tongue Level and Scalloping

- Studies vary in reliability of using tongue volume to oral cavity volume ratios as an indicator of OSA risk
- Presence of scalloping may indicate fat accumulation but also crowding from abnormally small arch form, clenching habit or swallowing dysfunction

Rana SS, Kharbanda OP, Agarwal B. Influence of tongue volume, oral cavity volume and their ratio on upper airway: A cone beam computed tomography study. J Oral Biol Craniofac Res. 2020 Apr-Jun;10(2):110-117. doi: 10.1016/j.jobcr.2020.03.006. Epub 2020 Mar 13. PMID: 32215247; PMCID: PMC7090350.

**At or below occlusal plane**



**Above occlusal plane, scalloped**



Dr. Jon Parker

**Filling oral cavity, scalloped**



# Morning Headaches

- **Low oxygen** levels initiate the **widening of blood vessels** and can cause headaches.
- Along with excessive daytime drowsiness, headaches are usually the symptoms that sleep apnea sufferers complain the most about as they may not be aware that they have symptoms of snoring or breaks in breathing.





# Questionnaires and Conversations

- Screening form results are a starting point for further conversational exploration with the patient
- Patients acclimate to their symptoms or consider them a normal part of aging or an unavoidable hereditary certainty
- Patients mask symptoms with strategies such as napping or caffeine
- Sleepiness is not associated with AHI

# Screening Tools

- Epworth Sleepiness Scale (ESS) – commonly required for Med Ins reimbursement
- STOP-BANG questionnaire
- Berlin questionnaire
- GASP
- Modified Berlin questionnaire
- STOP questionnaire
- OSA50 questionnaire
- Sleep apnea clinical score (SACS)
- American Society of Anesthesiologists checklist
- Elbow sign questionnaire

Miller JN and Berger AM. Screening and assessment for obstructive sleep apnea in primary care. *Sleep Medicine Reviews*. 2016. (29): p. 41–51.

Prasad KT, Sehgal IS, Agarwal R, et al. Assessing the likelihood of obstructive sleep apnea: a comparison of nine screening questionnaires. *Sleep and Breathing*. 2017.

Gamaldo et al; OSA Assessment Tools Task Force of the American Academy of Sleep Medicine. Evaluation of clinical tools to screen and assess for obstructive sleep apnea. *J Clin Sleep Med*. 2018;14(7):1239–1244.

# Subjective History

- Chief complaint(s)
- History of complaint and patient's perception
- Patient's remedial efforts, e.g. overuse of caffeine, napping
- Social history





# The Hygienist's and Dentist's Role

- ✓ Recognize oral signs and symptoms
- ✓ Provide identification of potential patient candidates
- ✓ Educate patients on potential SDB issues
- ✓ Promote potential patients to be tested (PSG/HST)
- ✓ Provide alternative treatment to CPAP and surgery
- ✓ Non-invasively treat OSA and snoring

## The association between periodontitis and obstructive sleep apnea: a preliminary study.

Seo WH<sup>1</sup>, Cho ER, Thomas RJ, An SY, Ryu JJ, Kim H, Shin C.

### + Author information

#### Abstract

**BACKGROUND AND OBJECTIVE:** Periodontitis is becoming a highly prevalent disease worldwide. Obstructive sleep apnea (OSA) is a common disorder that is characterized by repeated disruptions in breathing during sleep, and mouth breathing is a common characteristic among patients with OSA. We aimed to assess the hypothesis that OSA is associated with the onset and progression of periodontal disease.

**MATERIAL AND METHODS:** This is a cross-sectional study of a total of 687 participants (460 men and 227 women), 47-77 years of age, who were examined between August 2009 and September 2010 as part of the Korean Genome and Epidemiology Study. The participants underwent standard polysomnography, clinical periodontal examination and health-screening examinations. Periodontitis was defined as clinical attachment level (CAL)  $\geq$  6 mm and probing pocket depth  $\geq$  4 mm. OSA was determined using the apnea-hypopnea index (AHI), and an AHI score of  $\geq$  5 was the cut-off used to indicate the presence of OSA.

**RESULTS:** The results showed that 17.5% of the participants had periodontitis, 46.6% had OSA and 60.0% who were diagnosed with periodontitis had OSA. In our study, old age, male gender, current smoking status, mouth breathing during sleep and high AHI were identified as risk factors for periodontitis. OSA was positively associated with periodontitis [odds ratio (OR) = 1.84, 95% confidence interval (CI) = 1.18-2.87], probing pocket depth (OR = 2.22, 95% CI = 1.30-3.77) and CAL (OR = 1.86, 95% CI = 1.07-3.21) in a dose-response manner. Additionally, OSA was positively associated with periodontitis (OR = 2.51, 95% CI = 1.37-4.62) in subjects  $\geq$  55 years of age, but not in subjects < 55 years of age.

**CONCLUSION:** There is a significant association between OSA and periodontal disease. Further research is needed to clarify the causal relationship between the two conditions.





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# Question and Answer



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## Missed Connections

### Providers and Consumers Want More Medical-Dental Integration

Oral health and overall health are inextricably linked. There is mounting evidence to suggest that poor oral health is related to a variety of chronic health conditions, such as high blood pressure, dementia, diabetes, and obesity. Despite this known connection, dental care is still largely siloed from medical care. The Centers for Disease Control and Prevention (CDC) estimates that integrating basic health screenings into a dental setting could save the health care system up to \$100 million every year.<sup>1</sup>

CareQuest Institute for Oral Health conducted a nationally representative survey in January and February 2021 to assess consumers' perspectives on oral and overall health (n=5,320). CareQuest Institute also conducted a nationwide survey of oral health providers to assess perspectives and current behaviors related to interprofessional practice (n=377). Consumers and oral health providers described a lack of integration between medical and oral health care, and a desire for increased interprofessional collaboration.

**Key Findings:**  
**Medical-dental collaboration is currently uncommon.**

- 63% of consumers report that their primary medical doctor "rarely" or "never" asks about their oral health.
- 33% of consumers report that their oral health provider "rarely" or "never" asks about their overall health.
- 45% of responding oral health providers report "rarely" integrating their care with clinicians outside of dentistry, with only 14% reporting it is part of their "daily" practice.
- Less than a third of consumers report receiving general health screenings from their oral health provider.
- A majority (89%) of adults report never receiving a referral from their oral health provider to a non-oral health professional.
- Almost a fourth (24%) of participating oral health providers report currently implementing interprofessional practice.

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Improving Oral Health Equity and Justice: The Power of Disaggregated Data on **June 6 at 7 p.m. ET**

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