Underwriting Sleep Apnea

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WAHLU

A Brief Survey Before We Get Started

The Weiner Sleepiness Scale

How likely are you to doze off or fall asleep in the following situation?

The final session of the Seminar immediately following a session on cardiomyopathies:

Chance of Dozing Off	Score
No chance	0
Slight chance	1
Moderate Chance	2
High Chance	3

Sleep Disorders

- Sleep Apnea (obstructive, central, mixed)
- Insomnia
- Narcolepsy
- Restless leg syndrome
- Idiopathic hypersomnolence
- Upper airway resistance syndrome (UARS)
- Shift-work sleep disorder

The Perfect Night's Sleep?

Sleep Time with OSA

Some Background on OSA

- Prevalence of OSA
  - 5% for women and 10% for men
  - Increases with age with a 2-3 fold higher prevalence in individuals age 65 and older compared with individuals aged 30 – 64
- Most people (up to 90%) with OSA remain undiagnosed
- 10% of people with moderate-severe OSA have no symptoms

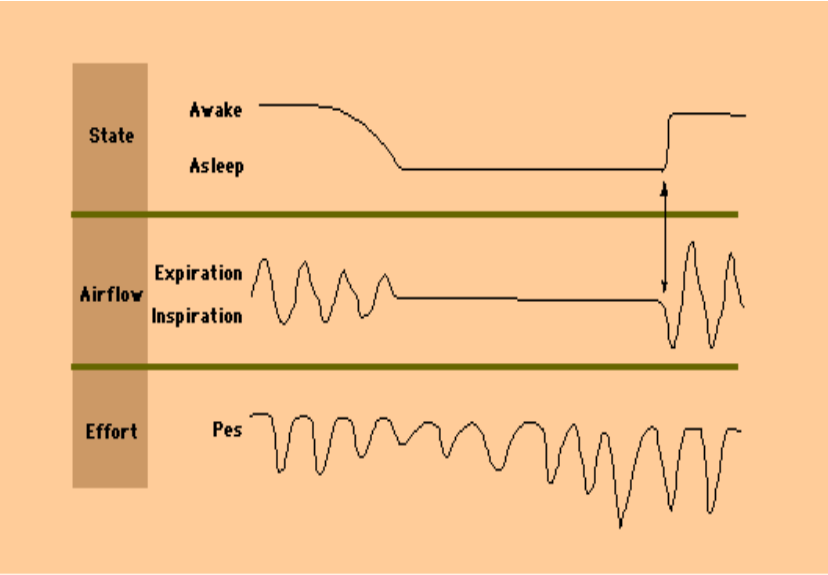
Definitions

- **Apnea**: Cessation of airflow for at least 10 seconds
- **Hypopnea**: 50% reduction in airflow for at least 10 seconds
- **Apnea Index (AI):** Total # of apneas/total hours of sleep
- **Hypopnea Index (HI):** Total # of hypopneas/total hours of sleep
- **AHI:** AI + HI
- **Respiratory effort-related arousal (RERA):** Increased respiratory effort (but not an apnea or hypopnea) for at least 10 seconds leading to an arousal
- **RDI:** Typically the same as AHI but can be higher if RERA's are included in the calculation
- **OSA:** Airway blockage resulting in breathing being briefly and repeatedly interrupted during sleep

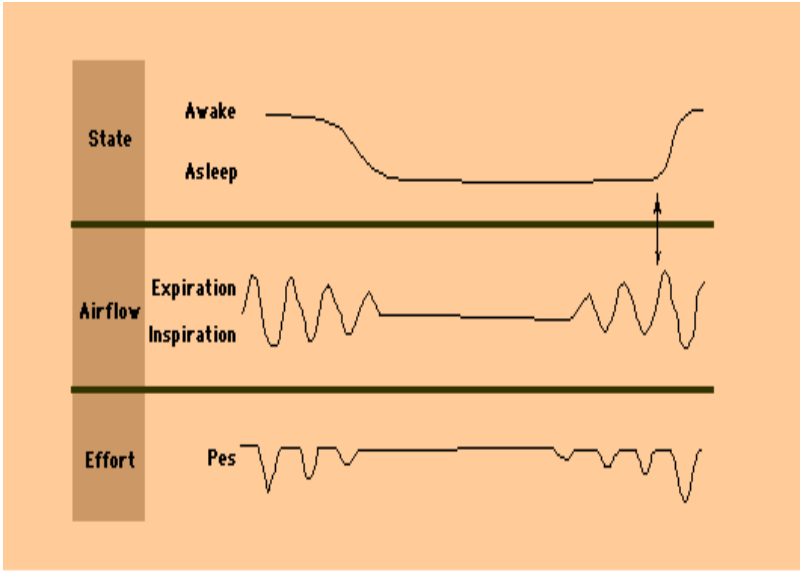
Severity of OSA

Degree of Sleep Apnea	AHI
None	0 – 4
Mild	5 – 14
Moderate	15 – 30
Severe	31 +

OSA versus CSA



Obstructive sleep apnea Obstructive sleep apnea in which there is continuing respiratory effort, as shown by progressively increasing fluctuations in esophageal pressure (Pes) at the time of cessation of airflow. The arrow illustrates that arousal in obstructive apnea occurs simultaneously with the resumption of airflow.



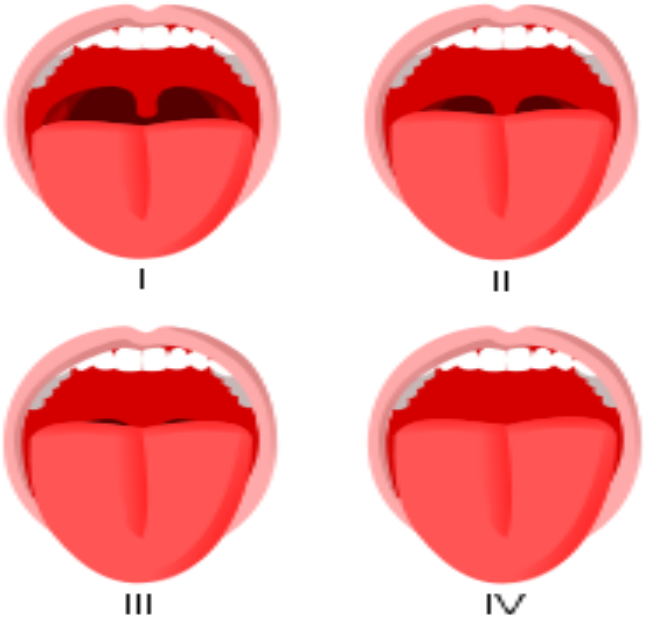
Central sleep apnea There is no respiratory effort, as shown by absence of changes in esophageal pressure (Pes), at the time of cessation of airflow. The arrow illustrates that arousal in central apnea typically occurs in the middle of the hyperpneic phase.

Exam Findings in OSA

- Obesity (2/3 of those with OSA are obese)
- Big tongue
- Big tonsils
- Big uvula
- High arched/narrow palate
- Nasopharyngeal narrowing
- Retrognathia
- Increased neck circumference
  - > 17 inches in men
  - > 16 inches in women

The Mallampati Score

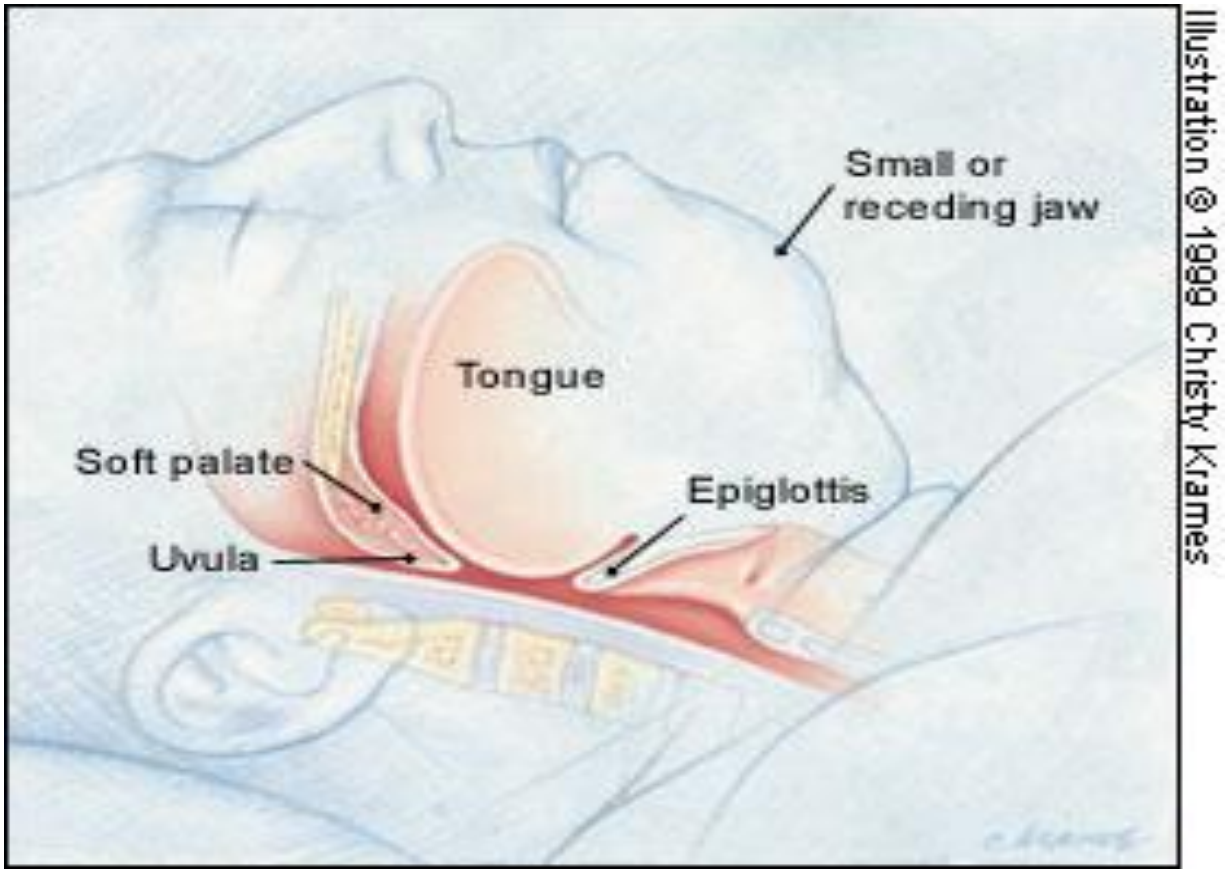
For every grade increase, the odds of having OSA doubles



Where is the Obstruction in OSA

- **Nasopharyx** – deviated septum, turbinates, adenoids
- **Oropharynx** – soft palate/uvula, tonsils
- **Hypopharynx** – tongue, hyoid bone/neck
- **Jaw** – upper/lower jaw/chin

Where is the Obstruction in OSA (ctd)



OSA Symptoms
(these are due to sleep disruption and are often a source of significant morbidity)

- Excessive daytime somnolence (EDS)
- Decreased concentration and alertness
- Memory loss
- Mood disturbances (depression, anxiety)
- Morning headaches
- Nonrefreshing sleep
- Irritability

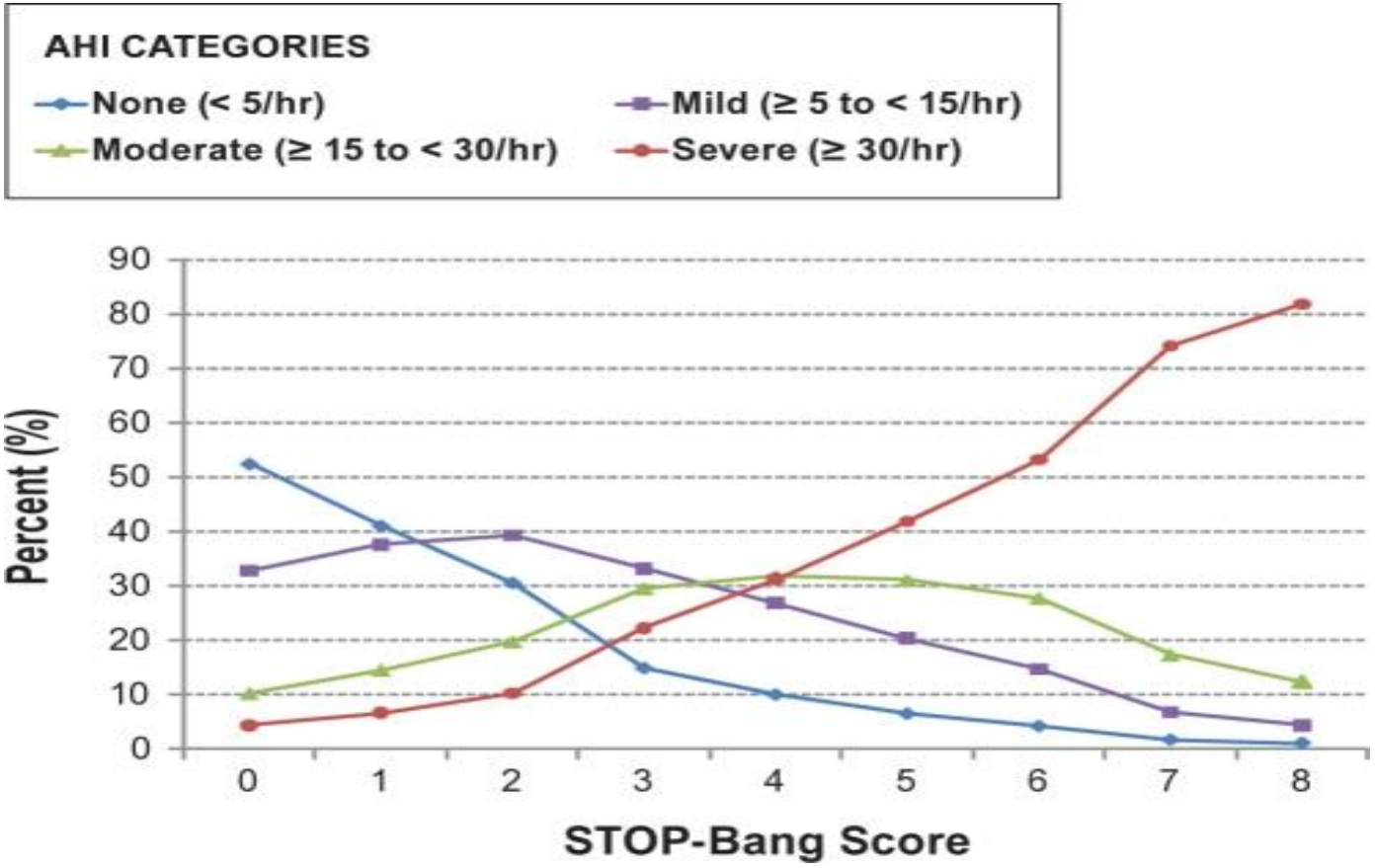
Complications of Untreated OSA
(these are due to hypoxemia and are often a source of significant mortality and morbidity)

- Cardiac arrhythmias
- Pulmonary hypertension
- Right heart failure
- Heart attack
- Stroke
- Hypertension
- Polycythemia
- Sudden death

Suspected Sleep Apnea

- **STOP – BANG Model** (total of 8 points)
  - ***S***noring loudly
  - ***T***ired during the day
  - ***O***bserved breathing cessation during sleep
  - ***P***ressure, high blood
  - ***B***MI > 35
  - ***A***ge > 50
  - ***N***eck circumference (male > 17”, female > 16”)
  - ***G***ender - male

Interpreting the STOP – BANG Score (the more sensitive test)



Suspected Sleep Apnea

- **Epworth Sleepiness Scale** (ESS)
  - Total of 24 points
  - How likely are you to doze off or fall asleep in *eight* different situations (i.e. reading, watching TV, talking with someone)?

Chance of Dozing Off	Score
No chance	0
Slight chance	1
Moderate Chance	2
High Chance	3

Interpreting the ESS Score (the more specific test)

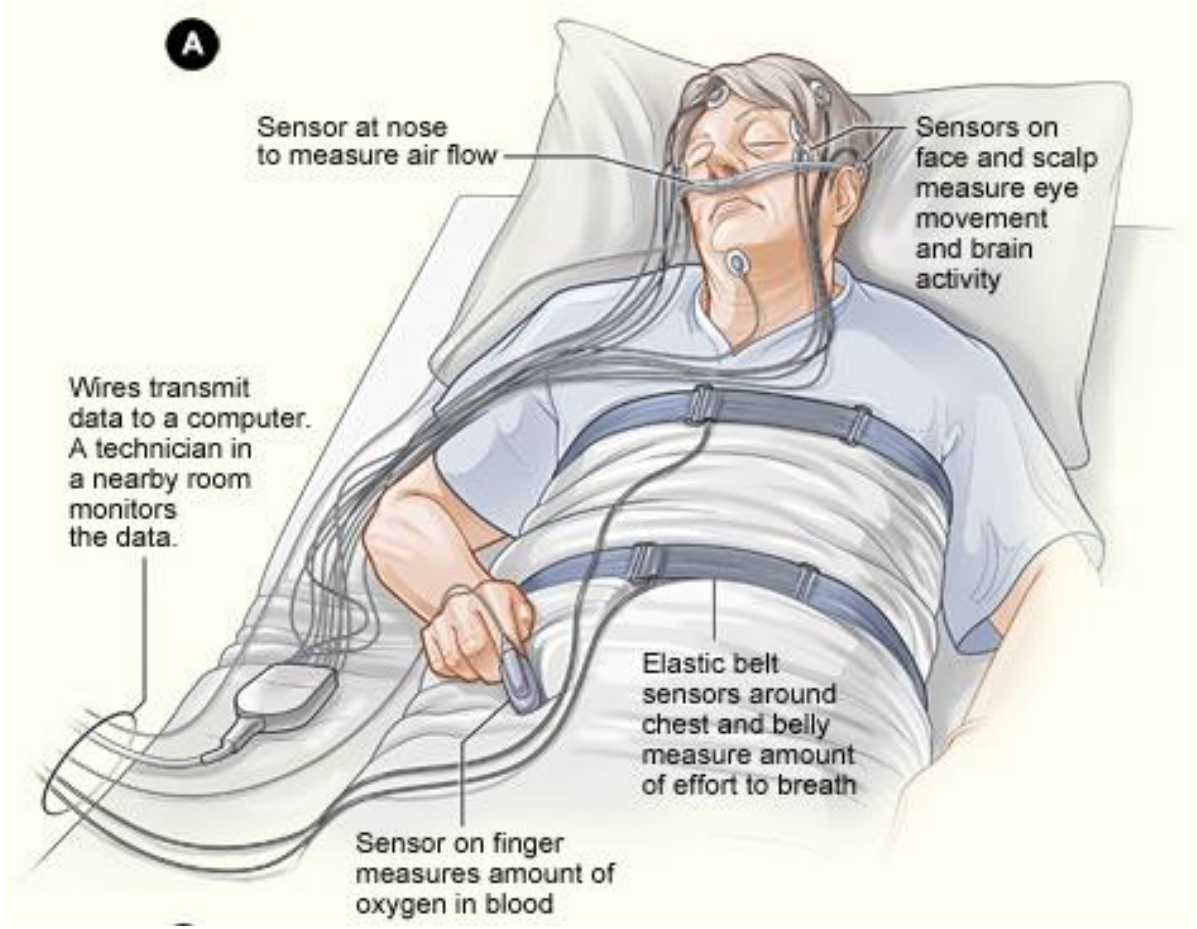
- A total score of 10 or greater is abnormal

Score	Possible Meaning
10 – 15	Mild-moderate sleep apnea
>15	Severe sleep apnea

STOP-BANG versus ESS

- Both should be used as part of a comprehensive sleep history evaluation
- STOP-BANG can be used for screening because it is the more sensitive test
- ESS can be used for sleepiness screening
- Depending on the population, it may be more important to exclude low-risk patients while avoiding false positives (i.e. ESS)

The Sleep Study (PSG)



At-home Sleep Studies

- **Overnight Oximetry**
  - Should not be used as a substitute for a sleep study
  - Many people with sleep apnea do not desaturate, so you'll under-diagnose sleep apnea in these people
  - Many people without sleep apnea do desaturate (lung disease, heart failure, obesity), so you'll over-diagnose sleep apnea in these people

At-home Sleep Studies (ctd)

- Many newer home tests measure multiple channels including:
  - Breathing effort
  - Oxygen levels
  - Airflow
  - Heart rate
  - Snoring
  - Sleep position

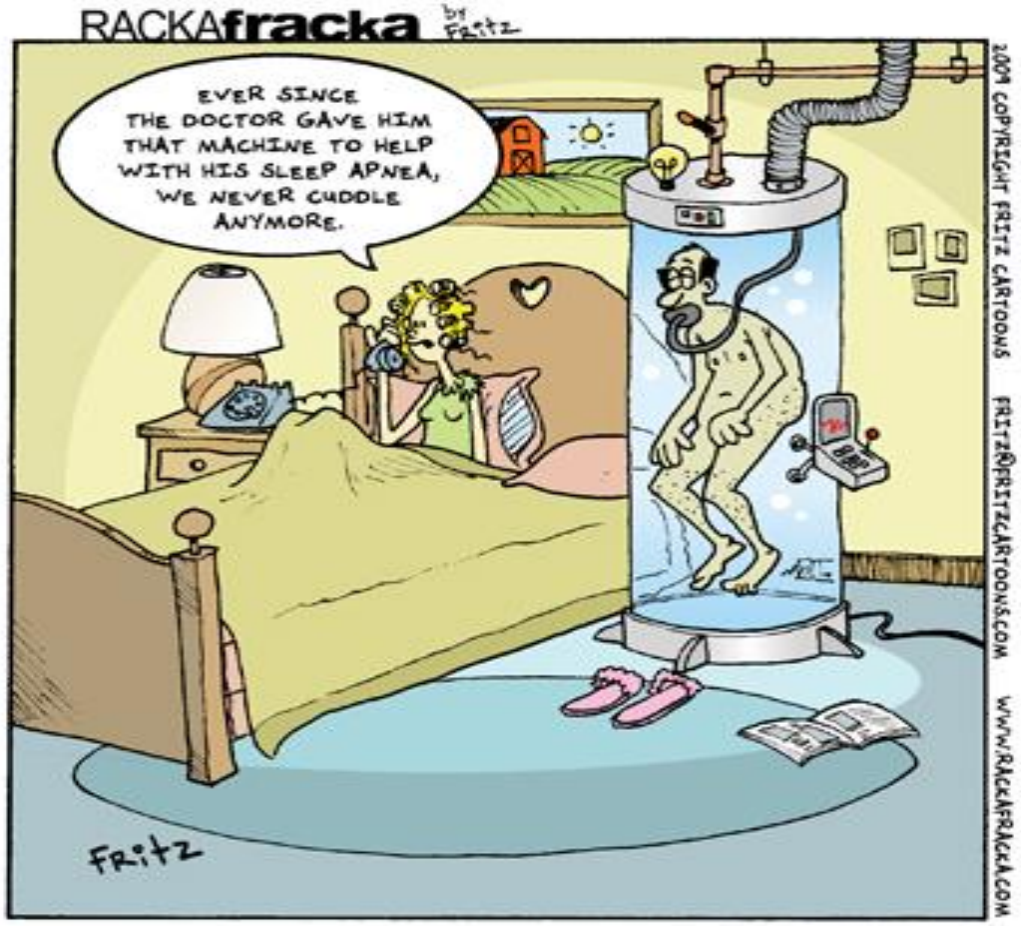
- A chest sensor, breathing sensor and finger sensor are the typical components of these units

Positional Sleep Apnea

- A subset of obstructive sleep apnea
- If the AHI is high enough, then the individual is spending a significant amount of time in that position
  - They obviously like sleeping that way and it will be difficult to get them to sleep in other positions
  - Tennis balls and pillow wedges often fail to work
- Given the mortality/morbidity associated with OSA, positional treatment should only be rarely recommended

When and How to Treat OSA

- An AHI ≥ 5 with symptoms or an AHI ≥ 15 should get treatment
- All individuals should be offered nasal CPAP therapy first
  - BiPAP (more expensive) and oral appliances are the next offerings
- Surgery should be considered in those who have failed medical options


RACKAfracka by Fritz
EVER SINCE THE DOCTOR GAVE HIM THAT MACHINE TO HELP WITH HIS SLEEP APNEA, WE NEVER CUDDLE ANYMORE.
Fritz
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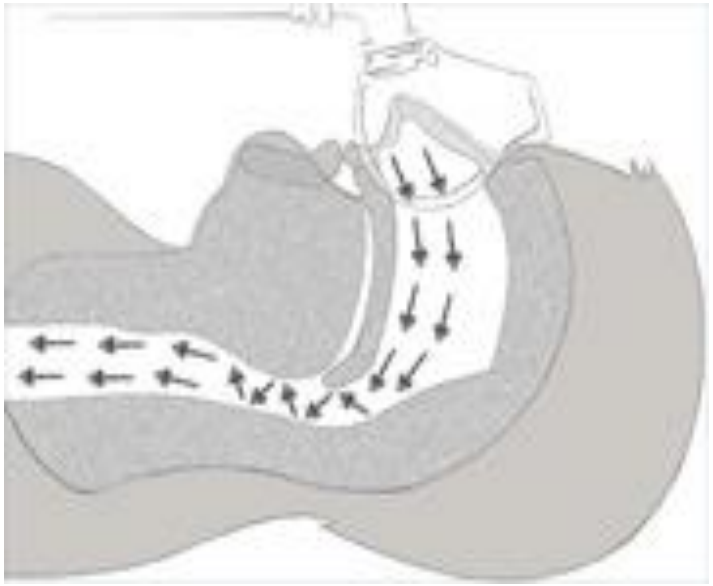
CPAP Machines and Masks

CPAP Can Be Frightening!

CPAP – How it Works



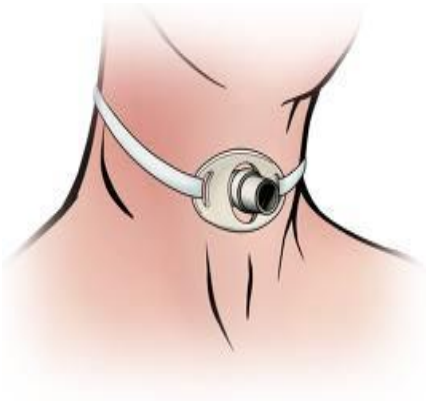
Compliance with CPAP

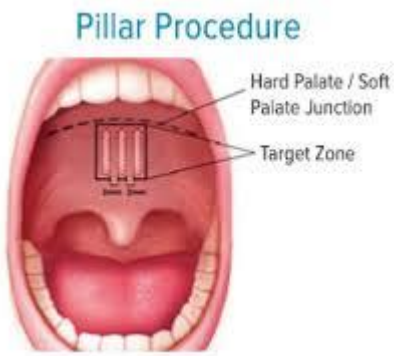
- Studies report varying degrees of compliance (>4 hours use/night defines compliance)
  - After one year: up to 50% are noncompliant
  - After two years: up to 67% are noncompliant

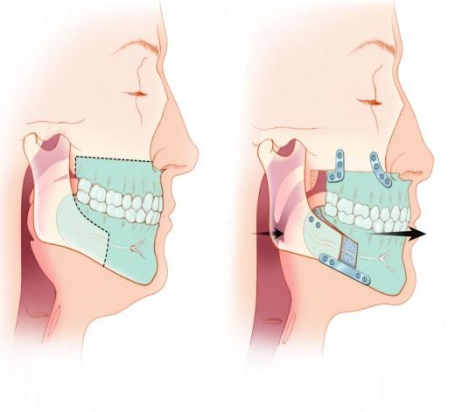
- Close, early follow-up with attention to education, “troubleshooting” and symptoms can help increase compliance rates


Bob finally gets his mask to fit right!
sb

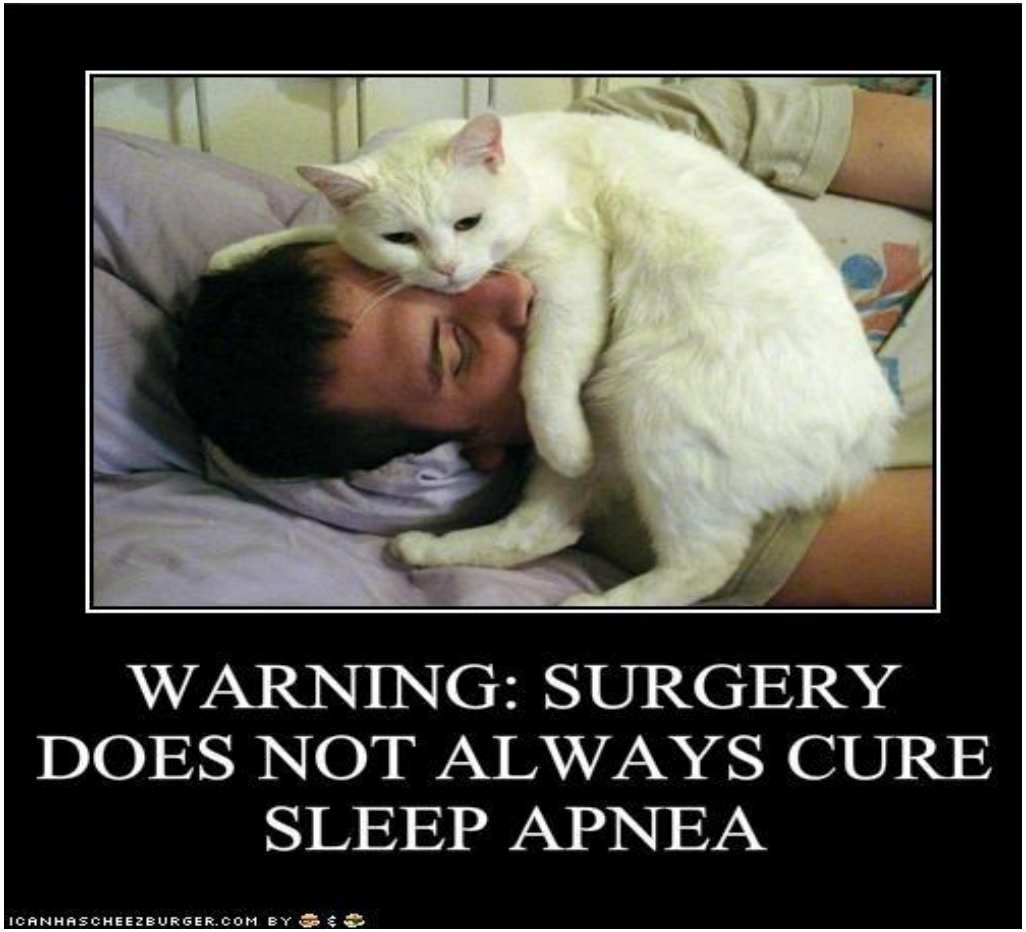
Treatment Options for Those Intolerant of CPAP



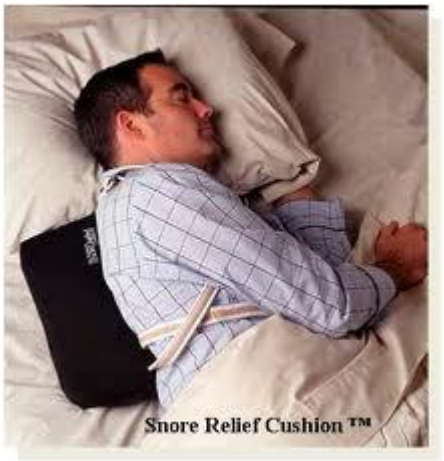




Interventions Other Than CPAP Don't Always Work



Less Traditional Treatment Options



So What About Mortality?

- Desaturations, overnight arousals (resulting from airway closure) and elevated AHI are all risk factors for:
  - Impaired glucose tolerance
  - Pulmonary hypertension
  - Hypertension
  - Polycythemia
  - Cardiac disease, CHF
  - Arrhythmias
  - Stroke
  - Sudden death

Other Bad Things About OSA

- Excessive Daytime Somnolence (EDS) results in inattention and can result in impaired daily function
- MVA's are 2-3x more common in people with OSA than those without OSA

All-cause Mortality Data for Untreated OSA

Degree of Sleep Apnea	AHI	Percent
None	0 – 4	100%
Mild	5 – 14	150%
Moderate	15 – 30	175%
Severe	31+	375% - 400%

Case Study #1

- 45 male with BMI = 33
- Witnessed apneas, daytime sleepiness and morning headaches
- Sleep study reveals an AHI = 37
- Intolerant of CPAP
- Manages to lose weight such that BMI = 29 after 15 months
- Reports no further symptoms

Case Study #2

- 36 hypertensive male diagnosed with OSA (AHI = 24)
- Meets with ENT who performs septoplasty and turbinate reduction
- Follows up with PCP 2 years later
- Still with hypertension but otherwise no symptoms

Case Study #3

- 51 male on CPAP for OSA (compliant) x 3 years
- Follows up with PCP and indicates recent worsening of daytime sleepiness

Case Study #4

- 29 female with daytime sleepiness
- Dentist prescribes a mandibular advancement device (MAD)
- She follows up with dentist and indicates that her sleepiness has improved

Case Study #5

- 57 obese, hypertensive male reports to PCP symptoms of:
  - Daytime fatigue
  - Memory difficulty
  - Poor concentration
- PCP recommends sleep study
- Never performed
- No follow up

Thank You – Questions?