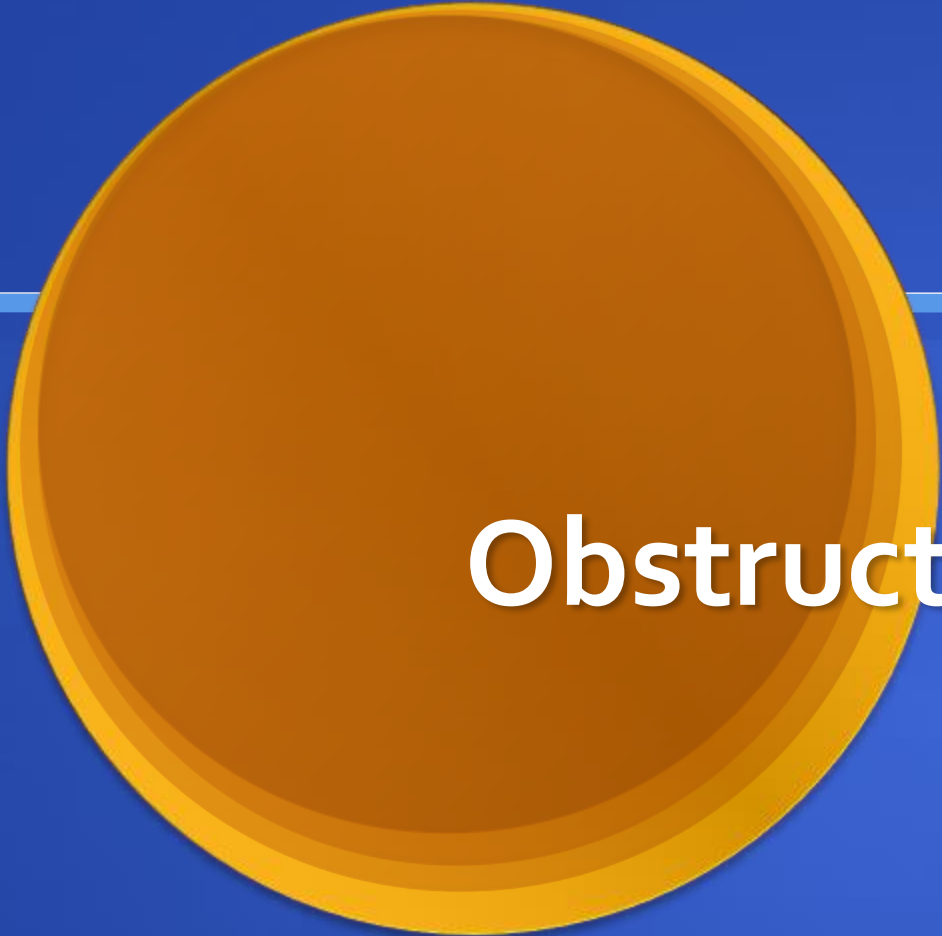


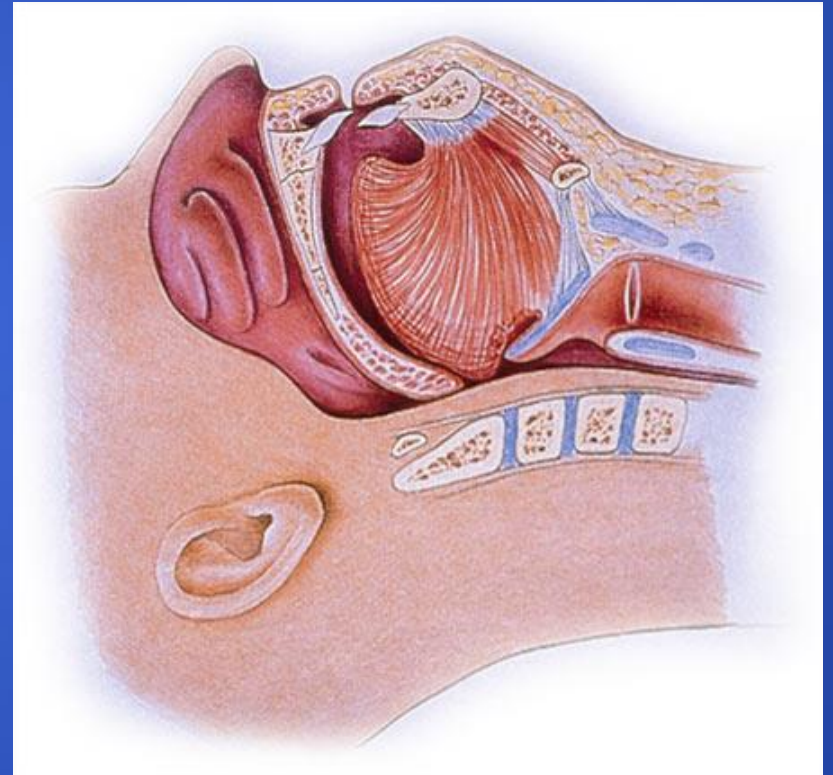
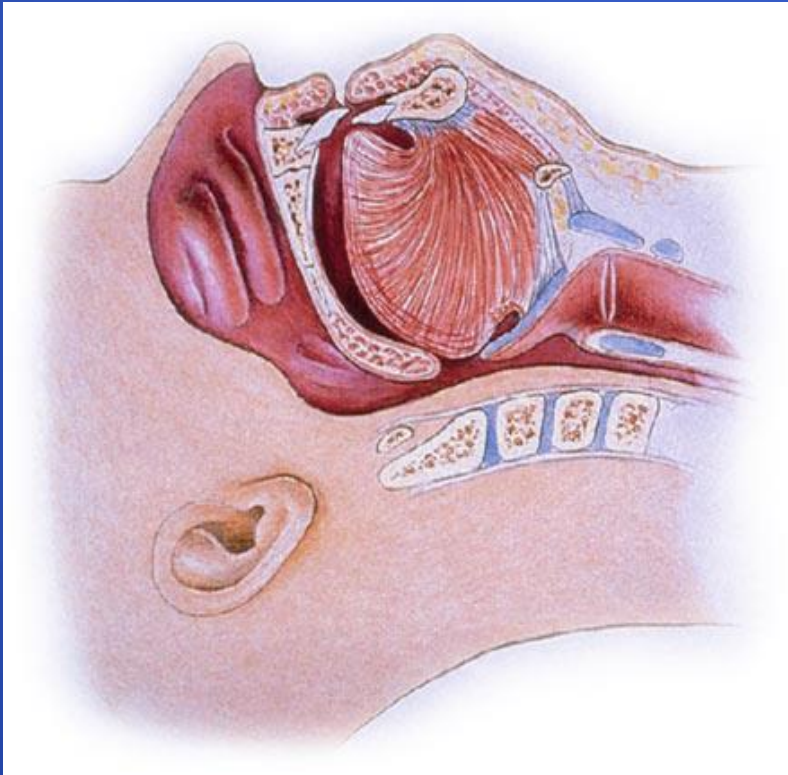


Obstructive Sleep Apnea. You Can Do It!

David Corley MD FCCP DABSM

Medical Director, Sleep and Neuro-diagnostics, Virginia Mason Franciscan Health
Medical Director, Sleep Disorders Center, St. Michael Medical Center, Silverdale, WA

Obstructive Sleep Apnea

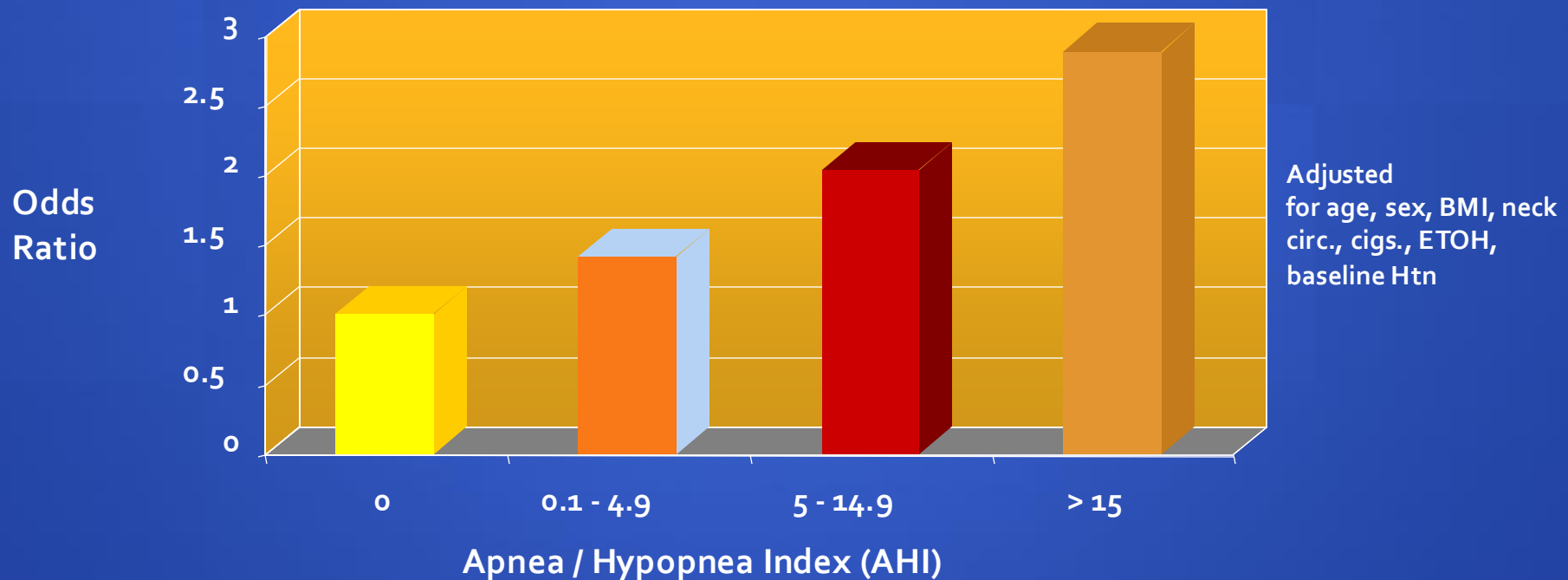


OSA Prevalence

● BMI 25-28	20%
● BMI 30-40	40%
● HTN	50%
● CVA	50%
● “Lone” Atrial Fibrillation	30%
● Atrial Fibrillation requiring cardioversion	50%
● CHF	10-30%

Cardiovascular Consequences: Hypertension

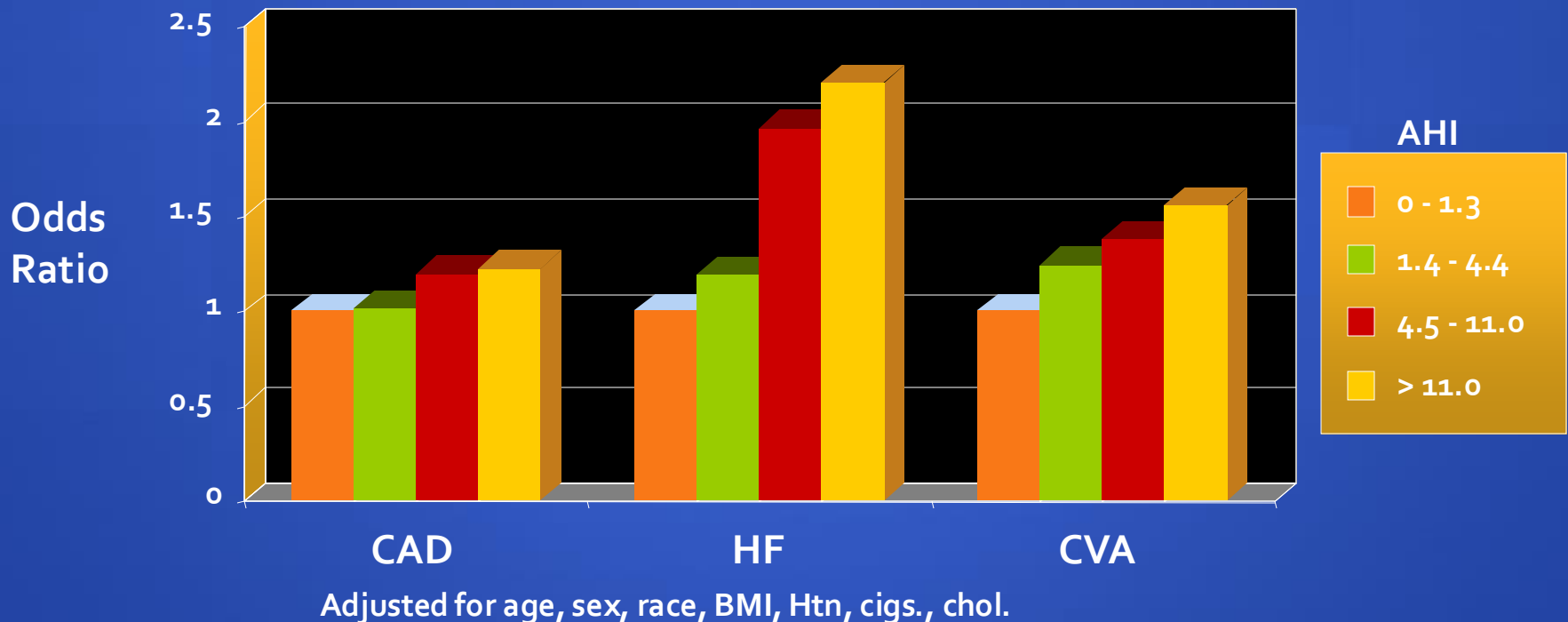
Prospective Study of Association Between OSA and Hypertension



Adapted from Peppard PE et al.
N Engl J Med 2000;342.

Consequences: Cardiovascular Disease

Cross Sectional Study of Association Between OSA and CVD

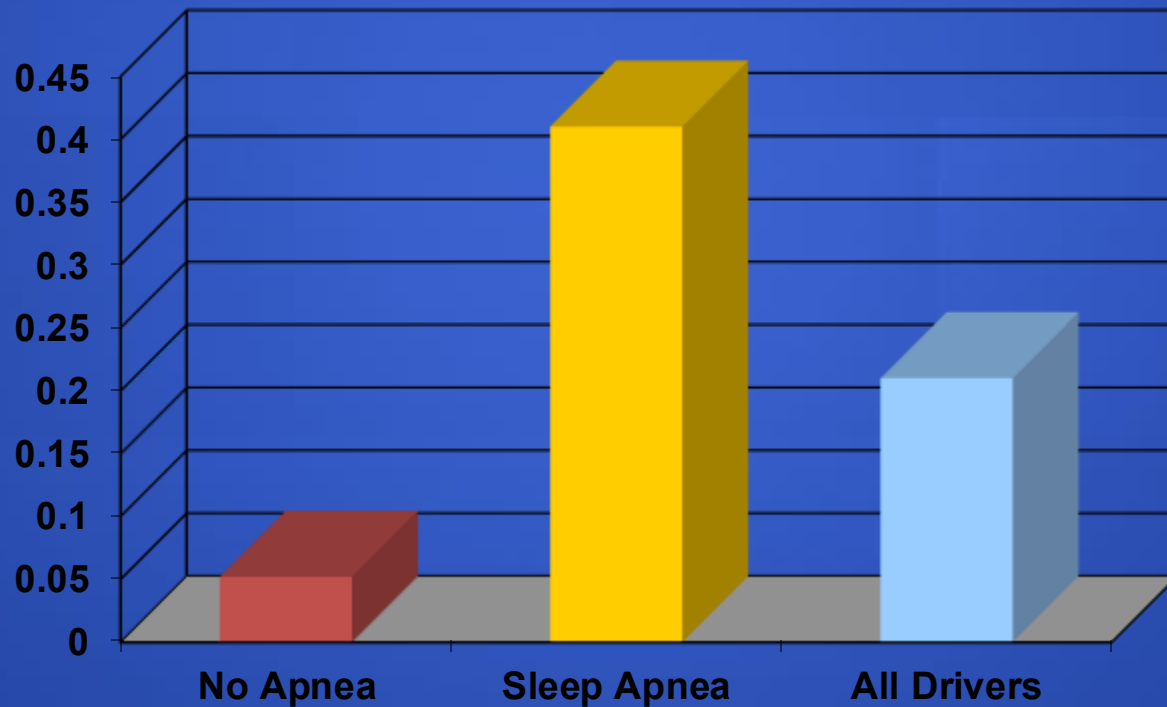


Adapted from Shahar E et al.
Am J Respir Crit Care Med 2001;163.



Consequences: Automobile Accidents

Accident / driver / 5 yrs



Adapted from Findley LJ et al. Am Rev Respir Dis 1988;138.

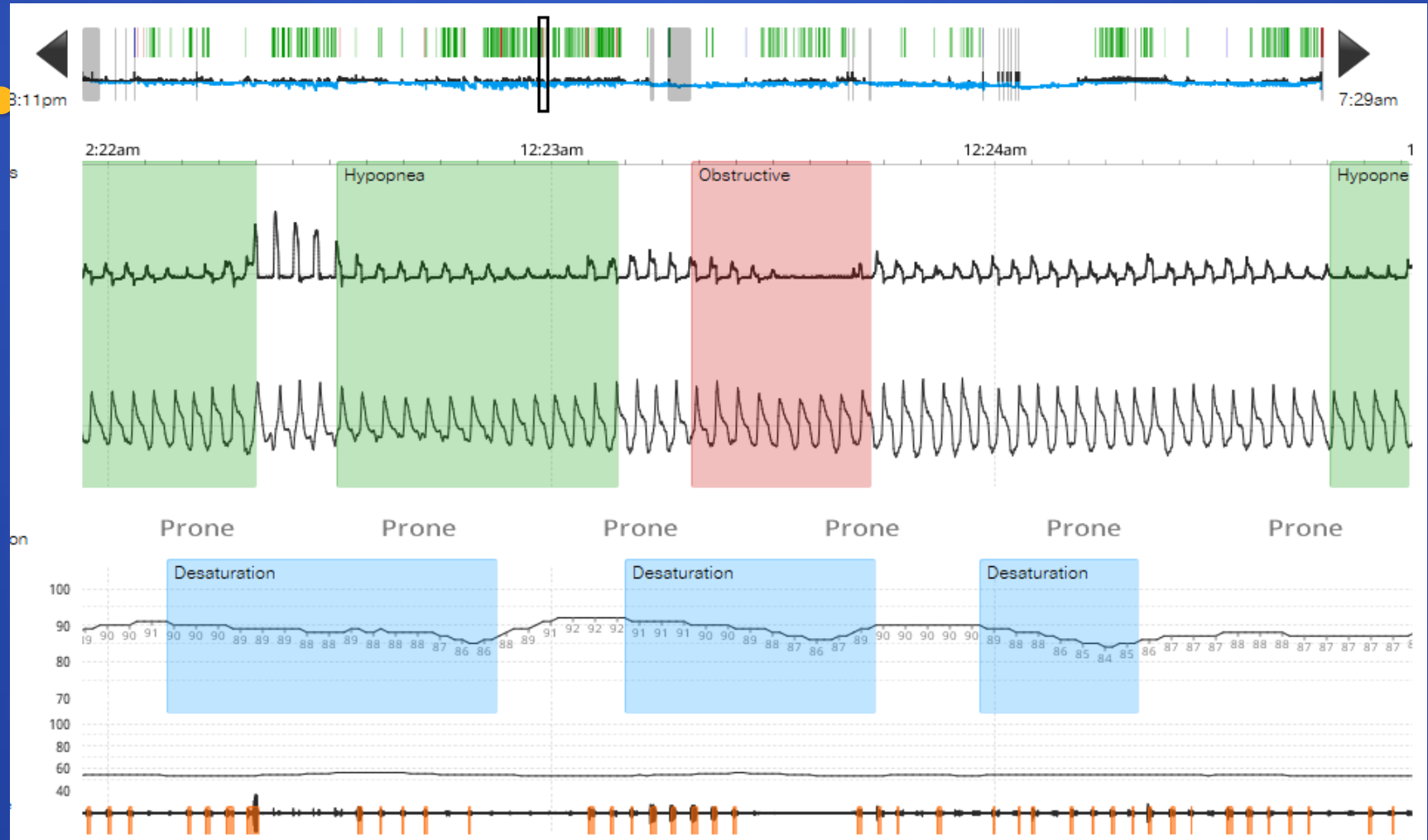
Who to Test? STOP-BANG

- Snoring ?
- Tiredness ?
- Observed Apneas ?
- Pressure (Hypertension) ?
- BMI (Over 35 kg/m²) ?
- Age (over 50?) ?
- Neck (over 40 cm) ?
- Gender (male) ?

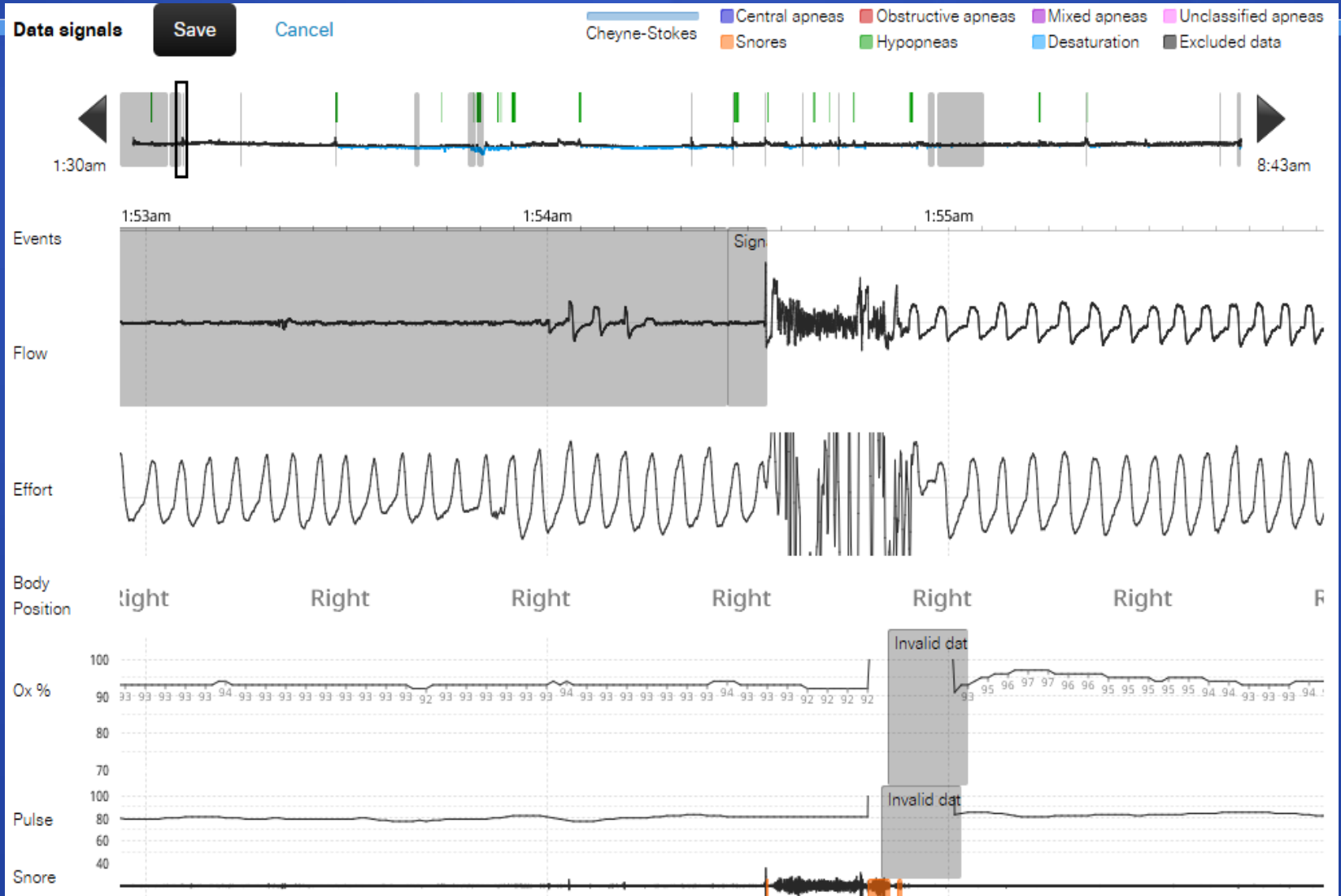
STOP BANG

- Scoring: Risk of Moderate OSA > 15 AHI
 - 0 – 2 risk is low (<15%)
 - 3 – 4 intermediate risk (15 - 60%)
 - 5– 8 high risk (>60 %)

3:11pm



Non-diagnostic HST



Diagnostic Report

Recording details

07/25/2015

Device	Type: III		
Recording	Start: 7:53pm	End: 6:00am	Duration - hr: 10:07
Flow Evaluation	Start: 8:03pm	End: 5:58am	Duration - hr: 9:23
Oxygen saturation evaluation	Start: 8:03pm	End: 6:00am	Duration - hr: 9:57

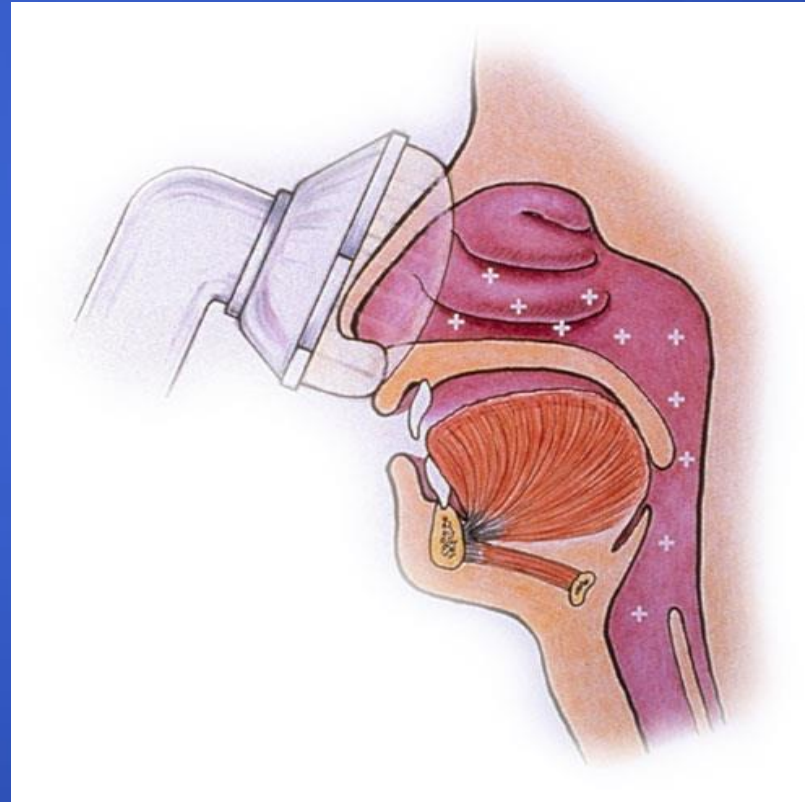
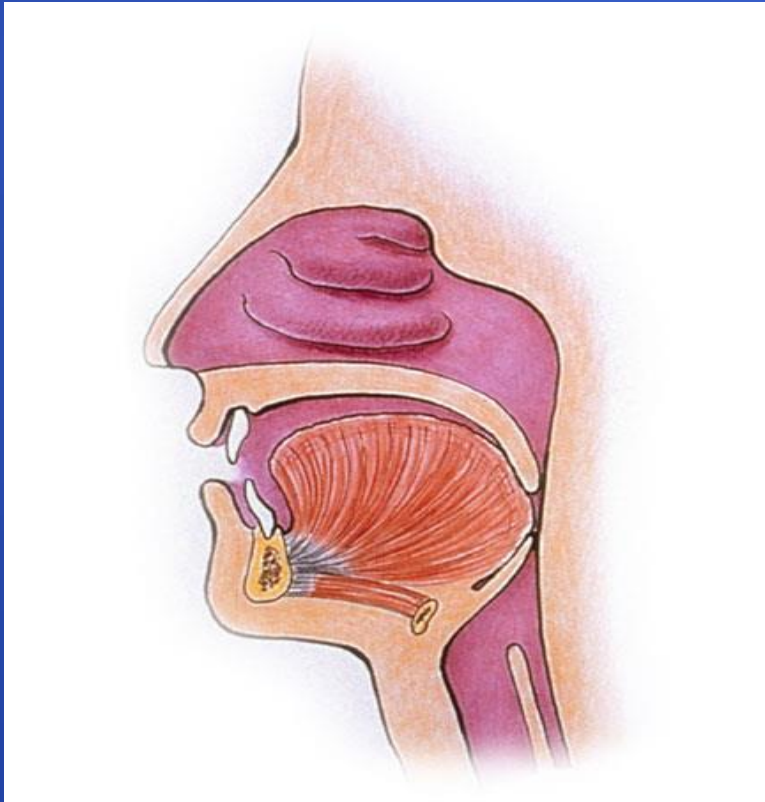
Statistics



Events index	AHI: 15.0	AI: 4.3	HI: 10.8
Supine	Time - hr 5:52	Percentage: 62.6	
	AHI: 21.9	AI: 6.7	HI: 15.3
Non-supine	Time - hr 3:28	Percentage: 36.9	
	AHI: 3.5	AI: 0.2	HI: 3.2
Upright	Time - hr 0:02	Percentage: 0.5	
	AHI: 0.0	AI: 0.0	HI: 0.0
Events totals	Apnea: 40	Hypopnea: 101	
Apnea Index	Obstructive: 1.9	Central: 2.1	Mixed: 0.2
	Unclassified: 0.0		
Cheyne-Stokes respiration	Time - hr: 0:00	Percentage: 0	
Oxygen desaturation	ODI: 16.1	Total: 160	
Oxygen saturation %	Baseline: 96	Avg: 95	Lowest: 83
Oxygen saturation - eval time %	<=90%sat: 2	<=85%sat: 0	<=80%sat: 0
	<=88%sat: 1	<=88%Time - hr: 0:05	
Breaths	Total: 9653	Avg/min: 17.1	Snore: 744
Pulse - bpm	Min: 43	Avg: 59	Max: 93



Positive Airway Pressure (PAP)





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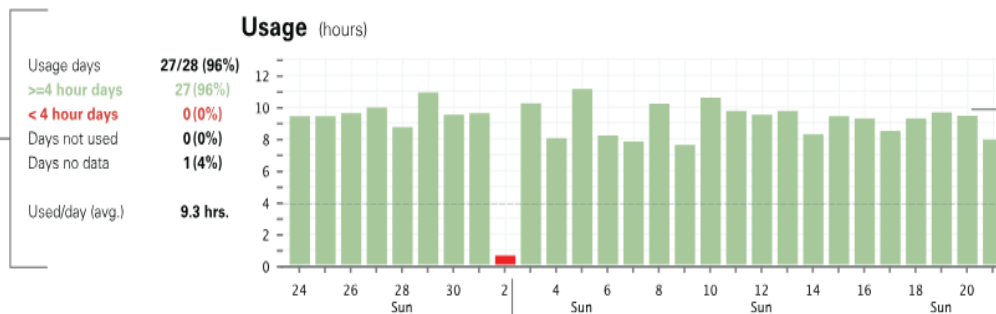
Medicare Coverage

- OSA with REI > 15/hour: generally approved without comorbidity after Part B deductible is met
- OSA with REI 5-15/hour: requires documented comorbidity (eds, htn, insomnia, ischemic heart disease, stroke, impaired cognition, mood disorders)
- Trial Period: Medicare covers an initial 3 month trial period.
- Ongoing Coverage: Requires documentation of effectiveness and compliance (more than 4 hours of use on 70% of nights). Rents for 13 months then you own.

Graph descriptions

Usage

Breakdown of patient's usage in days and hours, indicating their usage patterns



Leak

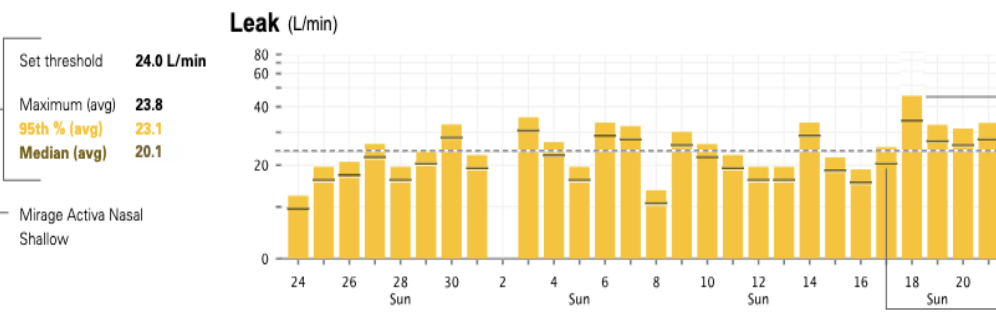
Refers to unintentional leak

Tip: 95th percentile value should be ≤ 24 L/min.

If > 24 L/min, check mouth leak or mask fit

Mask information

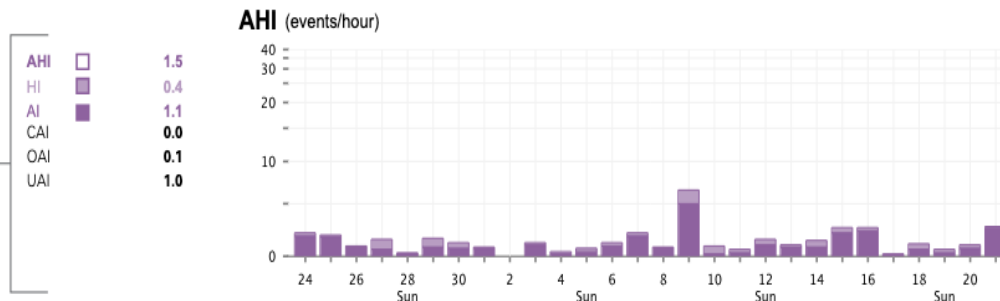
Per prescription entered into AirView



Events

Type and occurrence per hour

Tip: AHI should be below patient's recommended threshold. If it is above the threshold, check the AI, HI, CAI, OAI and UAI!



Compliance Report

Age: 64 years
Gender: Male

Usage		12/20/2014 - 01/16/2015
Usage days		30/30 days (100%)
≥ 4 hours		29 days (97%)
< 4 hours		1 days (3%)
Usage hours		181 hours 7 minutes
Average usage (total days)		6 hours 2 minutes
Average usage (days used)		6 hours 2 minutes
Median usage (days used)		6 hours 28 minutes

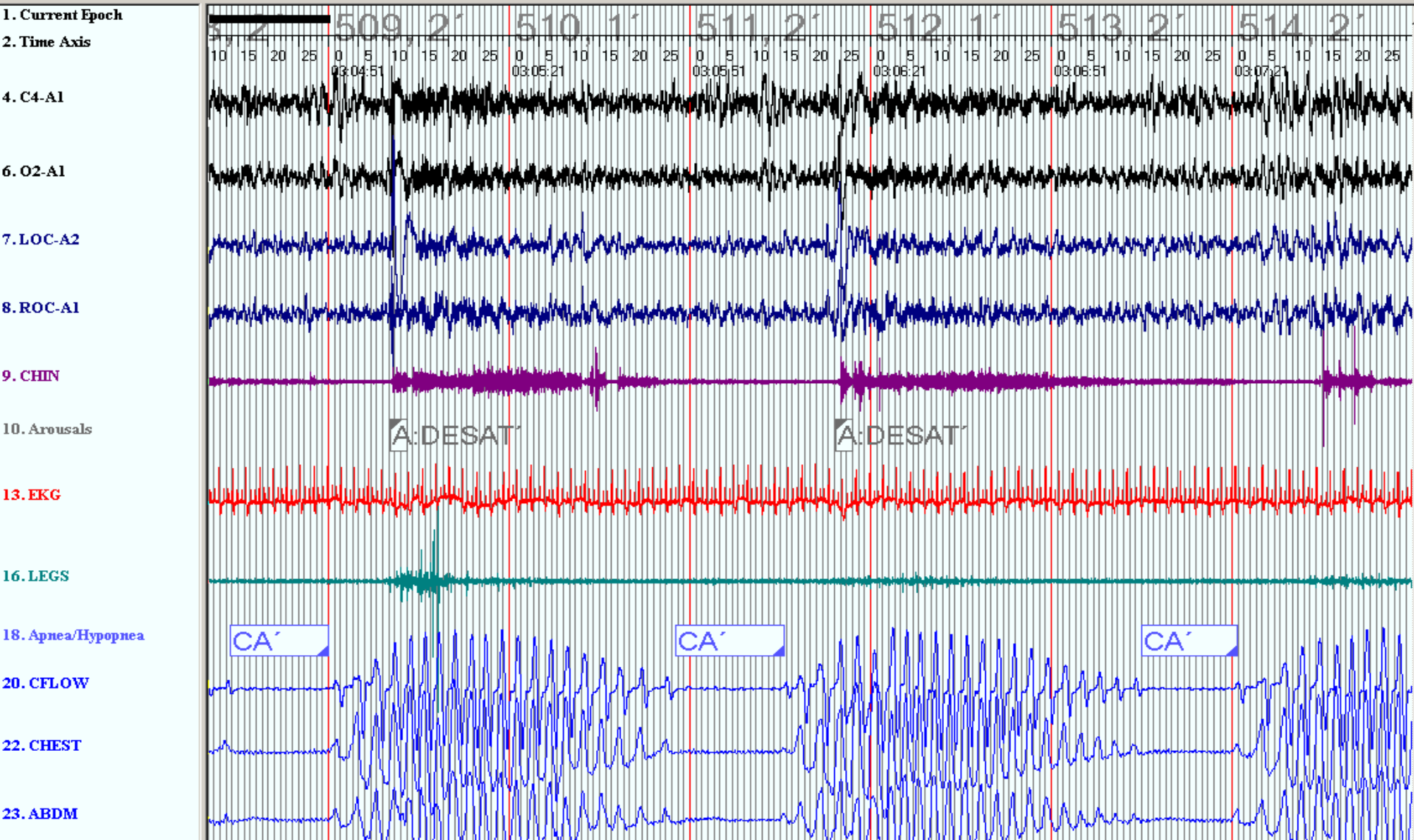
AirSense 10 AutoSet	
Serial number	00100236033
Mode	AutoSet
Min Pressure	5.2 cmH2O
Max Pressure	20 cmH2O
EPR	Fulltime
EPR level	3

Therapy					
Pressure - cmH2O	Median:	9.2	95th percentile:	10.5	Maximum: 11.2
Leaks - L/min	Median:	0.0	95th percentile:	6.4	Maximum: 13.6
Events per hour	Ap: 6.1		HI: 0.0		AHI: 6.1
Apnea Index	Central: 4.3		Obstructive: 1.4		Unknown: 0.4
Cheyne-Stokes respiration (average duration per night)					20 minutes (6%)
SpO ₂ %	Time spent SpO ₂ < 88%:				18 min
		Median:	92	95th %:	97

Usage - hours



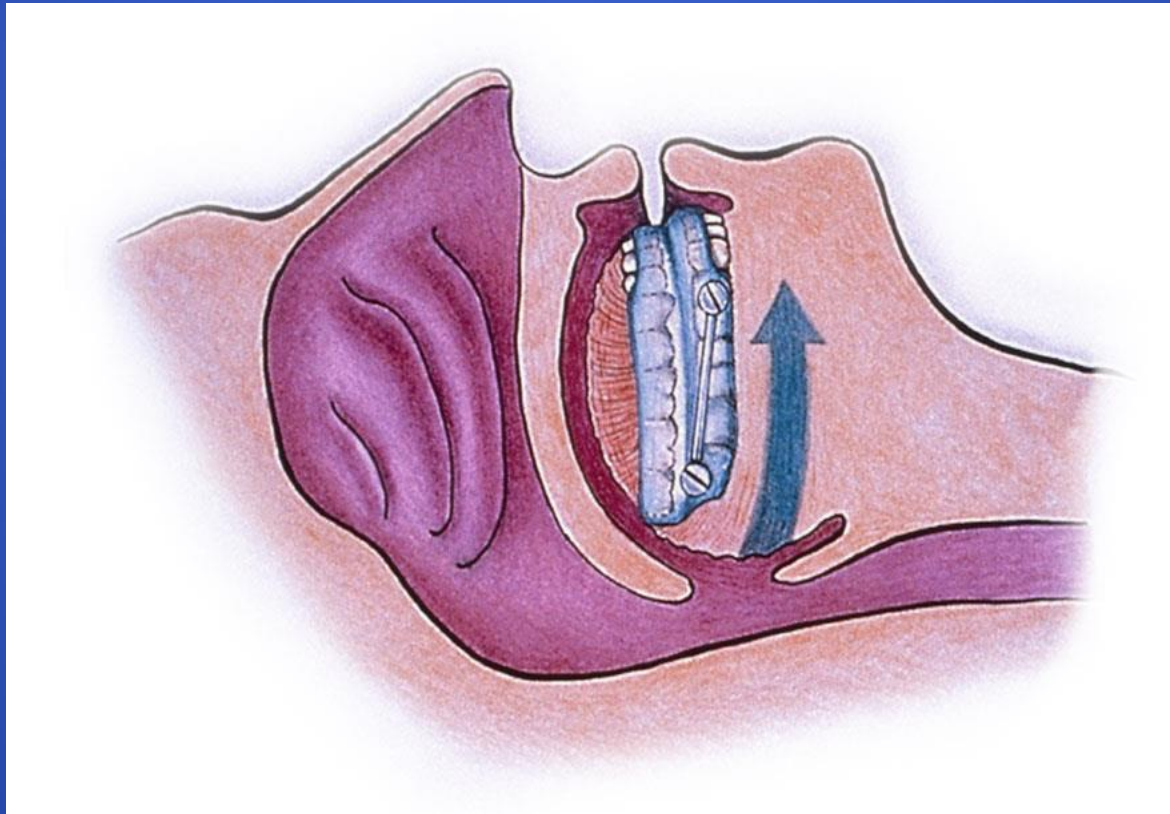
Cheyne Stokes Respiration



Types of PAP

- CPAP: continuous positive airway therapy
- APAP: automatic adjusting positive airway therapy
- BPAP: bilevel positive airway therapy
- BPAP: bilevel with synchronized, timed back up rate
- ASV: adaptive servo ventilation
- iVAPS: intelligent volume assisted pressure support

Dental Appliances



Dental Appliances

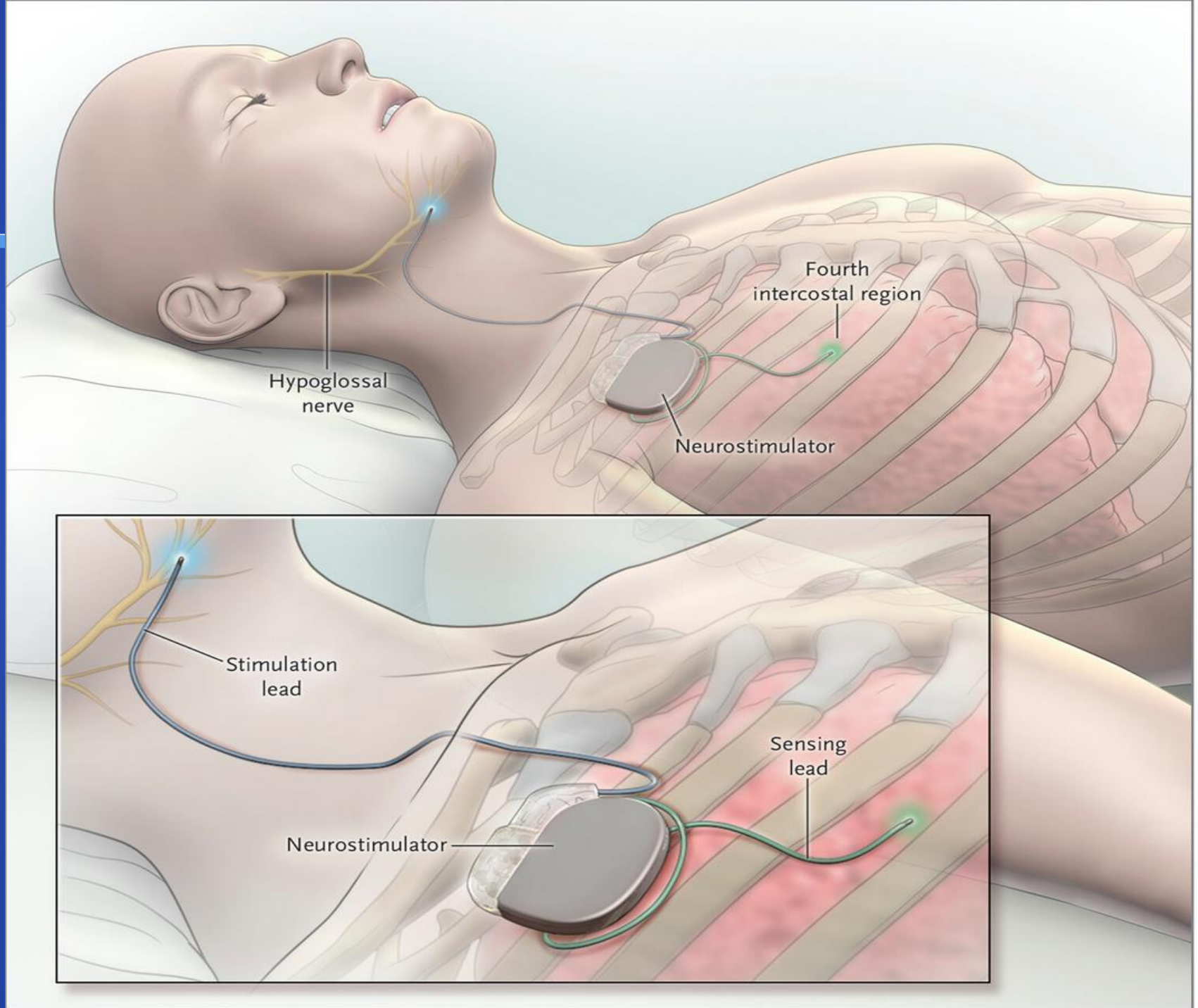


Sleep-Position Training



Inspire Device

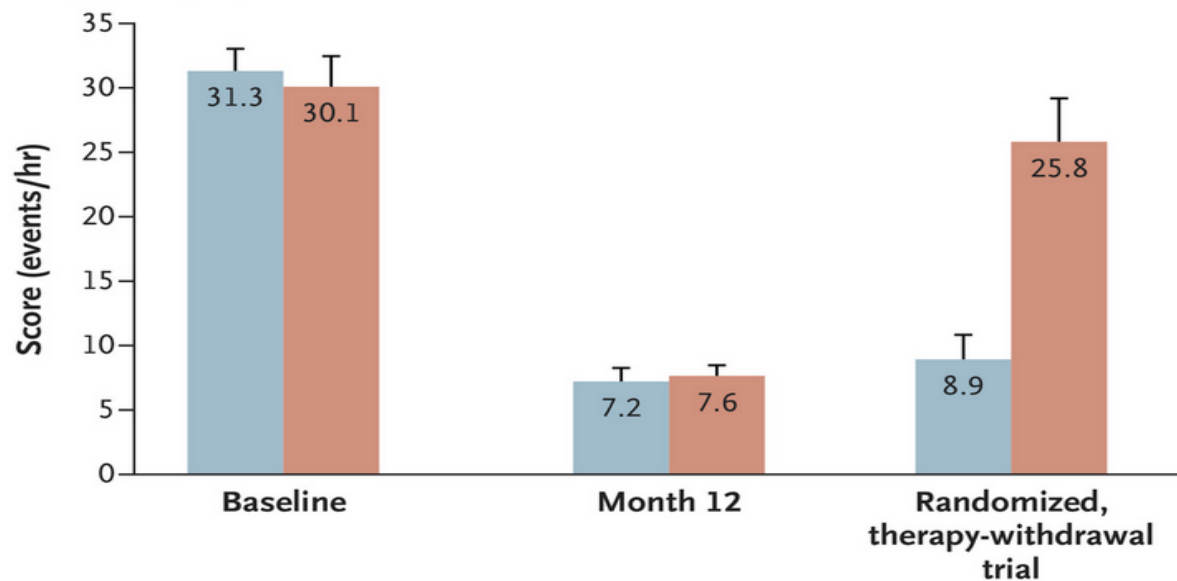
- FDA Criterion (Adult Patients > 22 years):
 - Severity 15-100 events/hour
 - Documented failure or intolerance of CPAP/BPAP
 - BMI < 40 kg/m² (optimal < 32)
 - Airway anatomy: absence of concentric collapse on endoscopy
 - Apnea type (>75% obstructive)
 - Able to operate remote
 - Contraindications: >25% central/mixed apneas, severe psychiatric or neurologic issues, inability to undergo MRI, pregnancy



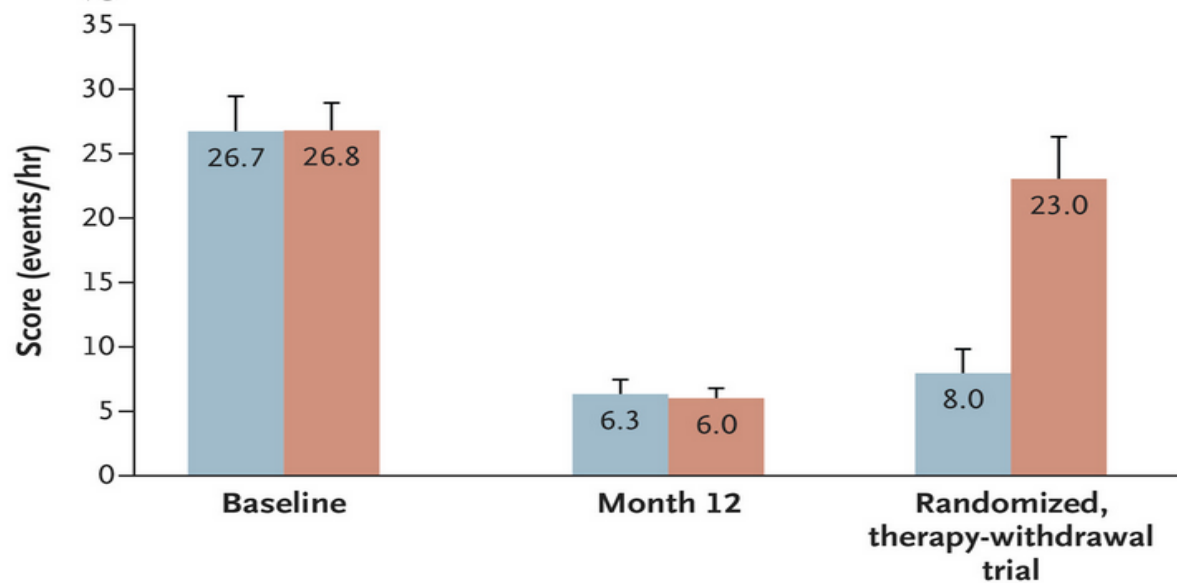
■ Therapy-maintenance group (N=23)

■ Therapy-withdrawal group (N=23)

A Apnea-Hypopnea Index



B Oxygen Desaturation Index



Tirzepetide

ORIGINAL ARTICLE



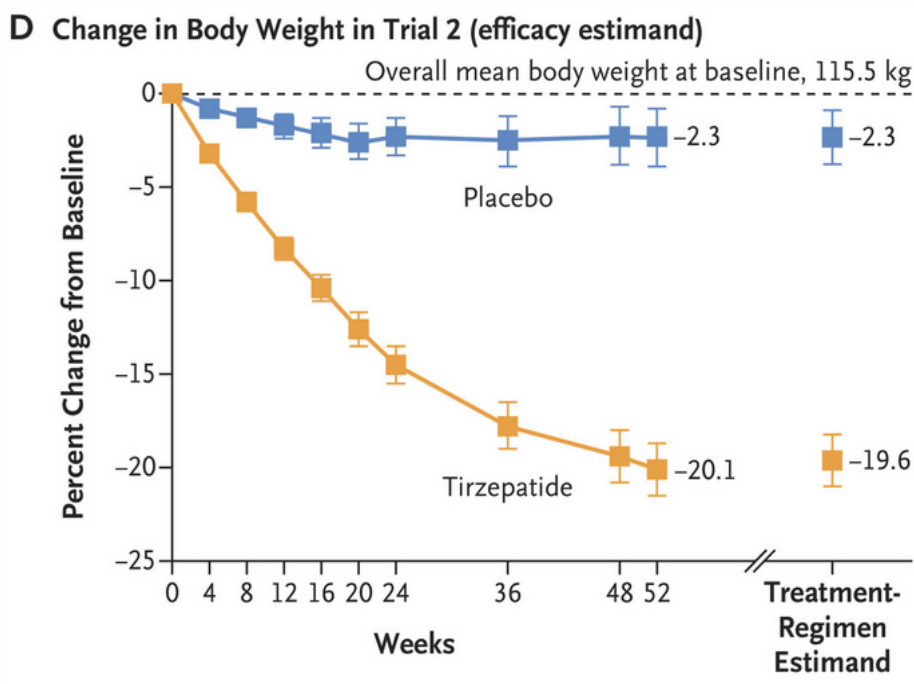
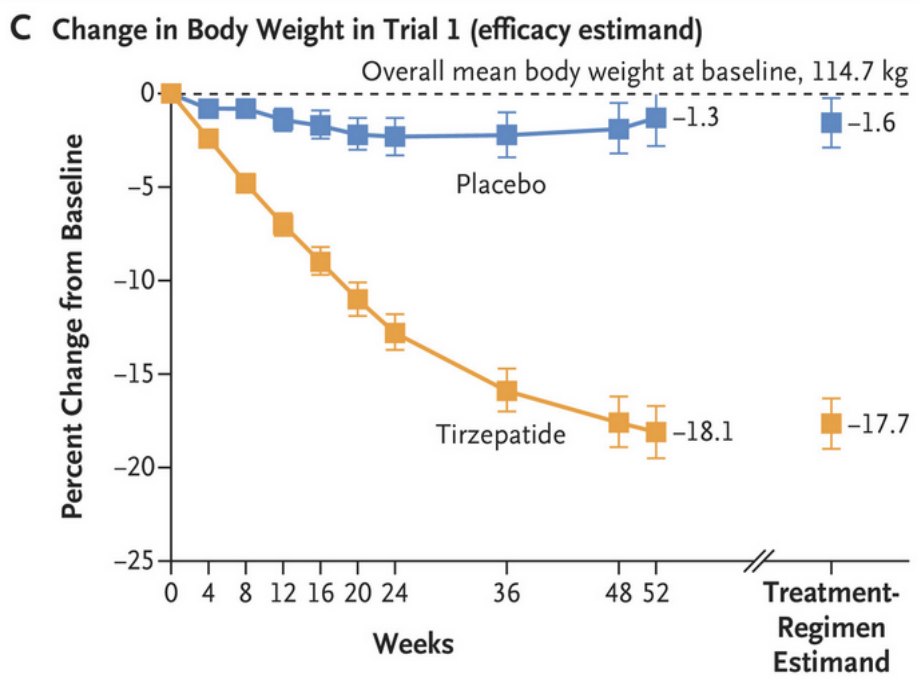
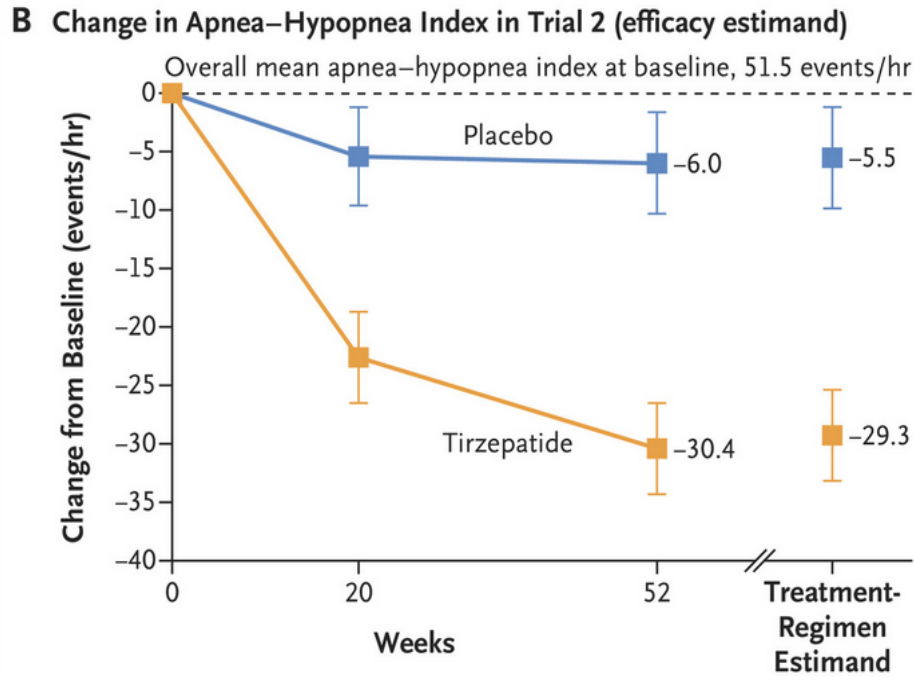
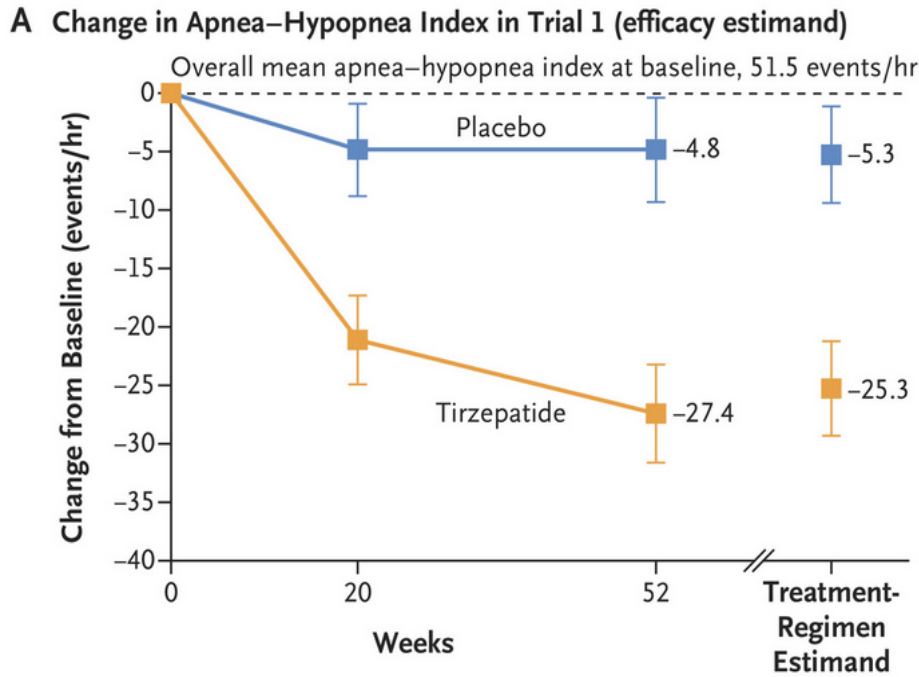
Tirzepatide for the Treatment of Obstructive Sleep Apnea and Obesity

 This article has been corrected. [VIEW THE CORRECTION](#)

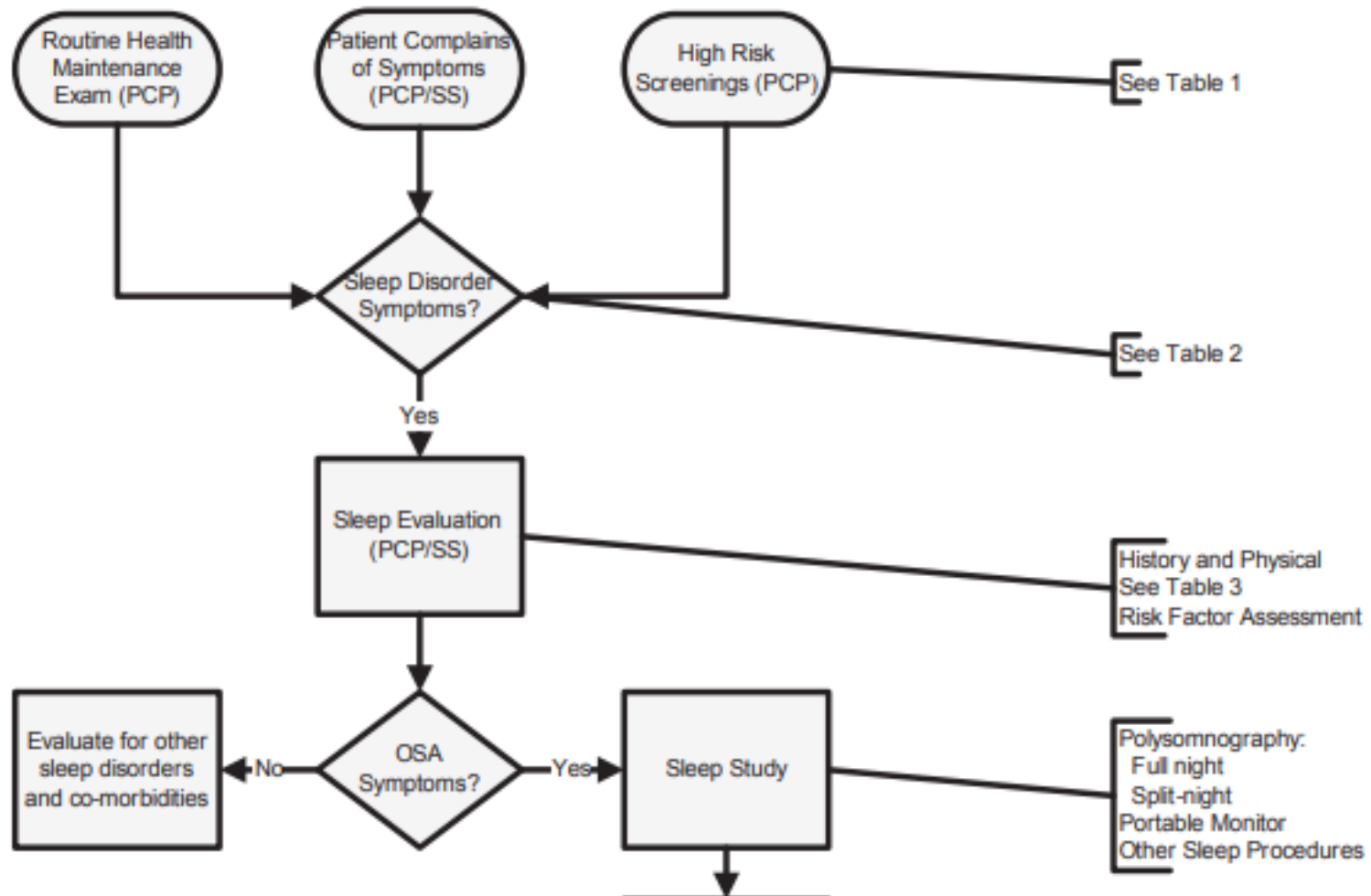
Authors: Atul Malhotra, M.D., Ronald R. Grunstein, M.D., Ph.D., Ingo Fietze, M.D., Terri E. Weaver, Ph.D., Susan Redline, M.D., M.P.H., Ali Azarbarzin, Ph.D., Scott A. Sands, Ph.D.,  , for the SURMOUNT-OSA Investigators* [Author Info](#) & [Affiliations](#)

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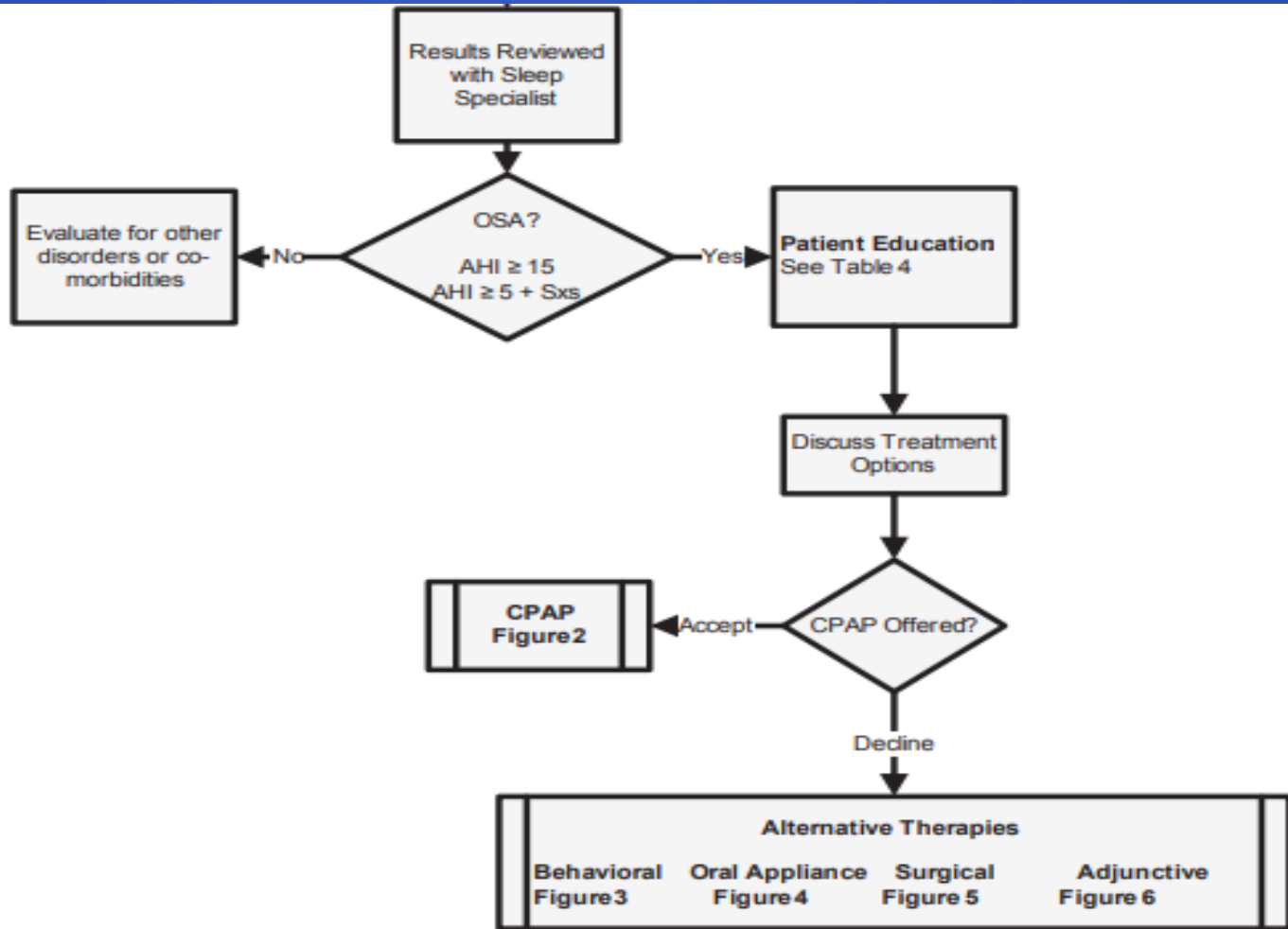
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AASM Guidelines for Evaluation of OSA



OSA Treatment



Direct to Test

- **TRADITIONAL MODEL**

- : Risk for sleep apnea identified -> Sleep Medicine consultation.
- Long wait times for consultation.

- **DIRECT TO TEST:**

- HSTs available to be performed and resulted in 2 to 3 weeks.
- Option 1: Risk for sleep apnea identified -> HST ordered by Primary Care provider -> HST positive -> Sleep Medicine consult +/- APAP ordered by primary care. Follow up by sleep medicine.
- Option 2: Risk for OSA -> HST negative -> stop there or refer to sleep medicine depending upon risk factors and symptoms.
- Option 3: Risk for OSA -> HST positive -> APAP ordered by primary care with follow up by Primary Care in concert with DME.

Summary, Step by Step

- 1. Identify patient suspected of having sleep apnea.
- 2. Unless contraindicated (severe cardiac or pulmonary disease or use of oxygen), order a home sleep test.
 - Your office referral coordinator will need to obtain insurance authorization for the study and identify which sleep center to send the request. We can assist with this step as needed.
 - If patient is unable to perform an HST, refer to sleep medicine.
 - If you do not plan to follow up with patient yourself, also initiate a referral to sleep medicine.
- 3. If REI is over 15/hour (or over 5/hour with symptoms or co-morbidities), order auto-PAP 5-15 cm H₂O or as recommended on the HST interpretation.
 - Prescription is sent to the durable medical equipment company (DME) of patient's preference.
- 4. Refer to sleep medicine at this point for follow up or manage yourself if comfortable. Patient will need a visit within three months to review PAP data download and certify compliance for most insurances.
- Annual visits are needed to review PAP data and document compliance for most insurances.

Sample Prescription

- Date of order: Indication: Obstructive Sleep Apnea G47.33
- Duration: 99 months Prognosis: Good
- REI : ***/hour O2 sat nadir: ***%
- Co-morbidities: (htn, eds, mood disorders, stroke, ischemic heart disease, impaired cognition, insomnia)
- APAP: 5-15 cm H₂O with EPR to comfort
- Ramp, heated humidity, mask to comfort, chin strap, heated hose, filters and supplies