

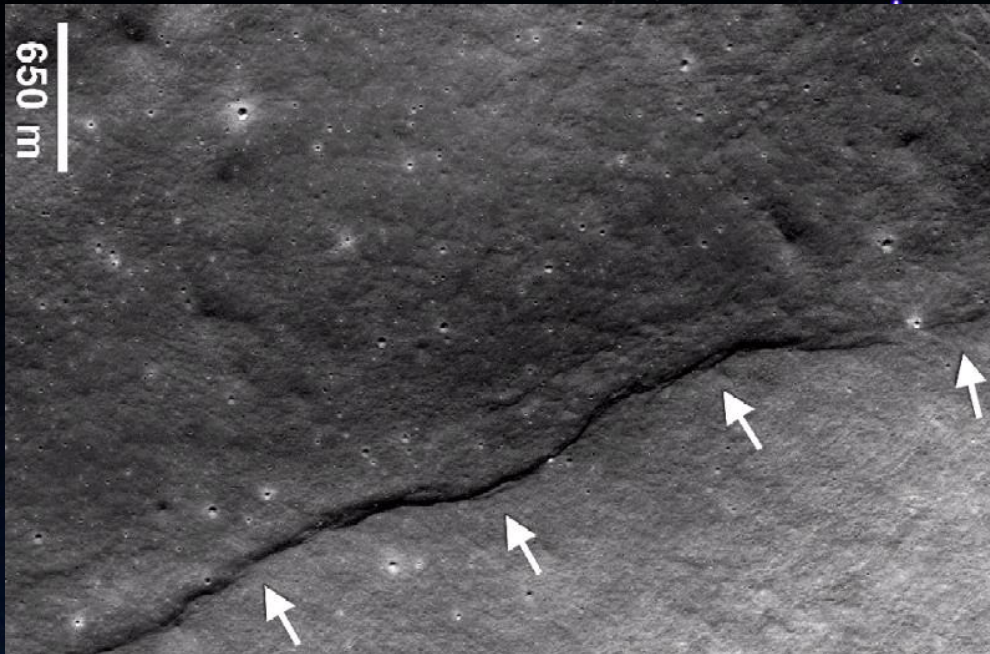


# IS MOON SHRINKING?

Dr. Hemang Shah

2/3/11

# Journal of Astrophysics & Astronomy



Indian Academy  
of Sciences  Springer 

Over recent geologic time, as the lunar interior cooled and contracted the entire Moon shrank by about 100 m. As a result its brittle crust ruptured and thrust faults (compression) formed distinctive landforms known as lobate scarps. In a particularly dramatic example, a thrust fault pushed crustal materials (arrows) up the side of the farside impact crater named Gregory (2.1°N, 128.1°E). By mapping the distribution and determining the size of all lobate scarps, the tectonic and thermal history of the Moon can be reconstructed over the past billion years. (Courtesy: NASA/GSFC/Arizona State University/Smithsonian)



Dr. Hemang Shah, MD  
7/10/2012

# SNORING: MORE THAN EARFUL

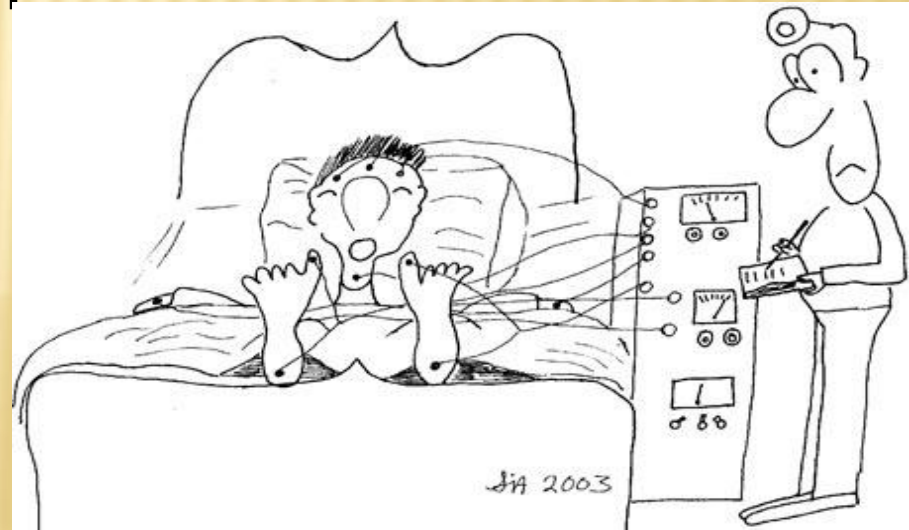
# OBJECTIVES

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- ✘ I love learning (teaching is the best way to learn)
- ✘ Patient knows disease the best
  
- ✘ Confession:
  - + I am not a Sleep Specialist (but I do interpret sleep studies at ARMC)
  - + I am not here to drum up the business
  - + National Sleep Foundation, Google, YouTube

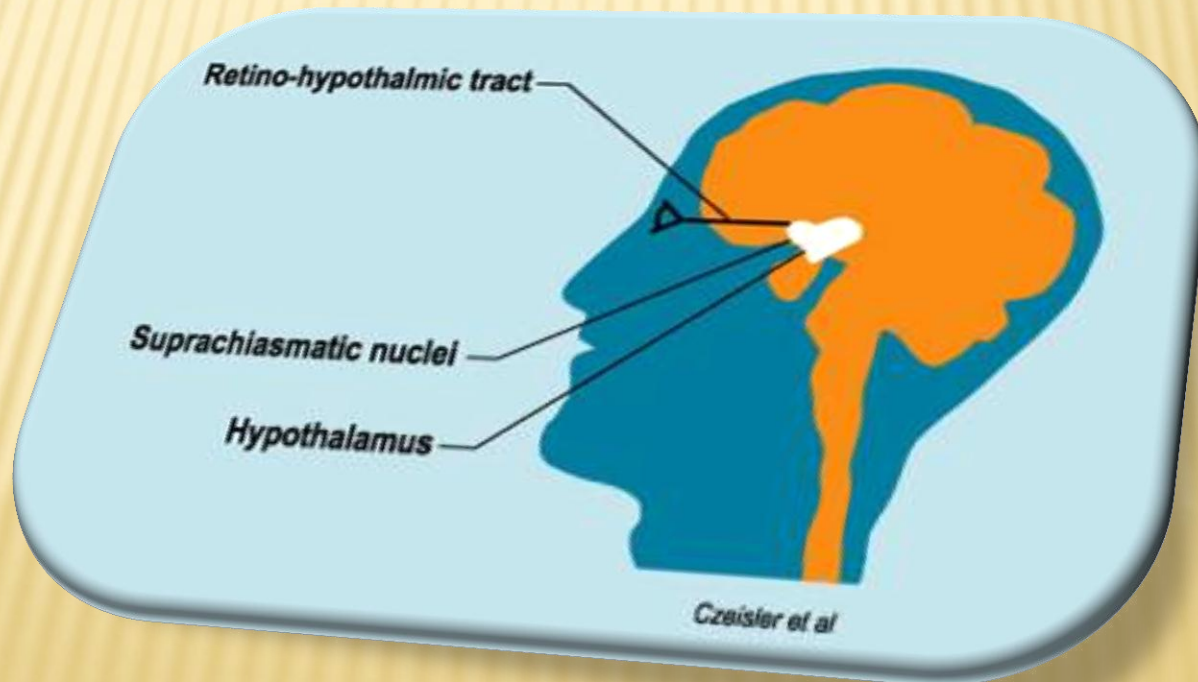
# SLEEP

- ✘ Define “Sleep”
- ✘ Sleep is a reversible, physiological state with reduced motility and reduced responsiveness to sensory stimuli.
- ✘ Wakefulness and sleep stages are defined on the basis of EEG appearance.

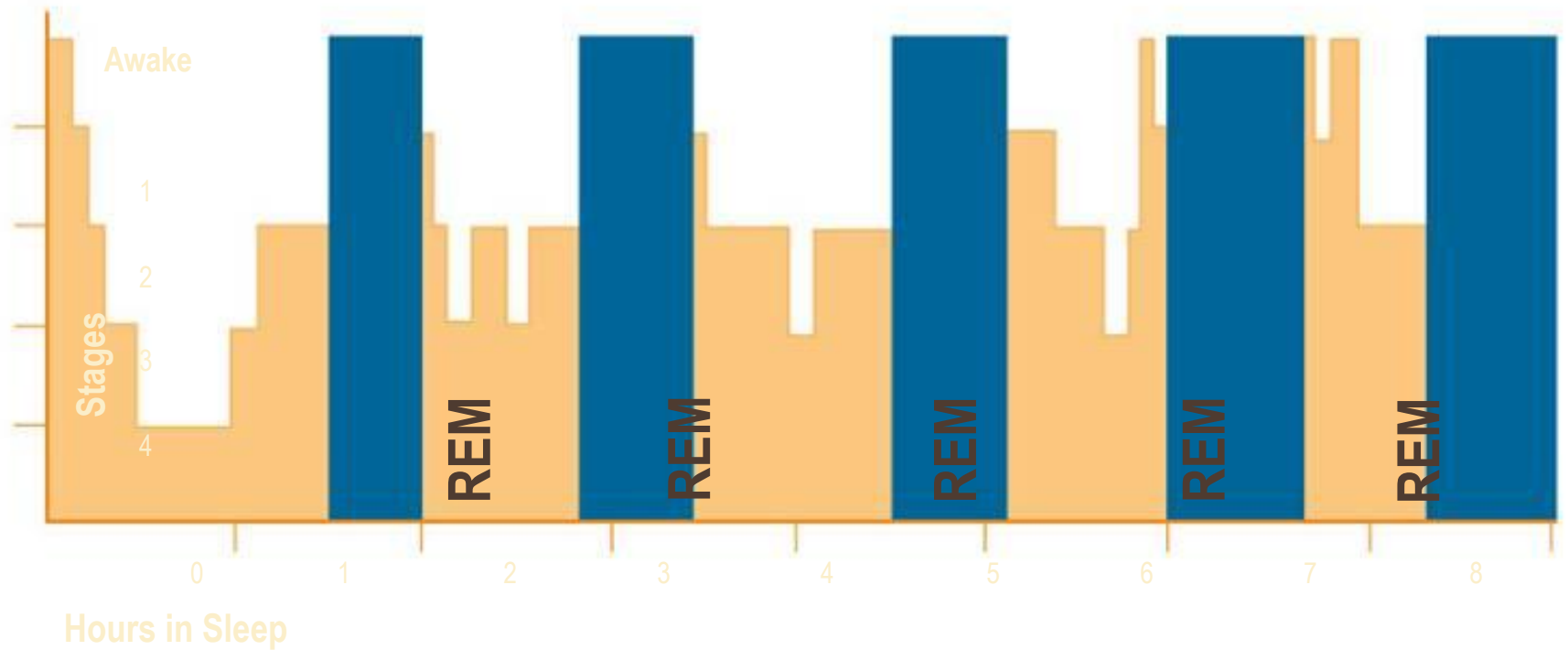


# OUR INTERNAL CLOCK

- ✘ The biological clock resides in the brain
- ✘ It helps regulate when we feel sleepy and when we are alert
- ✘ Circadian rhythm

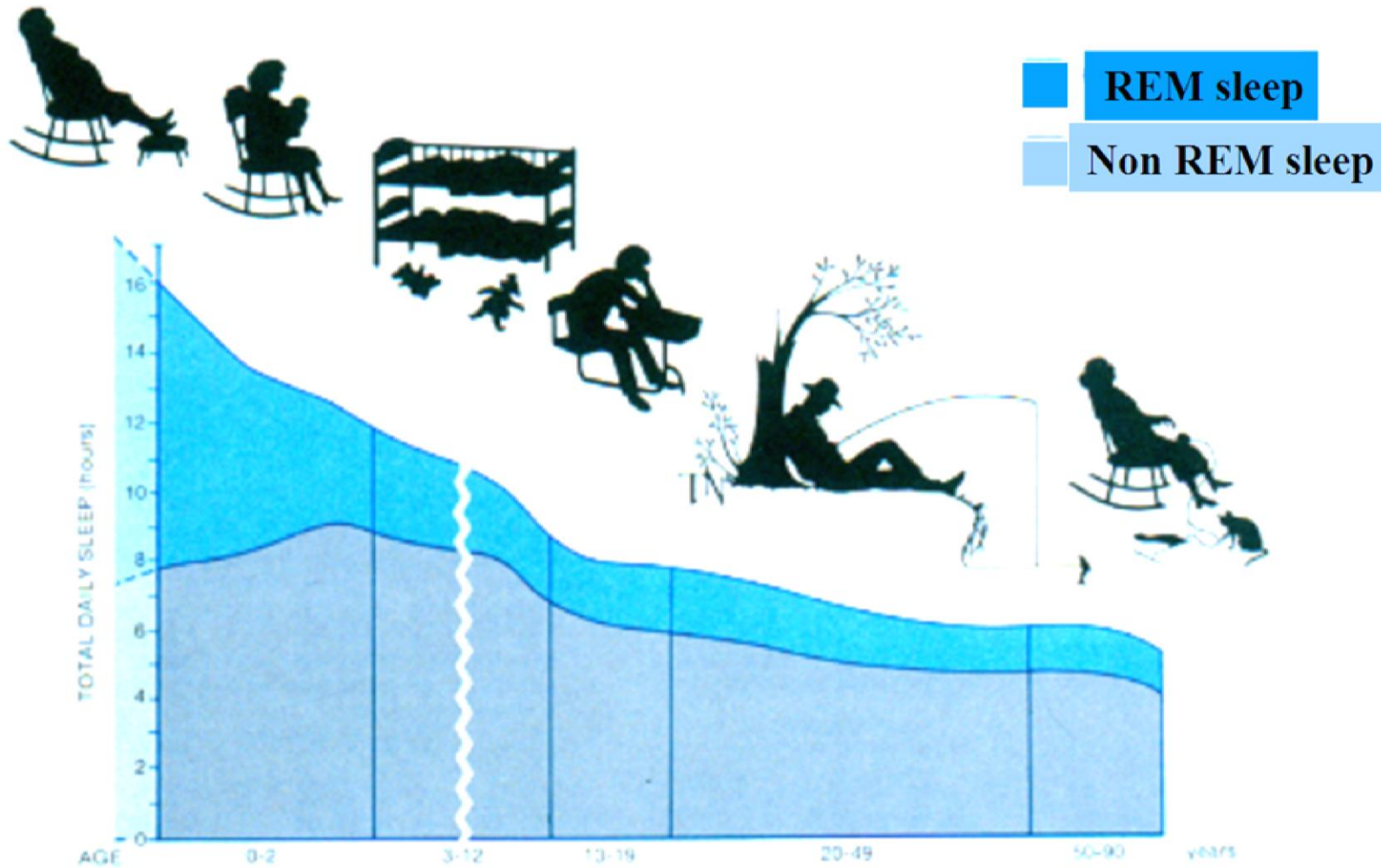


# THE SLEEP CYCLE IN ADULTS



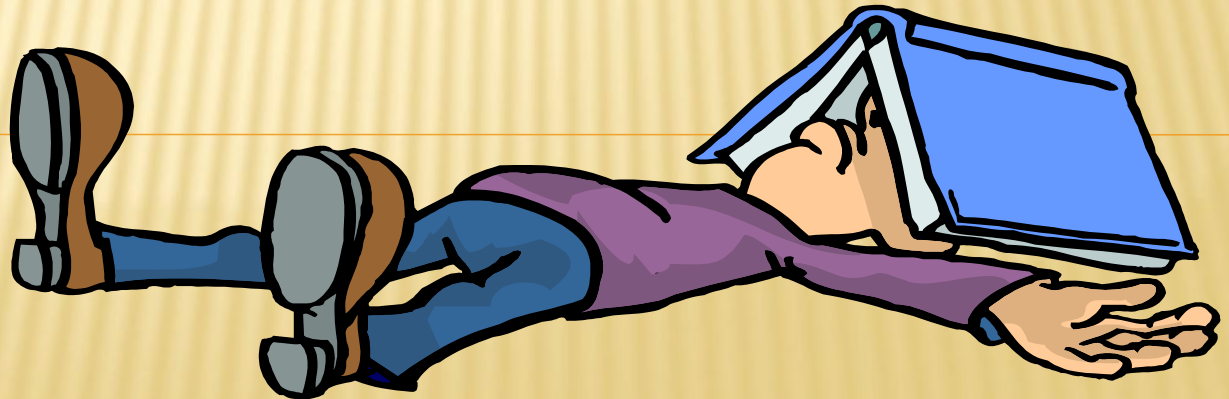
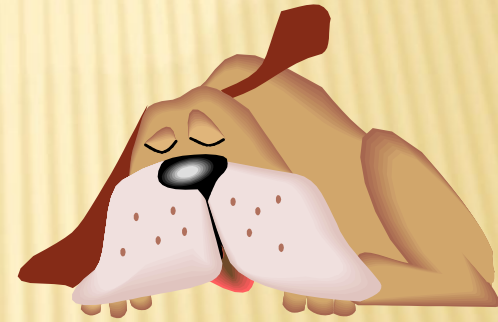
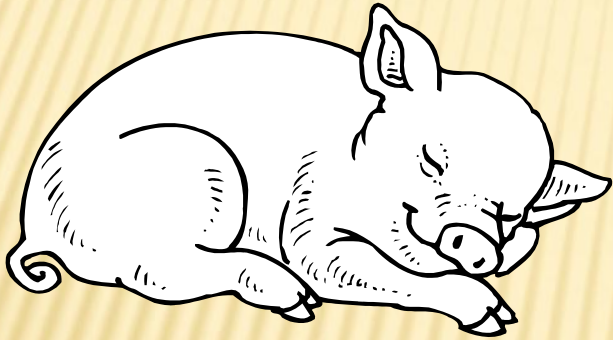
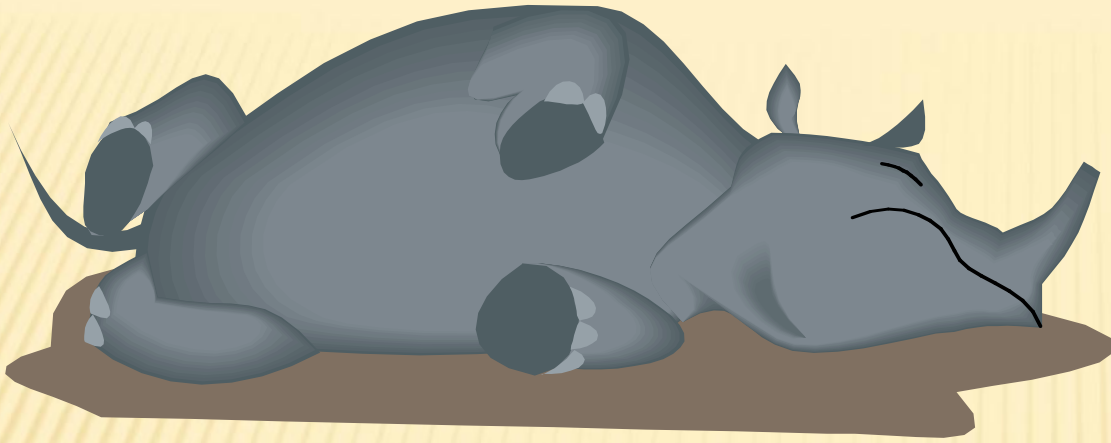


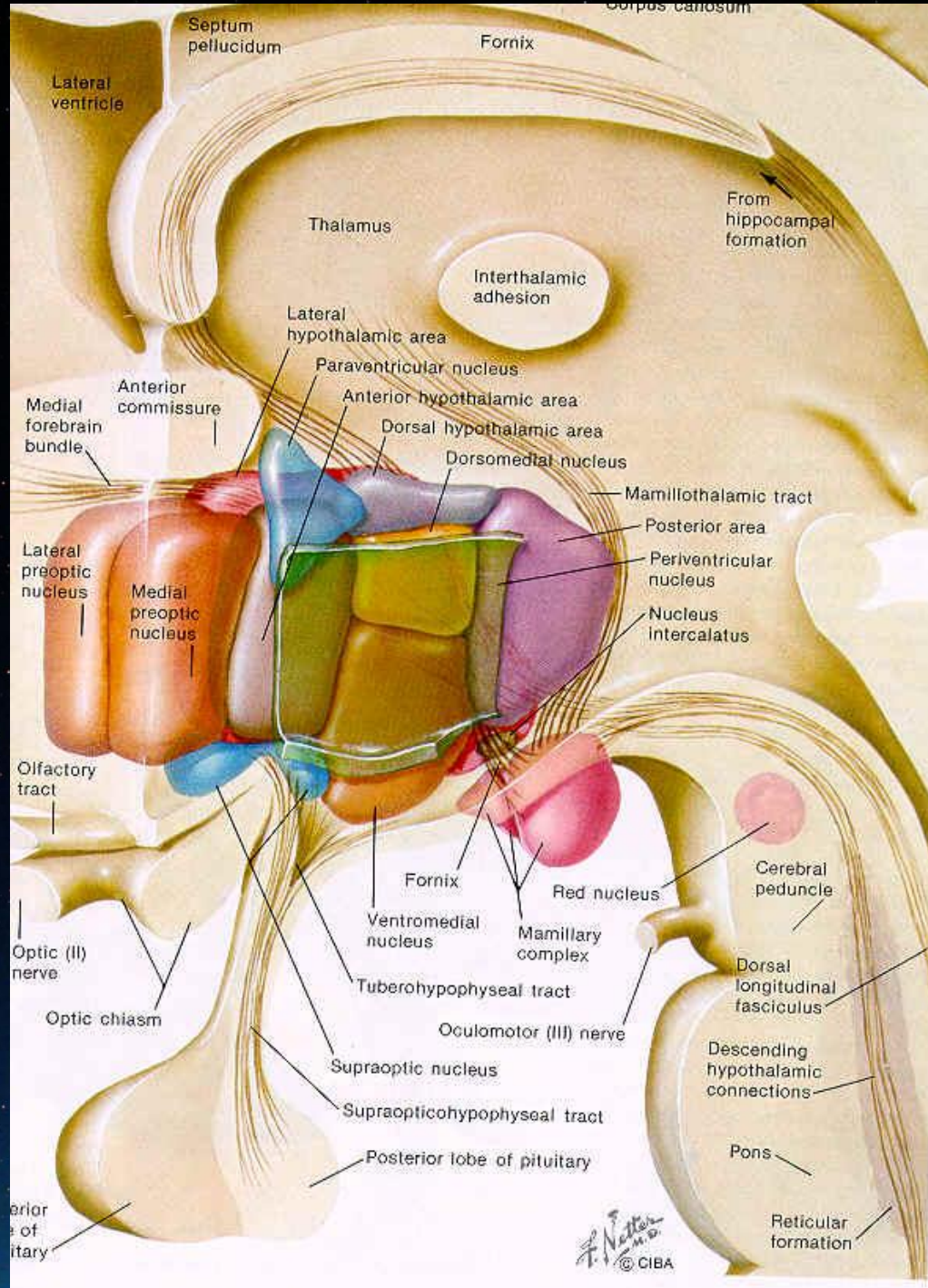
# ONTOGENY OF HUMAN SLEEP

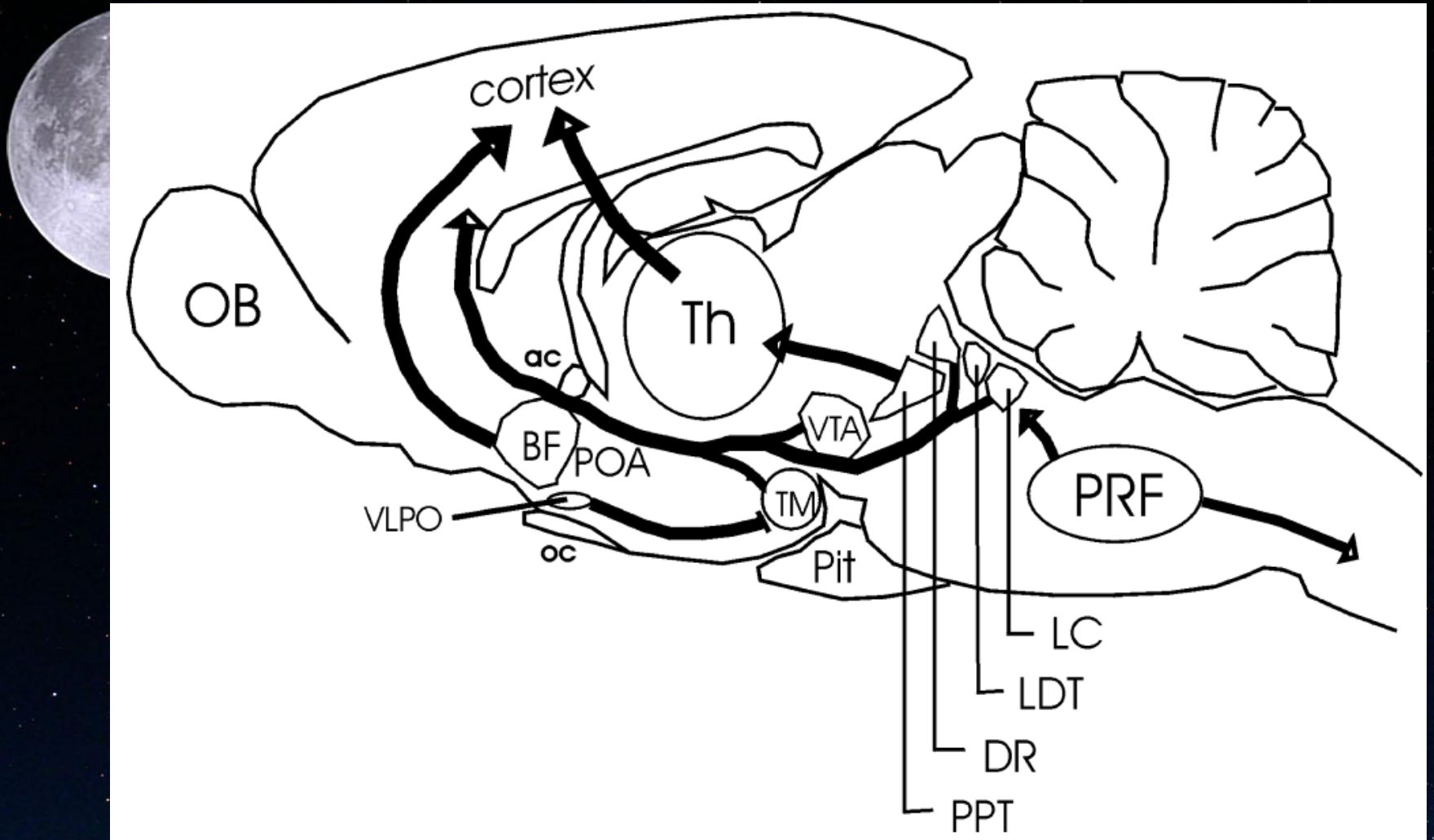




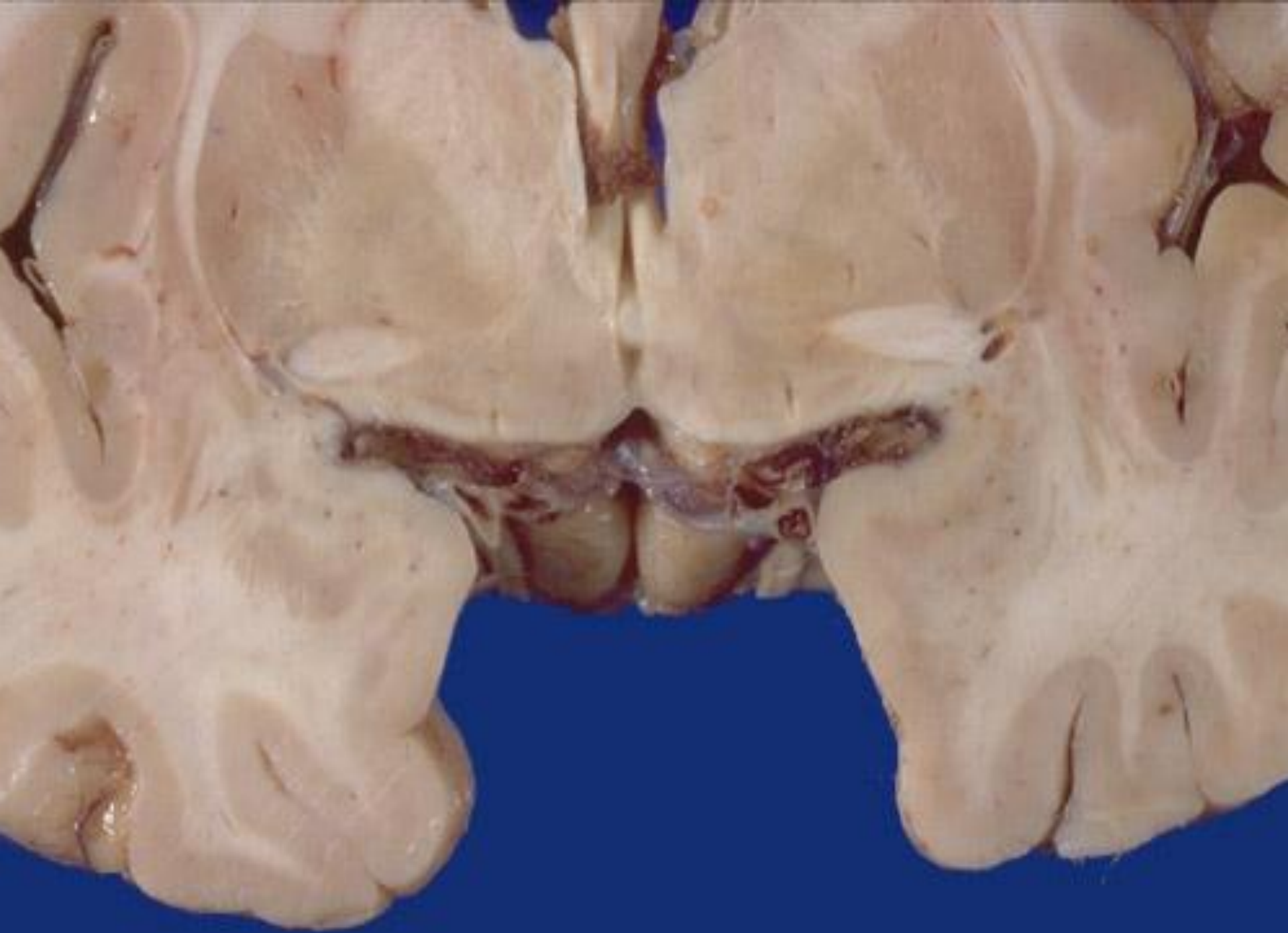
How does  
sleep  
happen?







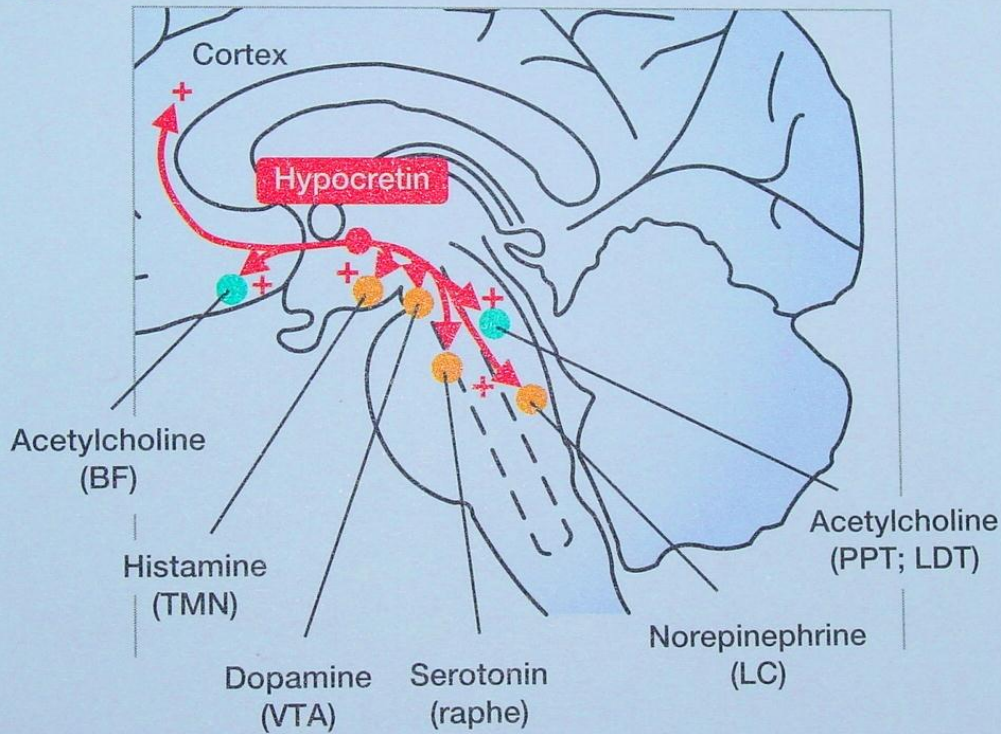
OB=olfactory bulb, Th=thalamus, ac=anterior commissure, oc=optic chiasm, Pit=pituitary gland, BF=basal forebrain, VLPO=ventrolateral preoptic nucleus, POA=preoptic area, TM=tuberomammillary nucleus, PPT=pedunculo-pontine nucleus, DR=dorsal raphe, LDT=laterodorsal tegmental nucleus, LC=locus coeruleus, PRF=pontine reticular formation.





# OREXIN (A&B) /HYPOCRETIN (1&2)

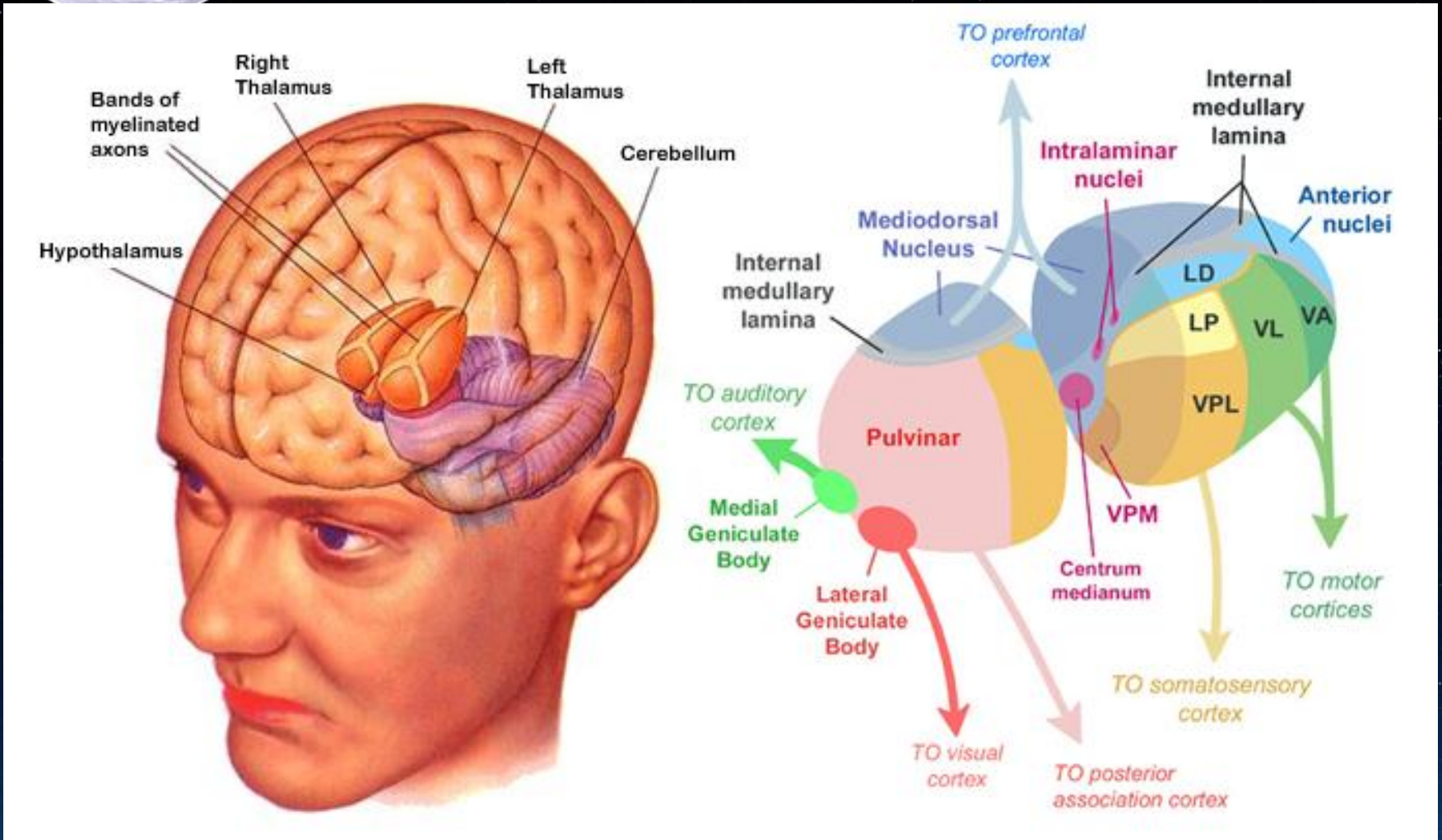
B.

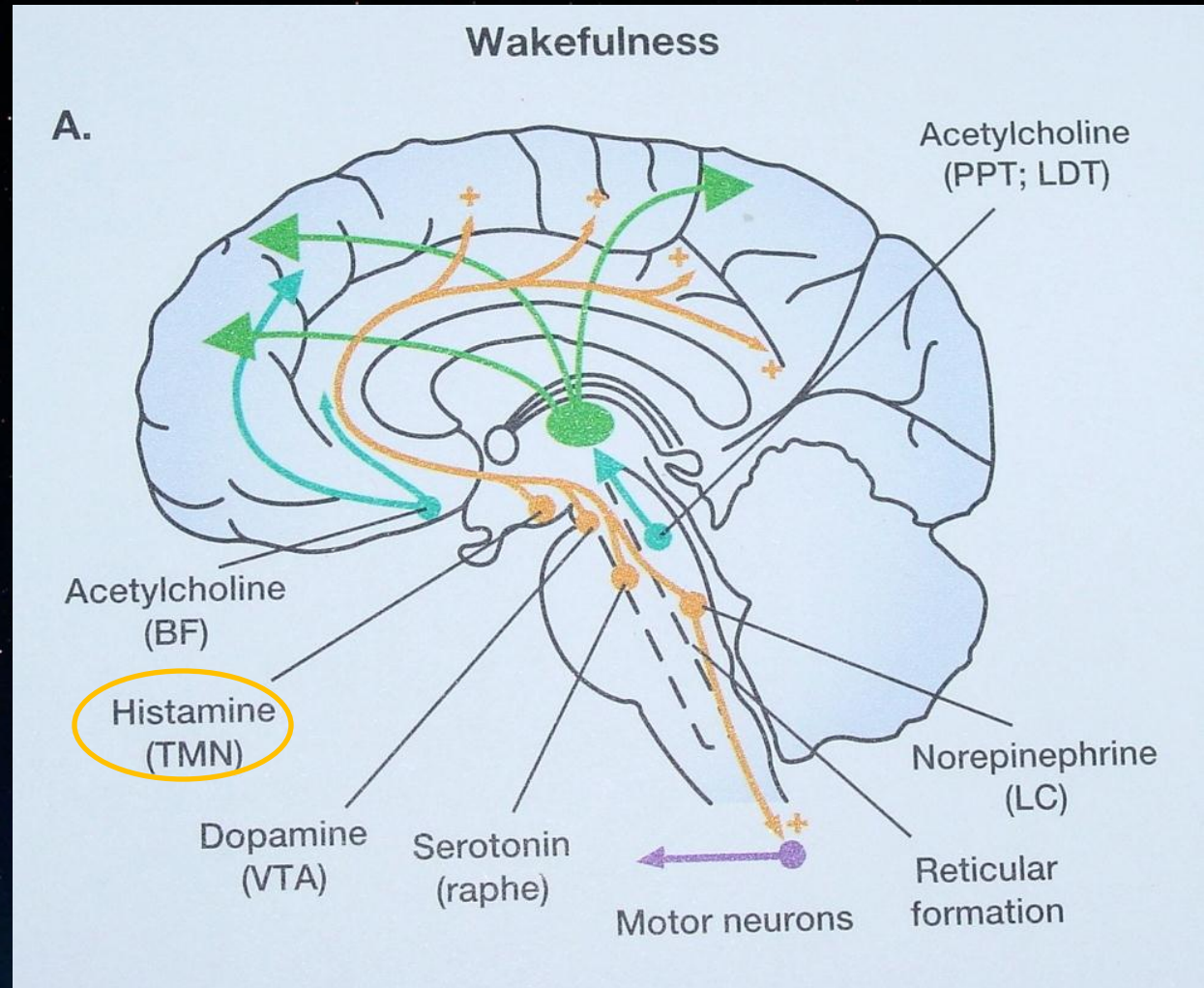


- ✗ Neurons producing orexins play an essential role in stabilizing wakefulness and sleep.
- ✗ Produced by neuron in the lateral and posterior hypothalamus
- ✗ 90% of narcoleptics w cataplexy: undetectable orexin in CSF



# THALAMUS



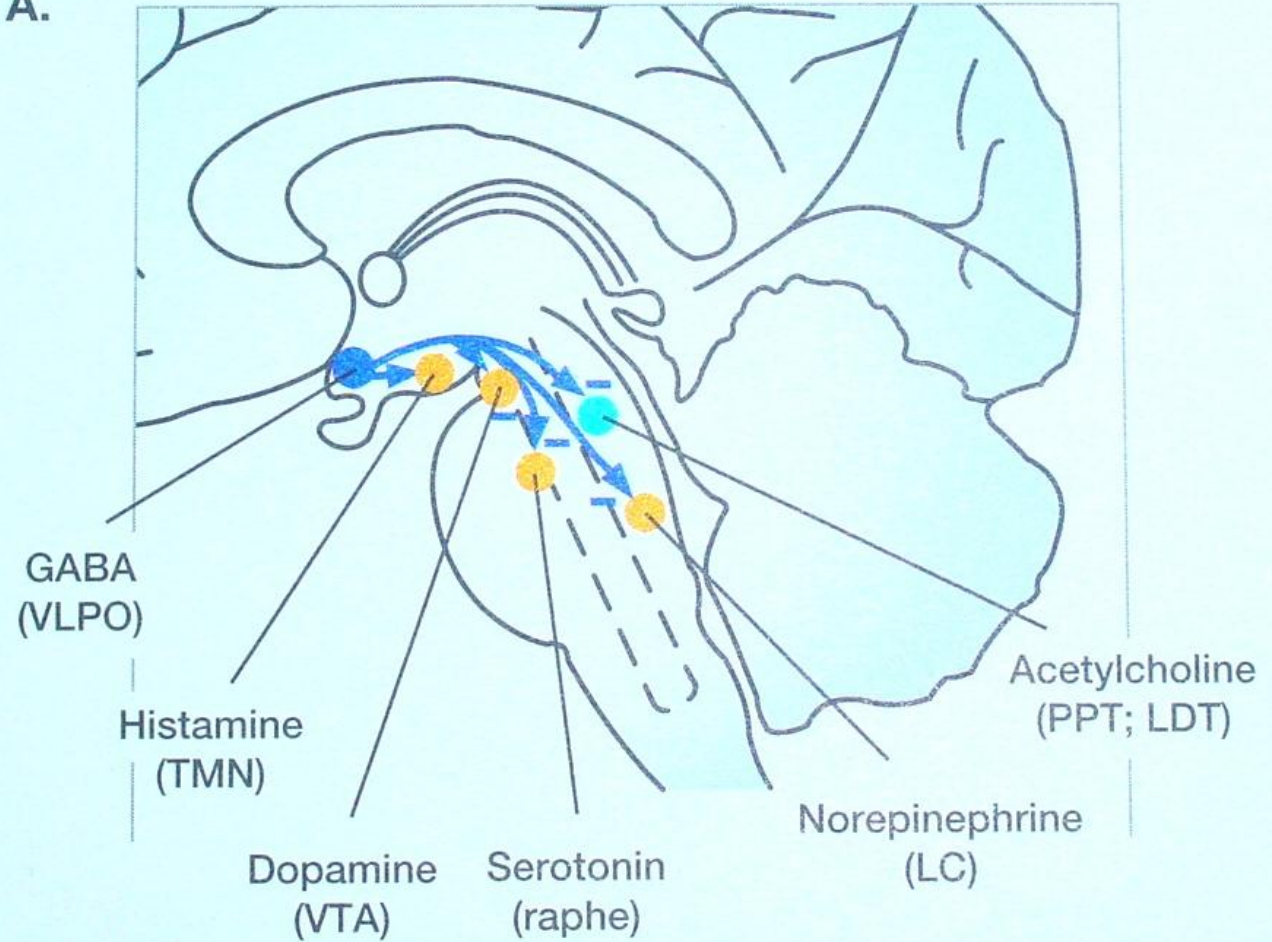


BF = basal forebrain; TMN = tuberomammillary nucleus; VTA = ventral tegmental Area; LC = locus coeruleus; PPT = pedunculopontine nucleus; LDT = laterodorsal tegmental nucleus



## NREM Sleep

A.

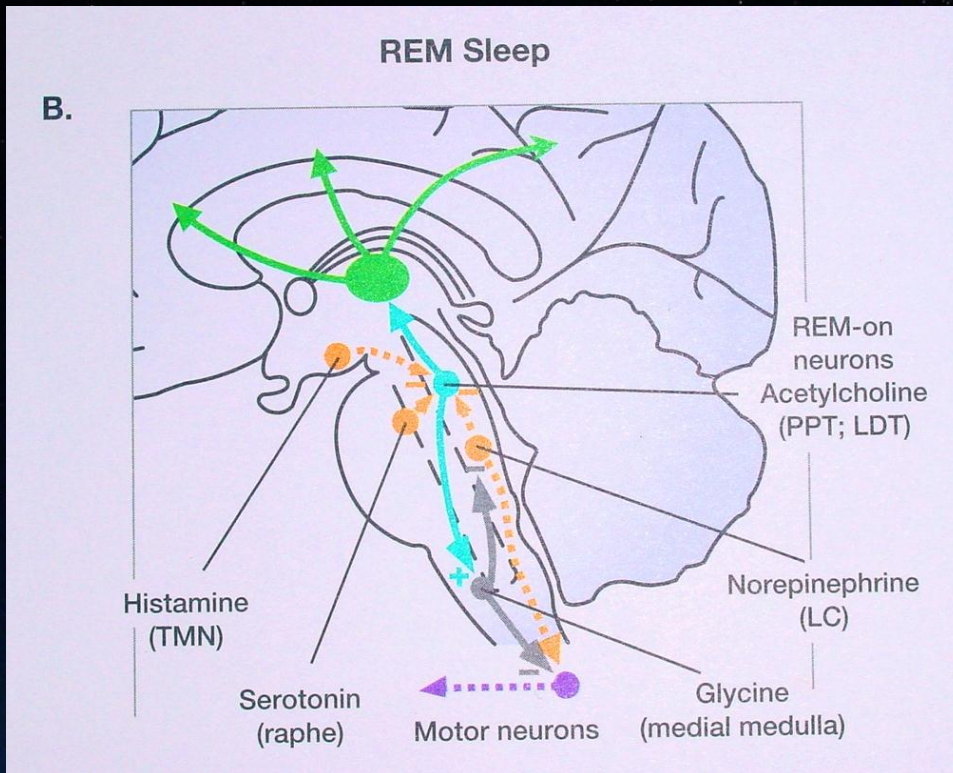


GABA =  $\gamma$ -aminobutyrate; VLPO = ventrolateral preoptic area; TMN = tuberomammillary nucleus; LDT = laterodorsal tegmental nucleus





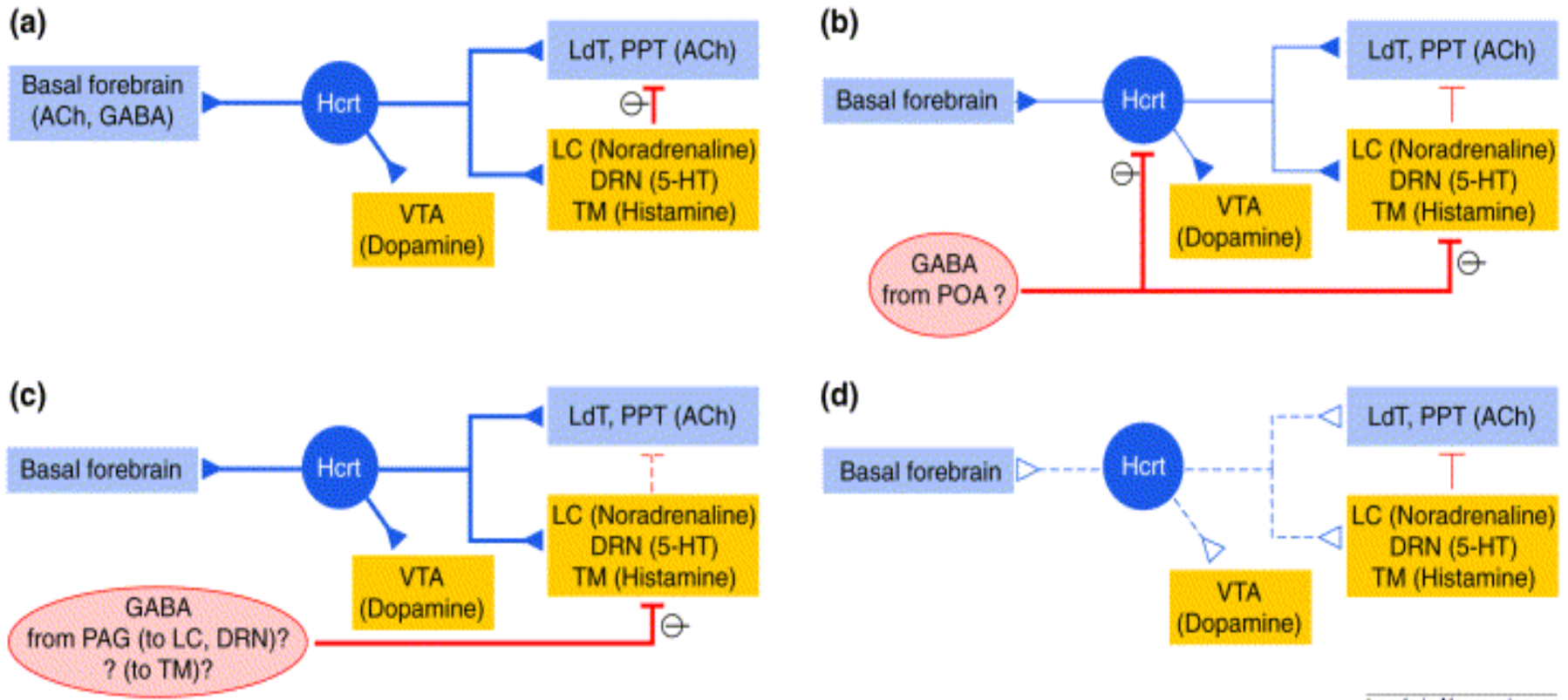
# SYSTEMS THAT CONTROL REM SLEEP



- ✘ Controlled by an interaction of cholinergic and aminergic brainstem neurons
- ✘ Neuron in/near the pedunculo-pontine and laterodorsal tegmental areas (PPT/LDT) neurons: active
- ✘ Atonia: dorsal pontine neuron through polysynaptic descending pathway (Glycine)



# REGULATION OF SLEEP (THE POTENTIAL INFLUENCE OF HYPOCRETIN/OREXIN)



(a) during waking, (b) during non-REM sleep, (c) during REM sleep, (d) narcolepsy

# CNS Variations between waking and sleep states

Parameter	Waking State	Slow-wave Sleep	REM Sleep
Blood Flow	Neurogenic and Chemical Control	Heterogenous Changes	Increased 30%-50% Phasic Oscillations
Brain Temperature	Related to Metabolic Rate	Decreased	Increased
Intracranial Pressure	Stable	Stable	Increased Phasic Oscillations

# BODY TEMPERATURE REGULATION DURING SLEEP

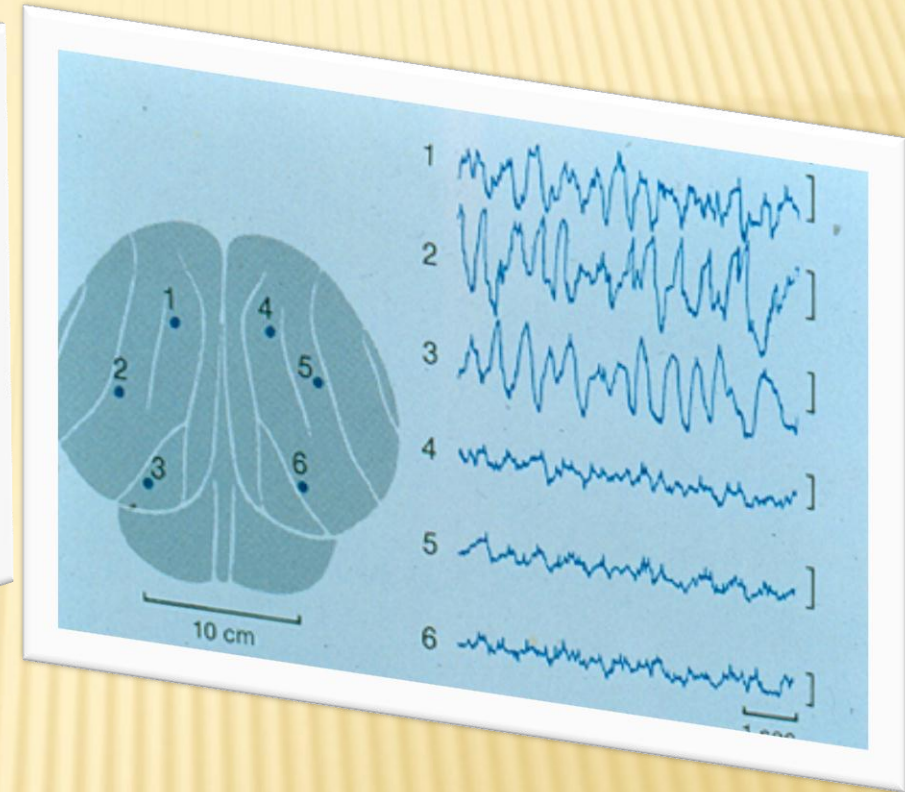
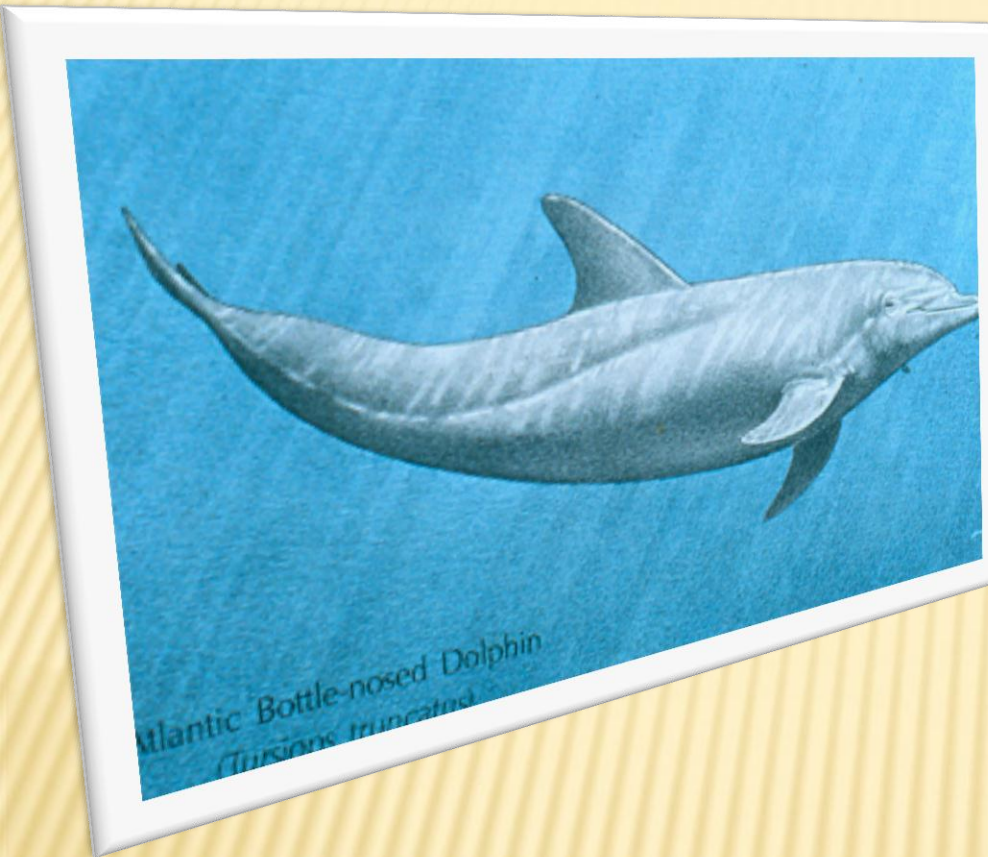
Parameter	Waking State	Slow-wave Sleep	REM Sleep
Regulation	Homeothermic	Homeothermic	Poikilothermic Temperature varies positively with ambient temperature
Sweating	Present	Present	Absent
Shivering	Present	Present	Absent
Thermoregulatory Vasomotor Activity	Present	Present	Absent

# THE PHYLOGENY OF SLEEP

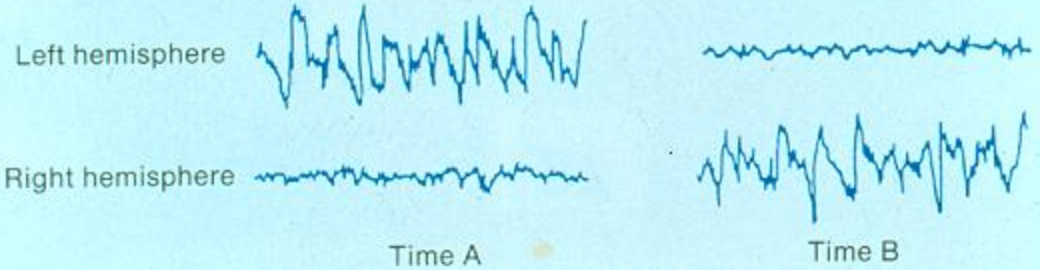


Sea Otter Sleeping “Moored” to a Float of Algae

<b>Mammal</b>	<b>Total Daily Sleep Time (in hours)</b>
Giraffe	1.9
Roe deer	3.0
Asiatic elephant	3.1
Pilot whale	5.3
Man	8.0
Baboon	9.4
Domestic cat	12.5
Laboratory rat	13.0
Lion	13.5
Eastern chipmunk	15.8
Little brown bat	19.9



Unihemispheric sleep in the dolphin



# SLEEP IN REAL WORLD

---

- ✘ Sleep is 1/3 of our life (?)
- ✘ Less sleep = more time to work (make money) / enjoy life?
- ✘ Sleep disorders (>80) and poor sleep habits contribute to accidents, impaired work productivity and academic performance, reduced quality of life, poor health, and even death.



# SLEEPING IS “COOL”

---

- ✘ More productive, joyful, inspired, great ideas, dream – get enough sleep
- ✘ Sleep is as essential as good nutrition, exercise, water, air for optimal health.
- ✘ Sleep improves “brain power”. [http://healthysleep.med.harvard.edu/video/sleep07\\_stickgold\\_learning](http://healthysleep.med.harvard.edu/video/sleep07_stickgold_learning)
- ✘ Sleep is the best meditation. [Dalai Lama](#)
- ✘ A man is nonviolent, nondestructive, not bothersome to others, when he is asleep.

# WOMEN'S SLEEP

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WoMEN, sHE, feMALE...

- ✘ Have unique physiology (**MEN**archy, **MEN**struation, **MEN**opause...) that can disrupt sleep
- ✘ Women worries, stress, anxiety and care giving responsibilities.
- ✘ Are more likely than men to report poor sleep
- ✘ Are more likely to experience daytime sleepiness
- ✘ Are three times more likely to suffer insomnia

# SNORING

---

- ✘ Partial blockage of airway causing abnormal breathing and sleep disruptions
- ✘ 90 million; 37 million experience on a regular basis
- ✘ Snoring explained <http://www.nlm.nih.gov/medlineplus/ency/anatomyvideos/000119.htm>
- ✘ Everybody snores [http://www.youtube.com/watch?feature=player\\_embedded&v=\\_vdYSZ4YGnU](http://www.youtube.com/watch?feature=player_embedded&v=_vdYSZ4YGnU)
- ✘ “Doc, I have snoring problem”

# JANE'S STORY



- × 45 years old executive, mother of 3
- × Stress at work – ↓ economy/business
- × Relax – wine at night with husband
- × Loves soda
- × Early morning headache, mild HTN, borderline DM

# JANE'S SLEEPLESS NIGHTS

---

- ✘ Doc, I can't fall a sleep (take furosemide, toss and turn, watch TV, check e-mails/facebook on phone, melatonin, husband is a restless sleeper)
- ✘ Once, I fall a sleep with 3 pillows, wake up 5 times to go pee, felt choking, sweating, gasping, acid in the mouth.
- ✘ When wake up – tiered, hangover, cranky, heavy head.

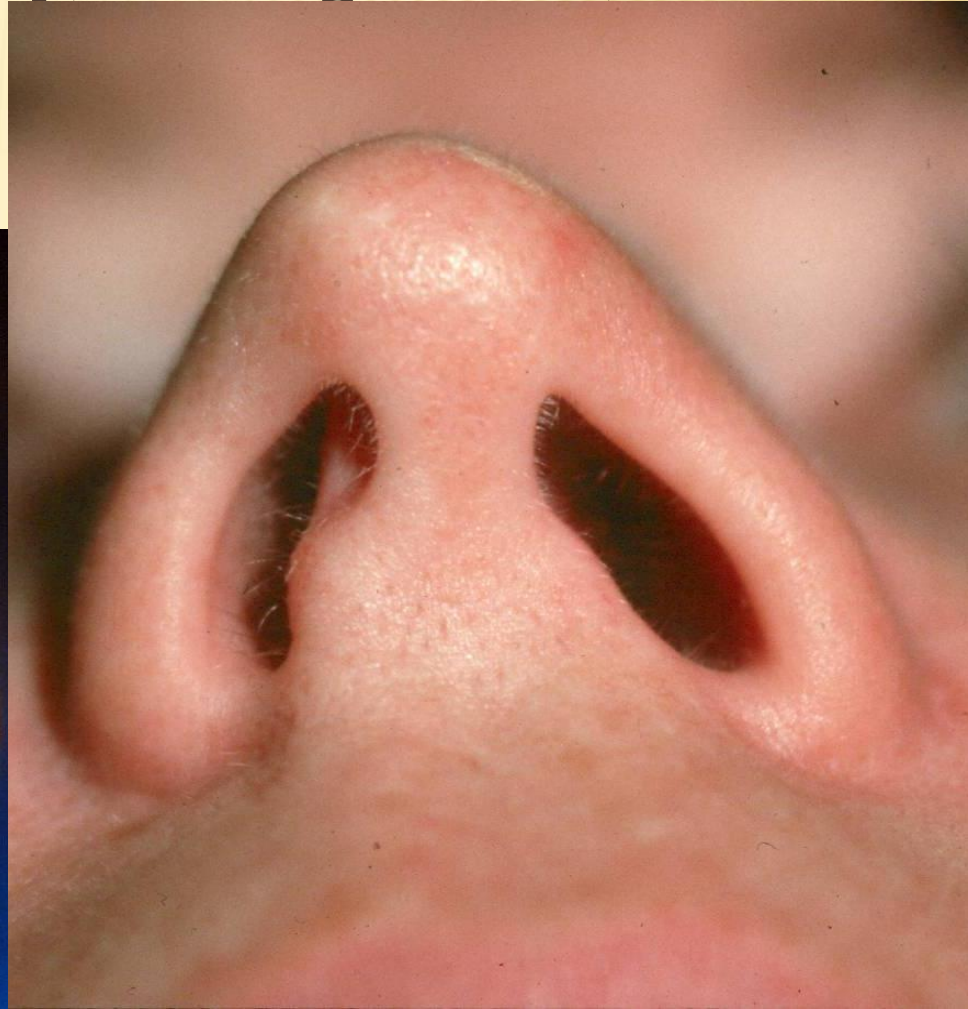
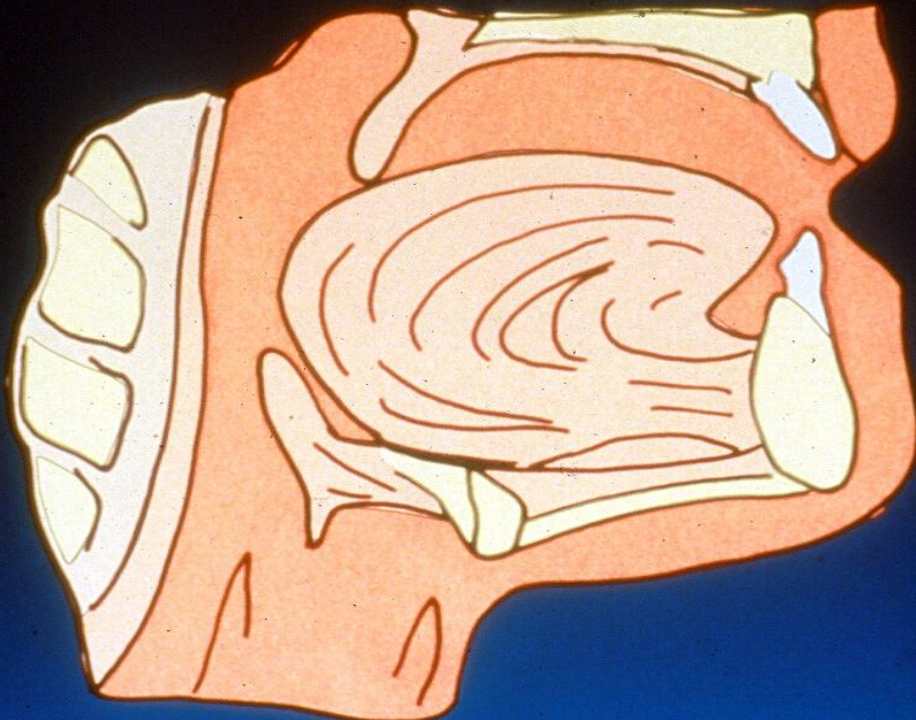
# JANE'S SLEEPY DAYS

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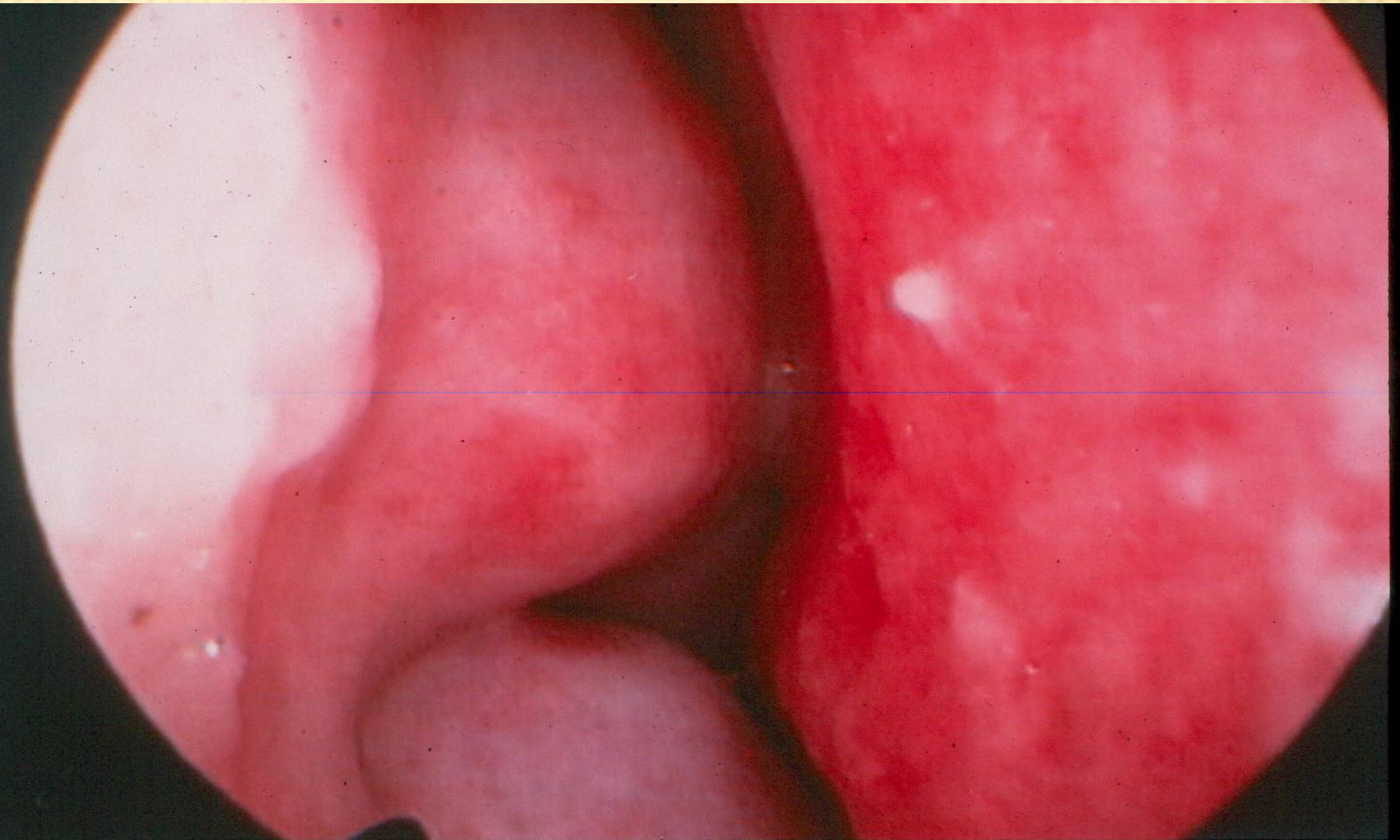
- ✘ Drive 1 hr to Raleigh (miss exit – don't know why)
- ✘ Go on “rumble strips” at least 3 times, Ppl honk, to keep me in lane, Doze off at traffic light
- ✘ Difficult to pay attention at work, poor concentration, make small mistakes.
- ✘ Weekends – sleep in late and take afternoon naps, involuntary nap after lunch ;)

# JANE'S PHYSICAL EXAM

- ✘ BMI 34, central obesity, neck girth 17,

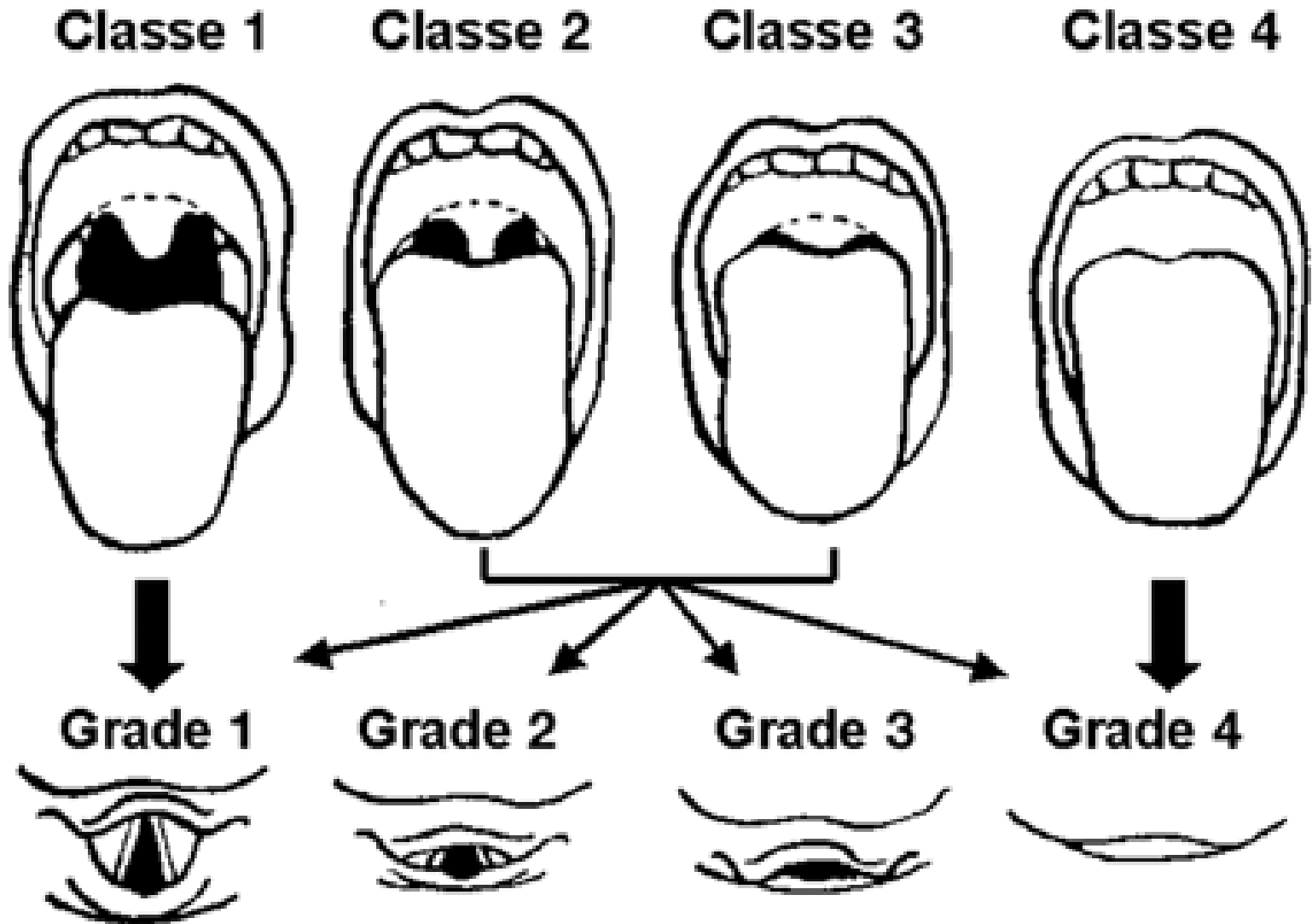


# NASAL SEPTUM AND TURBINATE





# ORAL CAVITY



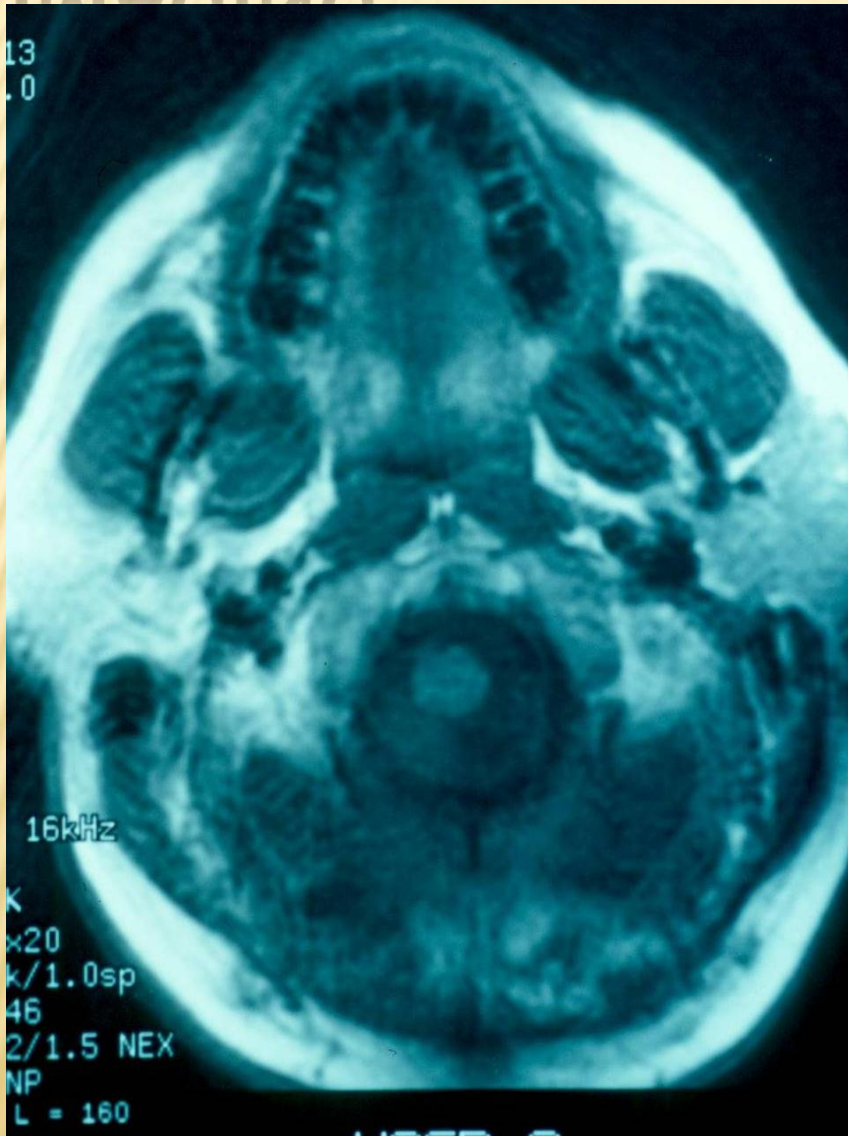




# OVERBITE

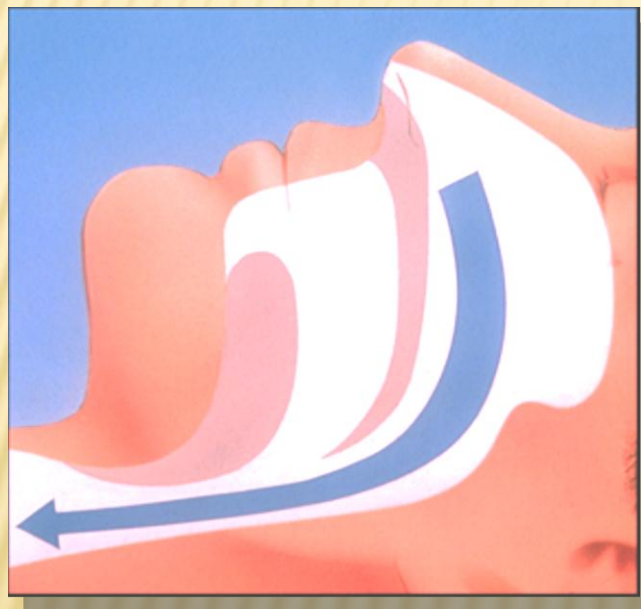


# IMAGING

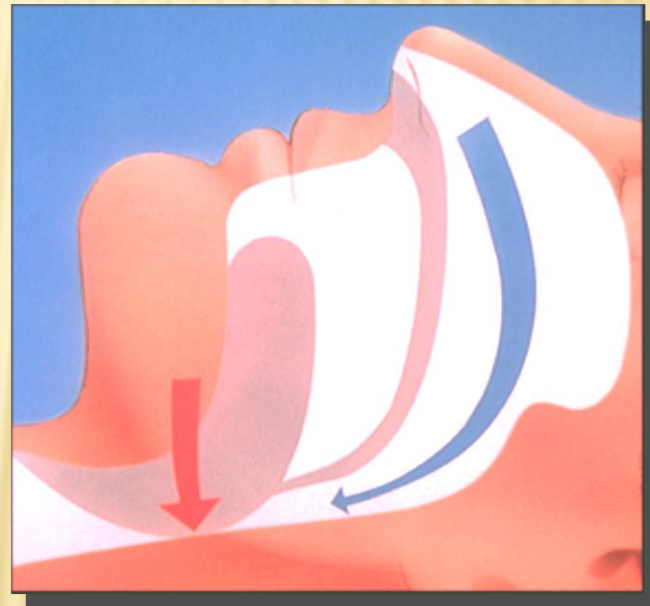


# WHAT'S HER PROBLEM

- ✘ OSA: Obstructive Sleep Apnea / Sleep Disordered Breathing (4/100, 2/100)
- ✘ Pauses in breathing last for 10 sec



Normal



Jane

- ✘ Let's look at her history again.

# DROWSY DRIVING

- ✗ True / False: People more than age 40, are more at risk of falling asleep behind wheel
- ✗ False: 20 years old, [http://www.youtube.com/watch?feature=player\\_embedded&v=NsXdZK1CC98](http://www.youtube.com/watch?feature=player_embedded&v=NsXdZK1CC98)
- ✗ Cost of drowsy driving
- ✗ Signs
  - + Don't remember last few miles, wave in lane, drifting and jerking back, loose focus, miss traffic signs, head nods, frequent yawning, going on rumble strip.
- ✗ Things that you can do:
  - + Need to slap yourself, open windows, splash of water, turn up the radio
  - + Plan ahead, avoid meds, alcohol, take rest of life, spread the word.
  - + [www.drowsydriving.org](http://www.drowsydriving.org)

# THE LINK BETWEEN OSA ACCIDENTS

- ✘ Motor vehicle crashes are the leading cause of injury morbidity and mortality
- ✘ In the US, more than 40,000 deaths and 6 million injuries every year<sup>1</sup>
- ✘ Sleep-related accidents comprise 15-20% of all motor vehicle crashes<sup>2</sup>



<sup>1</sup> US Census Bureau. *Statistical Abstract of the United States*. 119<sup>th</sup> end. 1999, No. 225 (146) and No. 1041 (645)

<sup>2</sup> Young T. Blustein J, Finn L, et al. Sleep Apnea, sleepiness, and driving risk. *Am J Respir Crit Care Med*, 1994; 150: 1463-73



# PATHOLOGIC BREATHING CYCLE: OSA



Wakefulness

Airway Patency  
Compensation

Sleep

Decreased  
Compensation

Airway  
Collapse

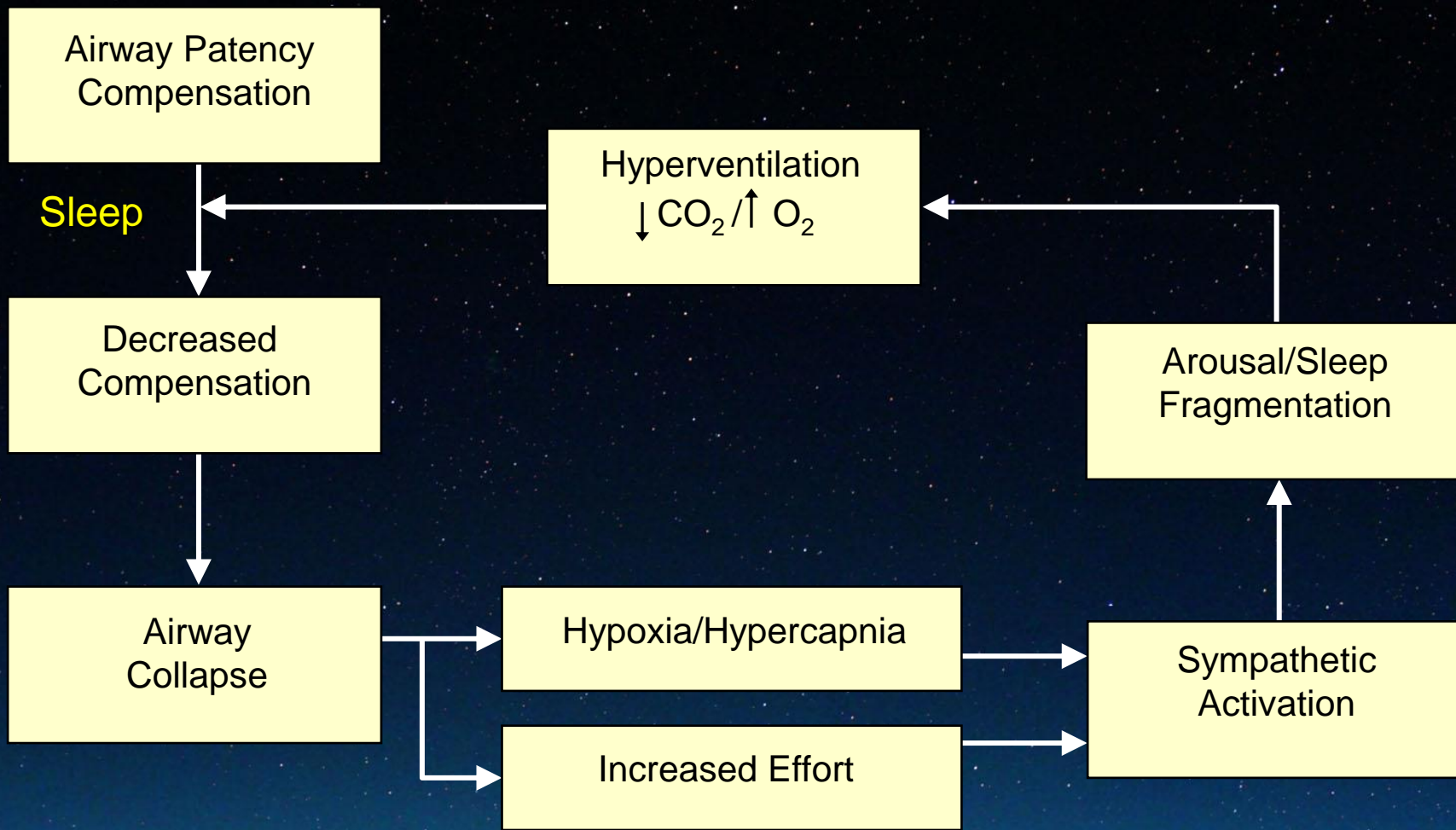
Hyperventilation  
 $\downarrow$  CO<sub>2</sub> /  $\uparrow$  O<sub>2</sub>

Arousal/Sleep  
Fragmentation

Hypoxia/Hypercapnia

Increased Effort

Sympathetic  
Activation



# DO I HAVE SLEEP APNEA?

## Snore +

- ✘ Sexual dysfunction
- ✘ Frequent urination at night
- ✘ Poor judgment or concentration
- ✘ Irritability
- ✘ Memory loss
- ✘ High blood pressure
- ✘ Depression
- ✘ Obesity
- ✘ Crowded airway
- ✘ Snoring, interrupted by pauses in breathing
- ✘ Gasping or choking during sleep
- ✘ Restless Sleep
- ✘ Excessive sleepiness or fatigue during the day
- ✘ Large neck size ( more than 17" in men, more than 16" in women)
- ✘ Morning headache

# HEALTH CONSEQUENCES OF UNTREATED OSA

## Near Term

- ✘ Automotive Accidents
- ✘ Excessive Sleepiness
- ✘ Memory and Performance Deficits
- ✘ Decreased Quality of Life

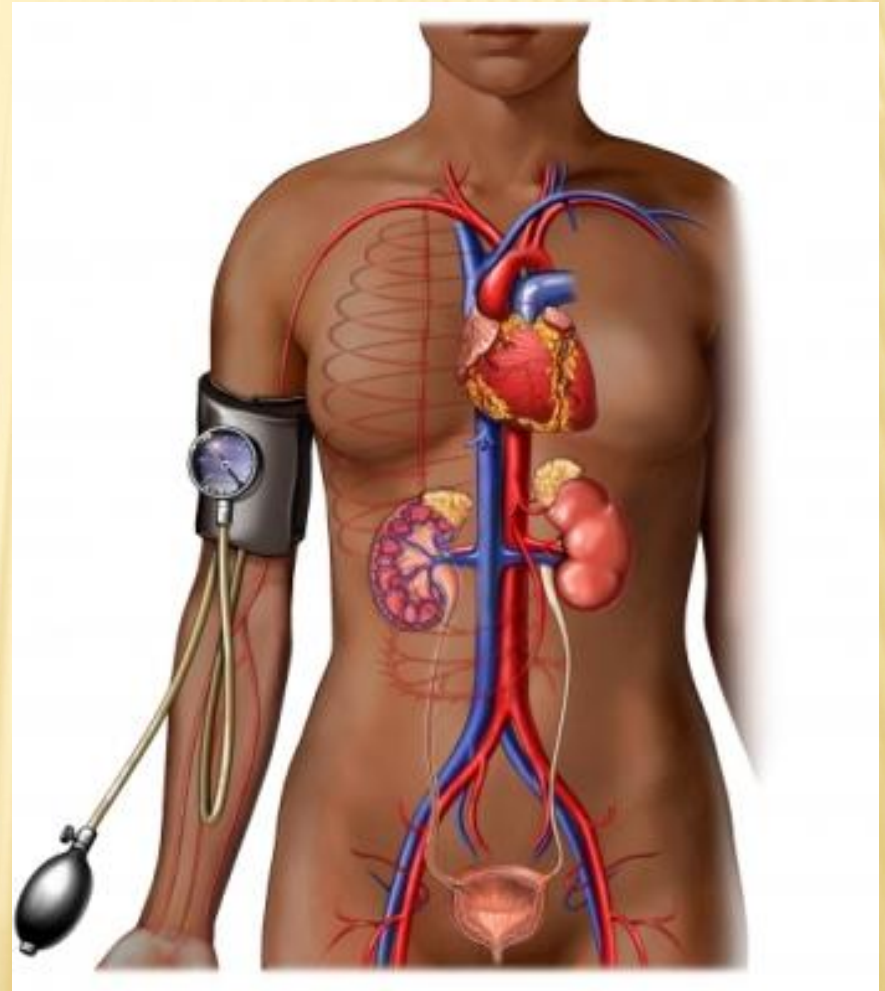
## Long Term

- ✘ Hypertension
- ✘ Heart Disease
- ✘ Heart Attack
- ✘ Arrhythmias
- ✘ Stroke
- ✘ Impaired Glucose Tolerance
- ✘ Obesity



# THE LINK BETWEEN OSA AND HYPERTENSION

- ✘ > 40% of patients presenting with OSA have daytime hypertension<sup>1</sup>
- ✘ 30 to 50% of patients with HTN have OSA<sup>2</sup>
- ✘ Even mild OSA is a risk factor for hypertension<sup>3, 6</sup>
- ✘ Patients with untreated OSA may be resistant to their anti-hypertensive medications<sup>4</sup>
- ✘ Even small decreases in blood pressure may help to decrease the risk of heart attack and stroke<sup>5</sup>



<sup>1</sup> Silverberg et.al, Curr Hypertens R, 2001

<sup>2</sup> Kracze, et.al, AJRCCM, 2000

<sup>3</sup> Bixler et al., Arch Intern Med 2000

<sup>4</sup> Logan et al., J Hypertens 2001

<sup>5</sup> Heinrich et al., Circulation 2002

<sup>6</sup> Neito, et. al. Jama 2000



## Reference Card From the

# Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (JNC 7)

## EVALUATION

### CLASSIFICATION OF BLOOD PRESSURE (BP)\*

CATEGORY	SBP mmHg		DBP mmHg
Normal	<120	and	<80
Prehypertension	120–139	or	80–89
Hypertension, Stage 1	140–159	or	90–99
Hypertension, Stage 2	≥160	or	≥100

\* See Blood Pressure Measurement Techniques (reverse side)

Key: SBP = systolic blood pressure DBP = diastolic blood pressure

### DIAGNOSTIC WORKUP OF HYPERTENSION

- Assess risk factors and comorbidities.
- Reveal identifiable causes of hypertension.
- Assess presence of target organ damage.
- Conduct history and physical examination.
- Obtain laboratory tests: urinalysis, electrolyte panel, serum potassium, creatinine, fasting glucose, and albumin/creatinine ratio.
- Obtain electrocardiogram.

### ASSESS FOR MODIFIABLE RISK FACTORS

- Hypertension
- Obesity (body mass index  $\geq 30$ )
- Dyslipidemia
- Diabetes mellitus
- Cigarette smoking

### ASSESS FOR IDENTIFIABLE CAUSES OF HYPERTENSION

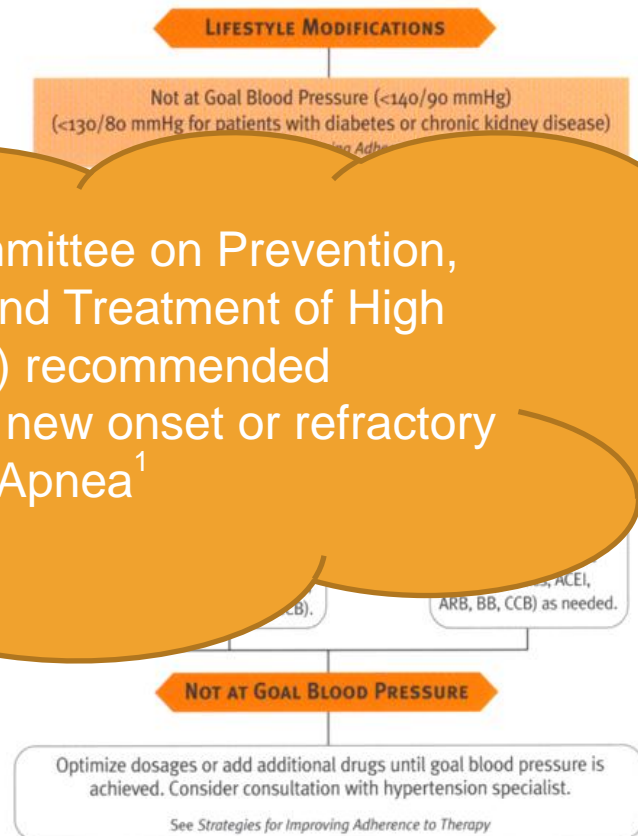
- Sleep apnea
- Drug induced/related
- Chronic kidney disease
- Primary aldosteronism
- Renovascular disease
- Cushing's syndrome or steroid therapy
- Pheochromocytoma
- Coarctation of aorta
- Thyroid/parathyroid disease

## TREATMENT

### PRINCIPLES OF HYPERTENSION TREATMENT

- Treat to BP <140/90 mmHg or BP <130/80 mmHg in patients with diabetes or chronic kidney disease.
- Majority of patients will require two medications to reach goal.

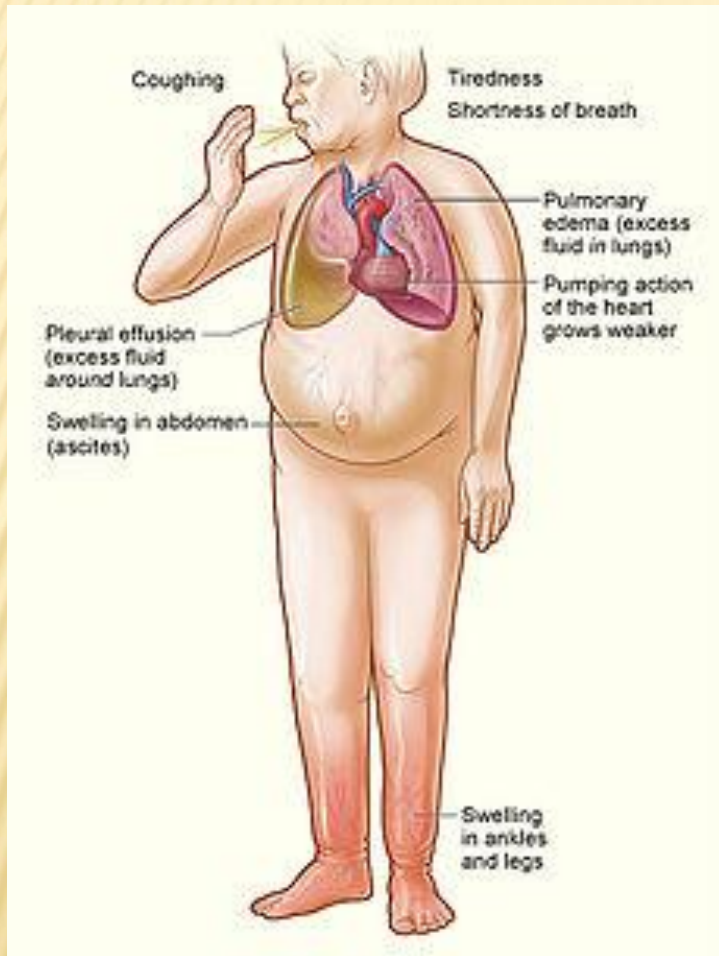
### ALGORITHM FOR TREATMENT OF HYPERTENSION



The Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure (JNC 7) recommended screening patients with new onset or refractory hypertension for Sleep Apnea<sup>1</sup>



# THE LINK BETWEEN OSA AND HEART FAILURE



- ✘ CHF affects 1.5-2% of population
- ✘ Annual direct cost estimated \$20-40 Billion
- ✘ There is a high prevalence of sleep disordered breathing in patients with CHF (~40-50%)<sup>3</sup>
- ✘ Many of the mechanisms in OSA may play a role in patients with heart failure<sup>5,6,7,8</sup>

<sup>3</sup> Shara E, American Journal of Respiratory Critical Care Med 2001.

<sup>5</sup> Peker, Y, Am J Resp Crit Care Med 2002.

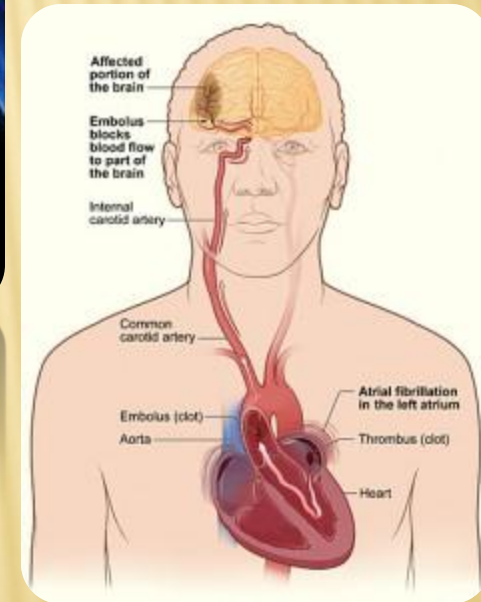
<sup>6</sup> Bradley, T, New England Journal of Medicine; 349. Sin D, Circulation 2000.

<sup>7</sup> Bradlely, T. & Leung, R., Am J Resp Crit Care Med 2001.

<sup>8</sup> Yokoe, T, Circulation 2003.

# THE LINK BETWEEN OSA AND ATRIAL FIBRILLATION

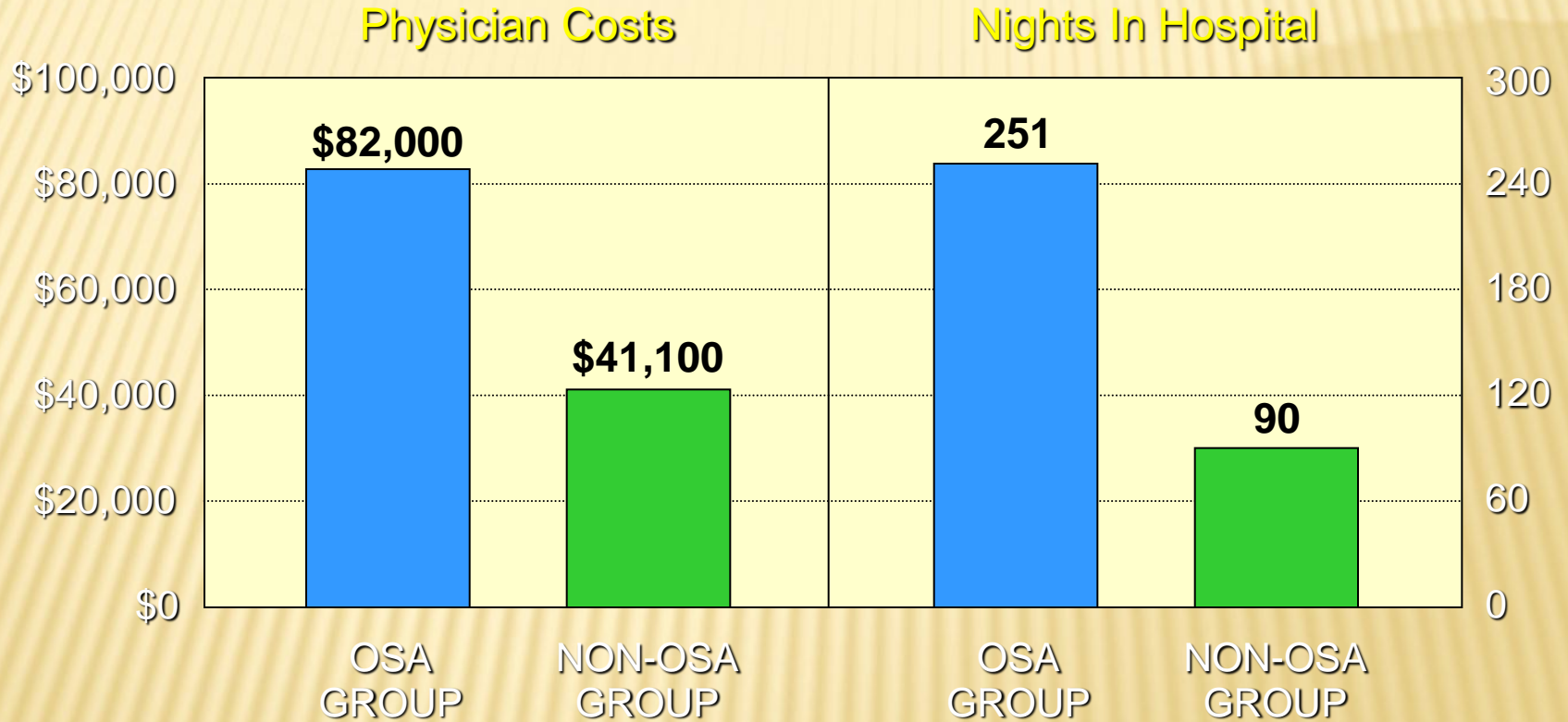
- ✗ OSA is commonly seen in patients with Atrial Fibrillation
  - The adjusted odds ratio for the association between AF and OSA was 2.19<sup>1</sup>
- ✗ Patients with untreated OSA have a higher recurrence of AF after cardioversion than patients without a polysomnographic diagnosis of sleep apnea
  - Appropriate treatment with CPAP in OSA patients is associated with lower recurrence of AF
    - > 82% in untreated OSA
    - > 42% in treated OSA<sup>2</sup>



<sup>1</sup> Gami AS, Pressman, G, Caples SM, Kanangala R, et al. Association of Atrial Fibrillation and Obstructive Sleep Apnea, *Circulation* 2004; 110: 364-367

<sup>2</sup> Kanangala, R, Murali NS, Friedman PA, Ammash NM, Gersh BJ, Ballman KV, Shamsuzzaman ASM, Somers VK. Obstructive Sleep Apnea and the Recurrence of Atrial Fibrillation. *Circulation* 2003; 107: 2589-2594

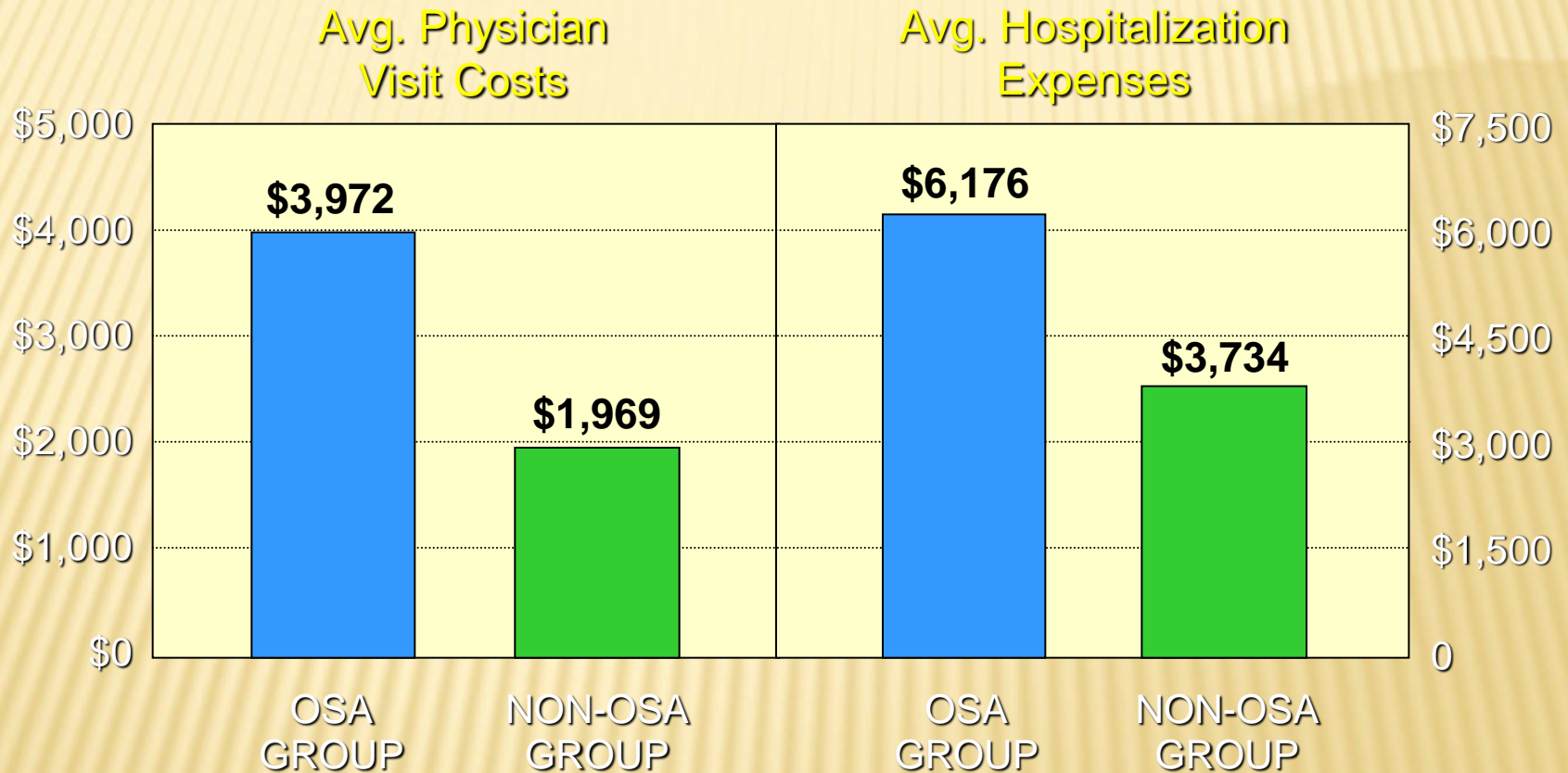
# THE IMPACT OF OSA ON UTILIZATION COSTS



<sup>1</sup> Utilization of Health Care Services in Patients with Severe Obstructive Sleep Apnea Kryger et. al. In Sleep 1996; 19: S111-S116



# THE IMPACT OF OSA ON UTILIZATION COSTS



<sup>1</sup> OSA Patients Use More Health Care Resources Ten Years Prior to Diagnosis Kryger, et al; Sleep Research Online 1(1): 71-74, 1998.

# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

---

- × Sleep hygiene
- × Positional interventions
- × Weight loss
- × Continuous Positive Airway Pressure (CPAP)
- × Oral appliances
- × Surgical intervention

# SLEEP HYGIENE

---

- ✘ Maintain a regular sleep routine (even weekends).
- ✘ Avoid naps if possible.
- ✘ Don't stay in bed awake for more than 5-10 minutes.
- ✘ Don't watch TV or read in bed.
- ✘ Do not drink caffeine inappropriately.

# SLEEP HYGIENE

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- ✘ Avoid inappropriate substances that interfere with sleep.
- ✘ Exercise regularly.
- ✘ Have a quiet, comfortable bedroom.
- ✘ If you are a 'clock watcher' at night, hide the clock.
- ✘ Have a comfortable pre-bedtime routine.

# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

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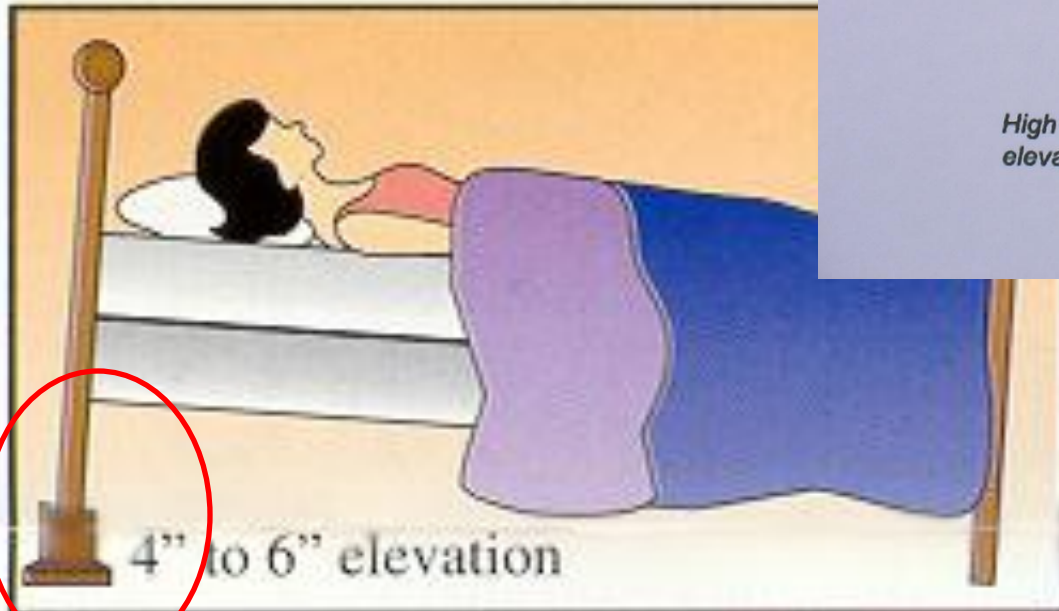
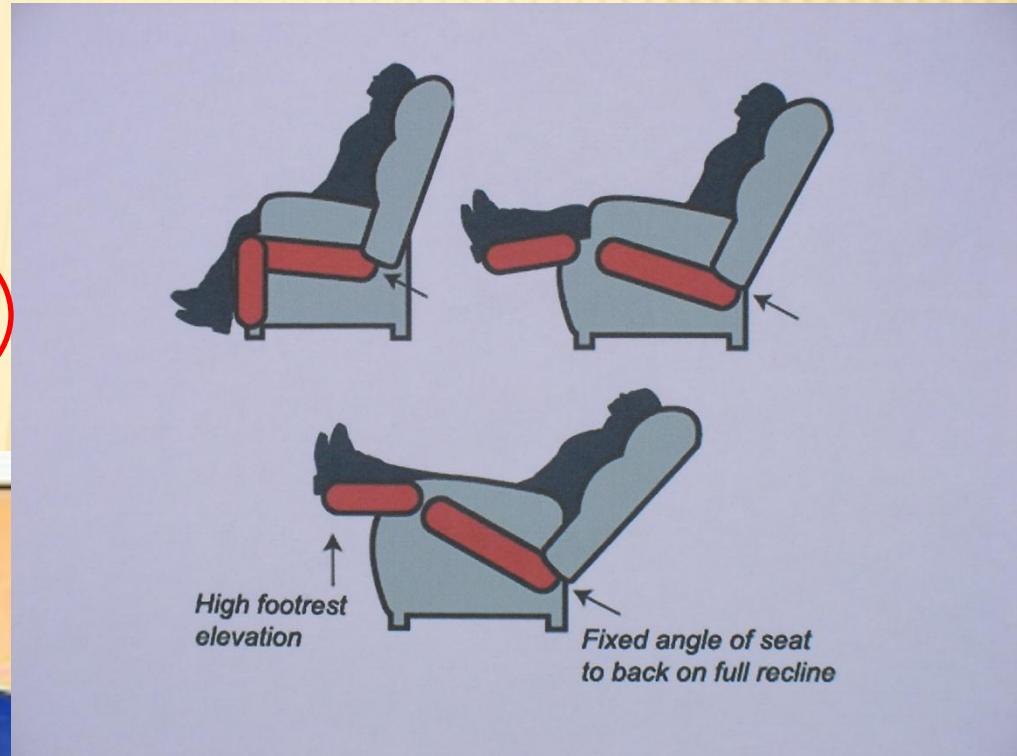
- × Sleep hygiene
- × **Positional interventions**
- × Weight loss
- × Continuous Positive Airway Pressure (CPAP)
- × Oral appliances
- × Surgical intervention

# POSITIONAL INTERVENTIONS – BODY PILLOW



- ✘ Change Your Sleep Position. (side, body pillow, tennis balls)

# POSITIONAL INTERVENTIONS – BED



# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

---

- × Sleep hygiene
- × Positional interventions
- × **Weight loss**
- × Continuous Positive Airway Pressure (CPAP)
- × Oral appliances
- × Surgical intervention



# WEIGHT LOSS

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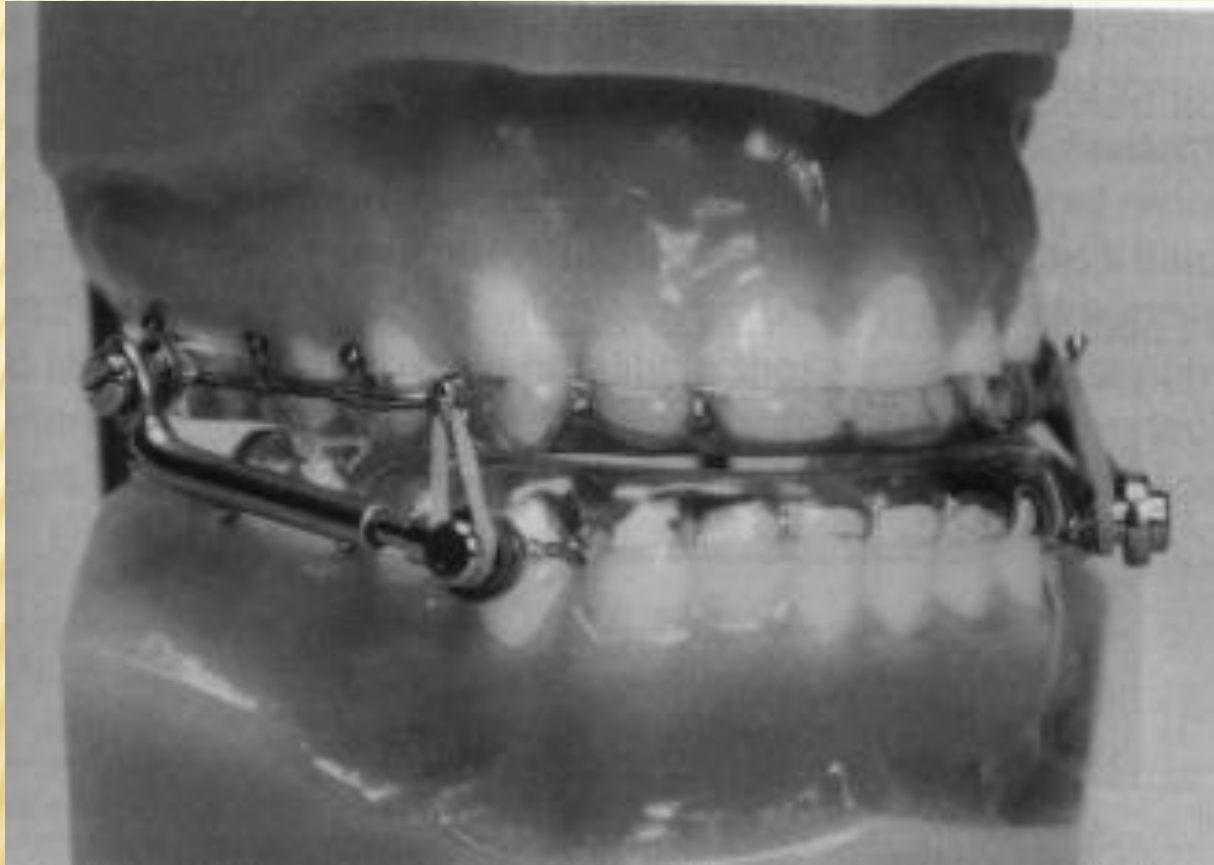
- ✘ Know your BMI
- ✘ Consider life style center at ARMC
- ✘ Sleep well
- ✘ Diet: need Vs want
- ✘ Only fluid you drink is WATER
- ✘ Stop watching TV
- ✘ Play outside games
- ✘ Volunteer

# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

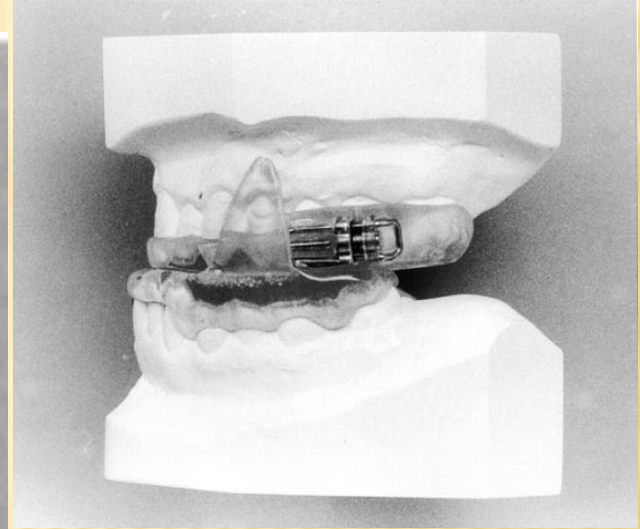
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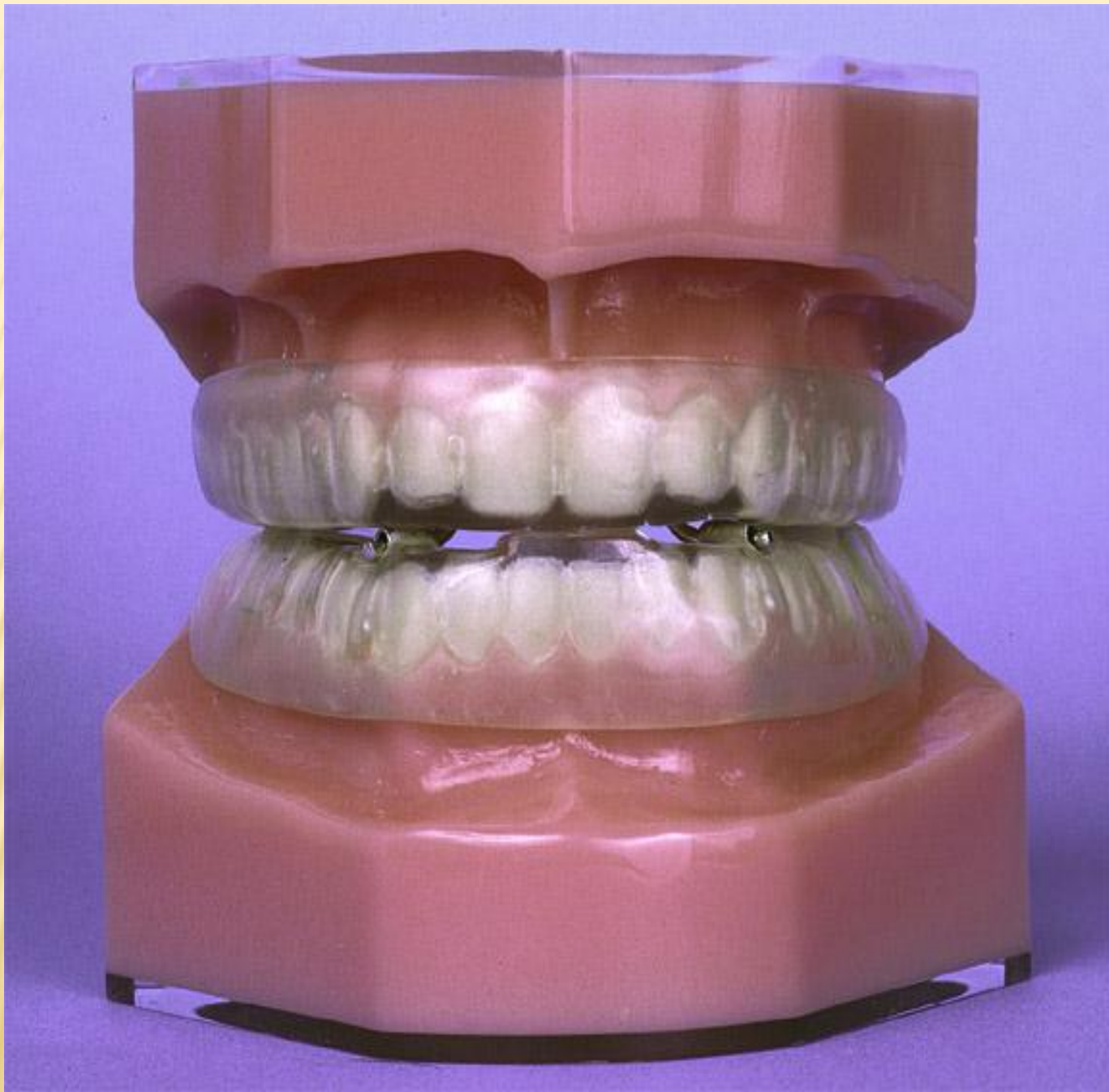
- × Sleep hygiene
- × Positional interventions
- × Weight loss
- × Continuous Positive Airway Pressure (CPAP)
- × **Oral appliances**
- × Surgical intervention

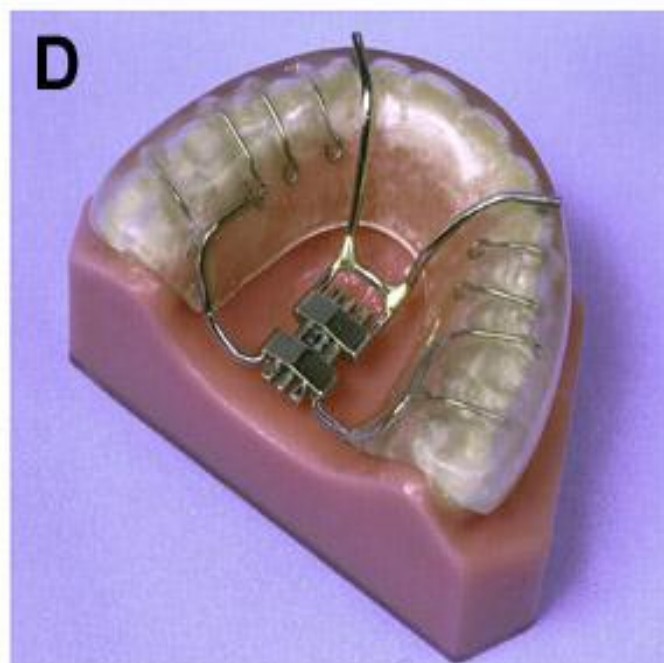
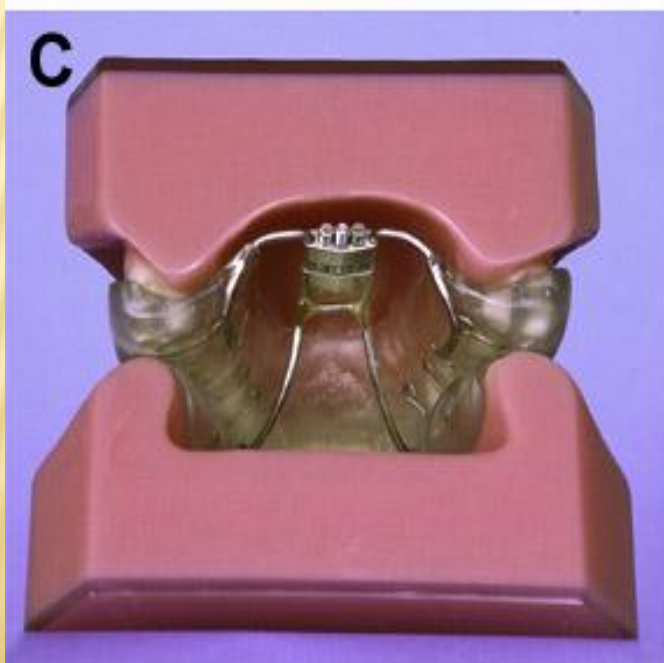
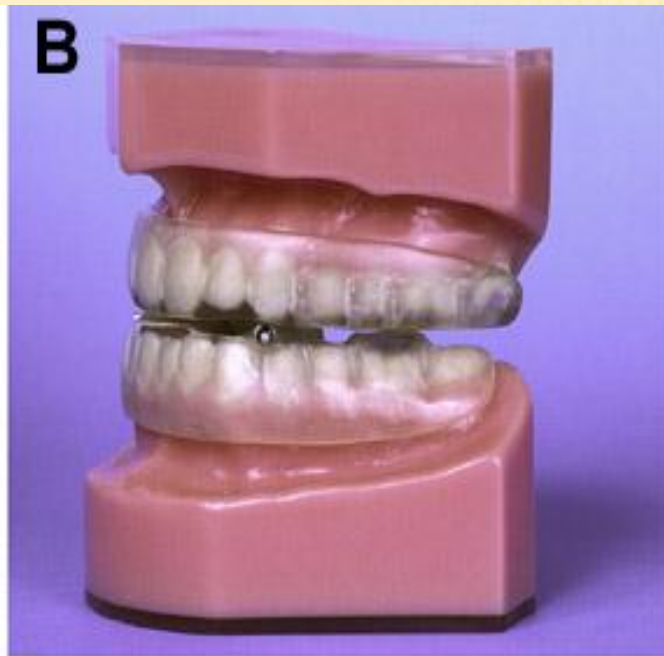
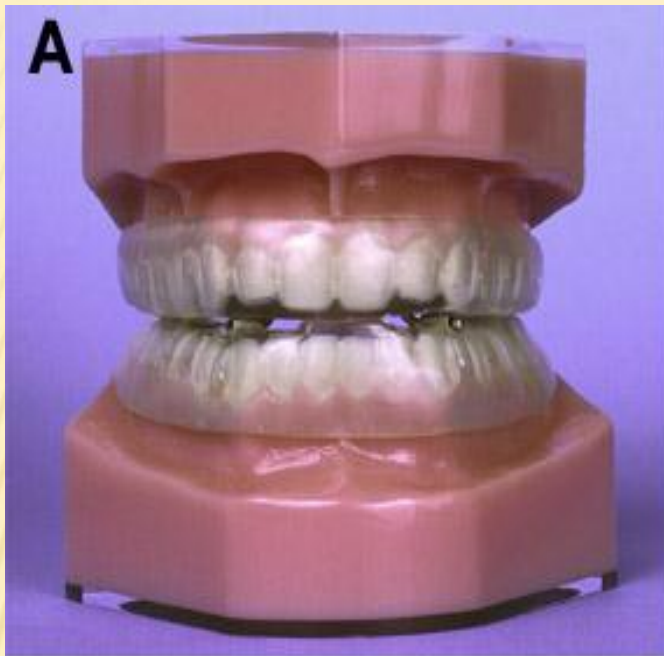
# JAW POSITIONING DEVICES



Mandibular Advancement Devices







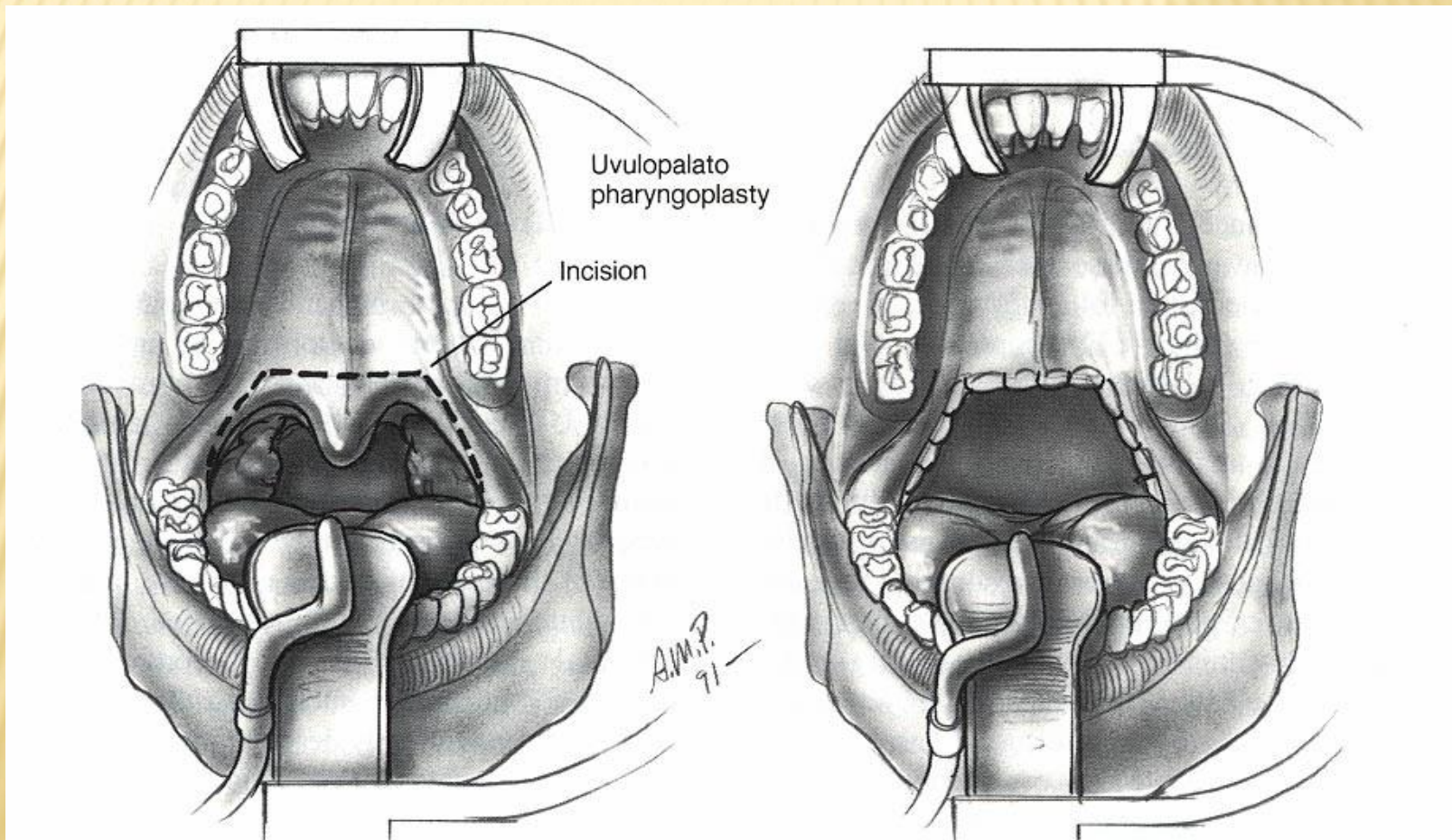
# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

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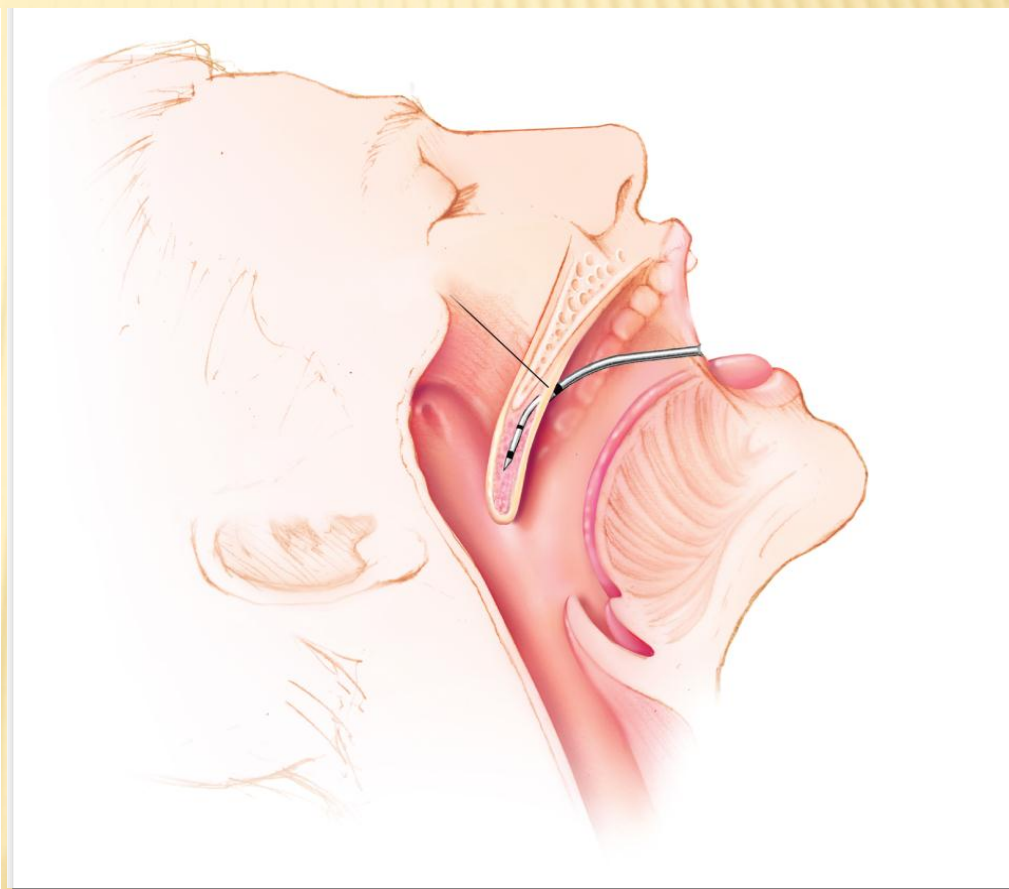
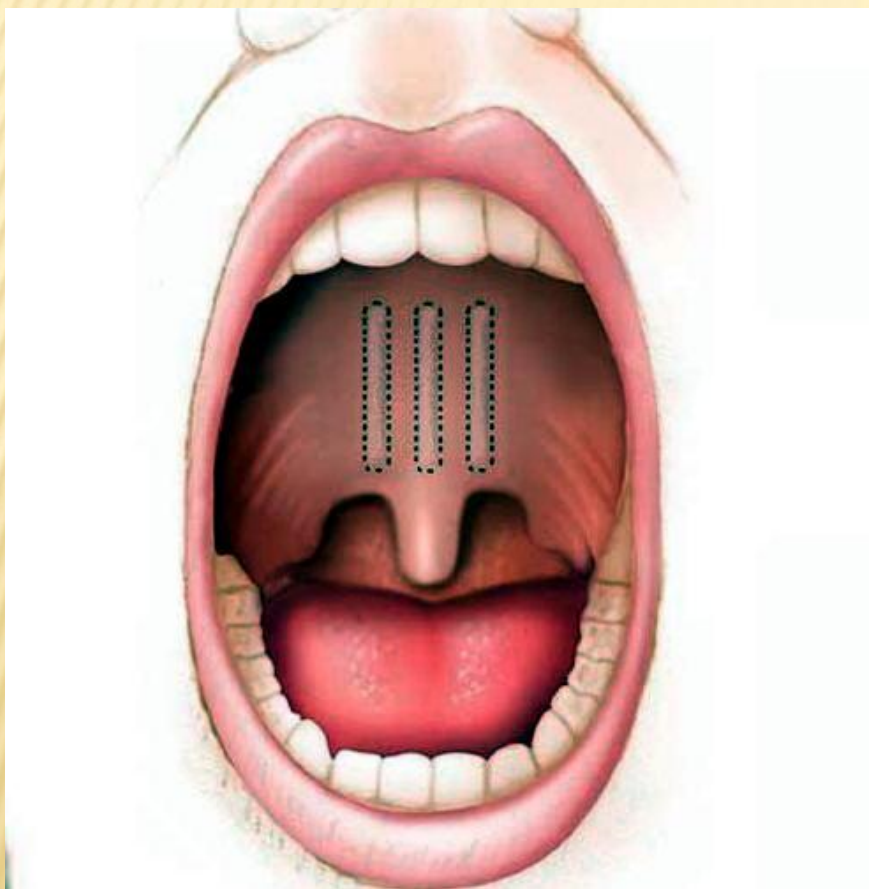
- × Sleep hygiene
- × Positional interventions
- × Weight loss
- × Continuous Positive Airway Pressure (CPAP)
- × Oral appliances
- × **Surgical intervention**

# SURGICAL INTERVENTION

- ✘ Removal of palate soft tissues (Uvulo-Palato-Pharyngo-Plasty)

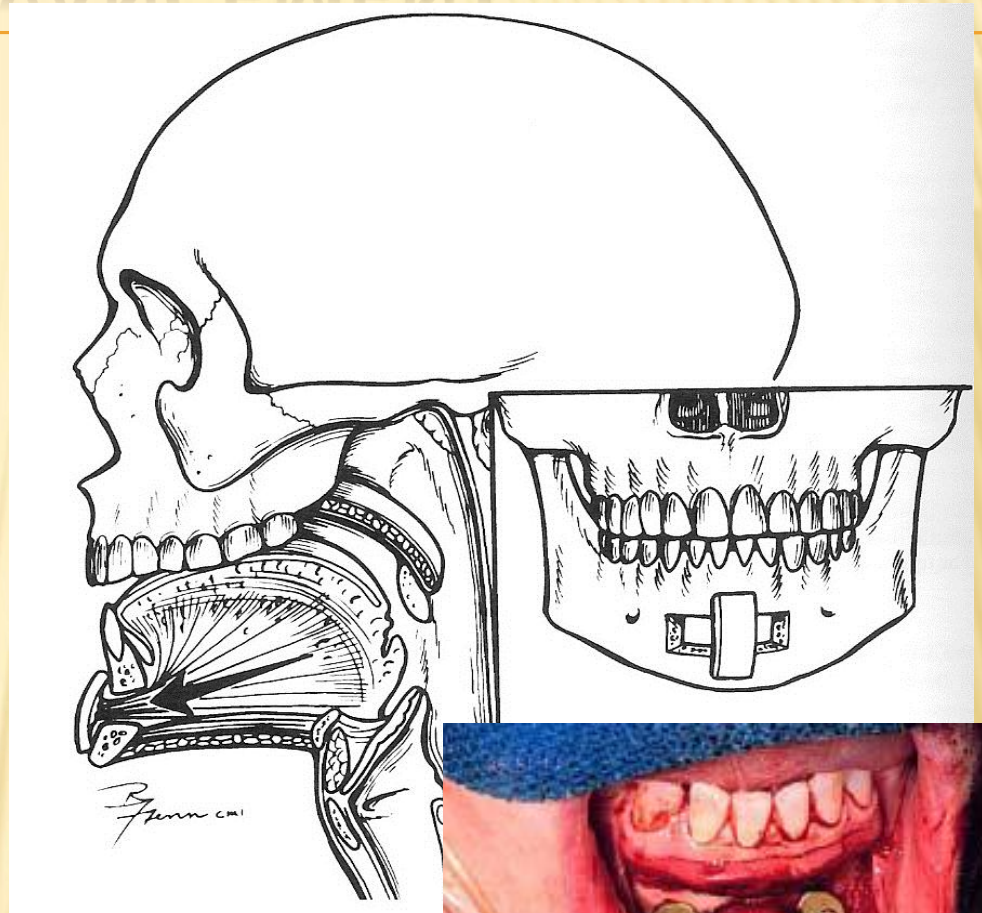
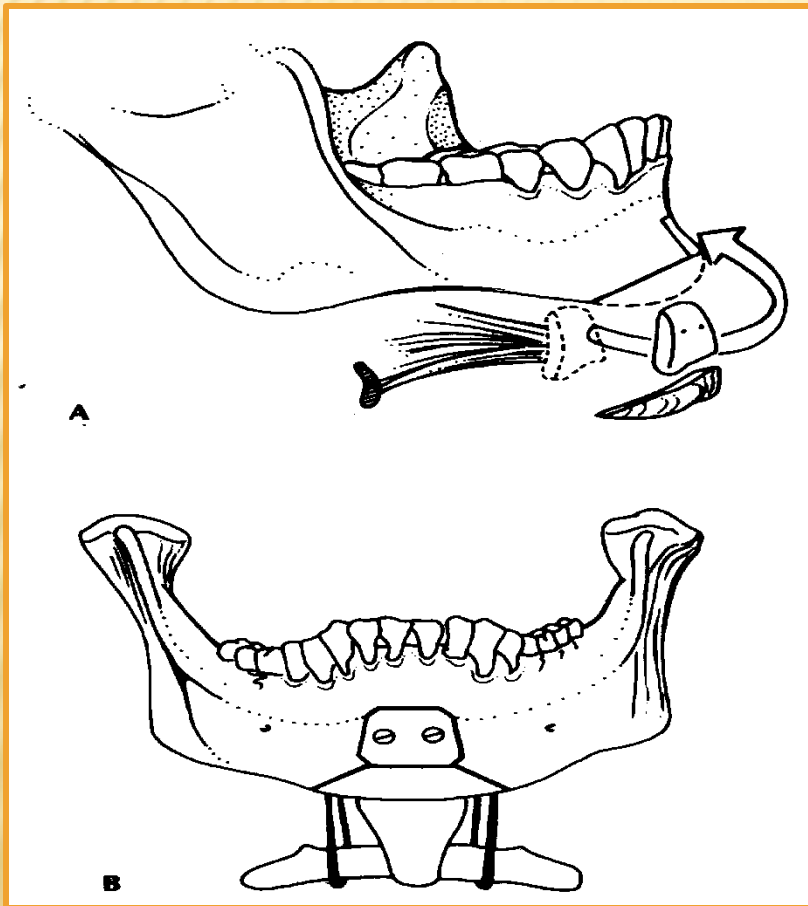


# IMPLANT PLACEMENT

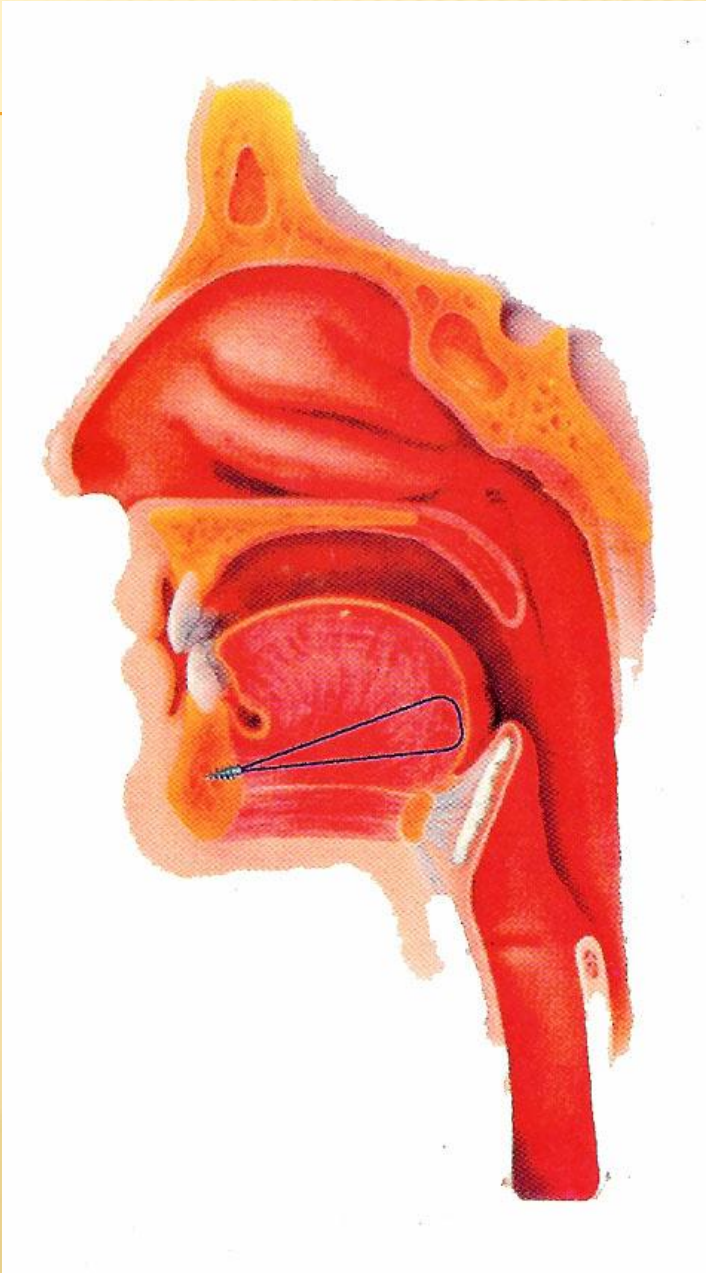
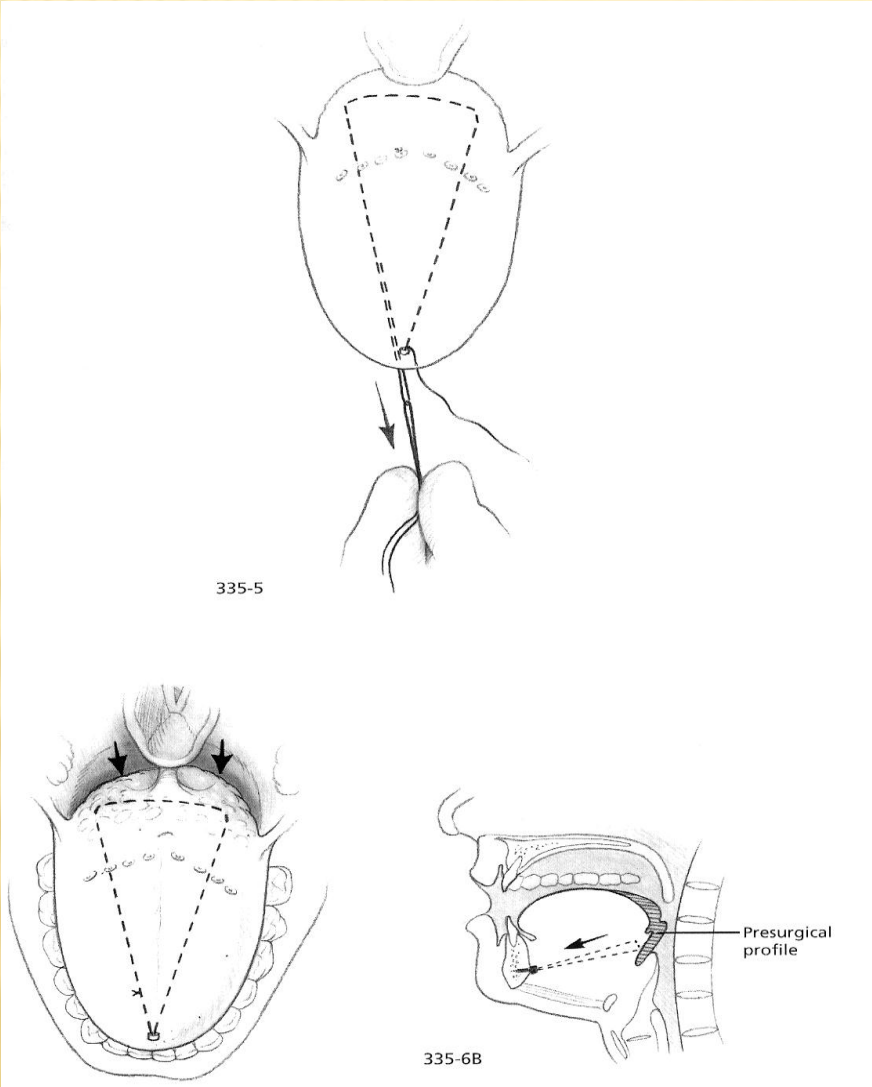




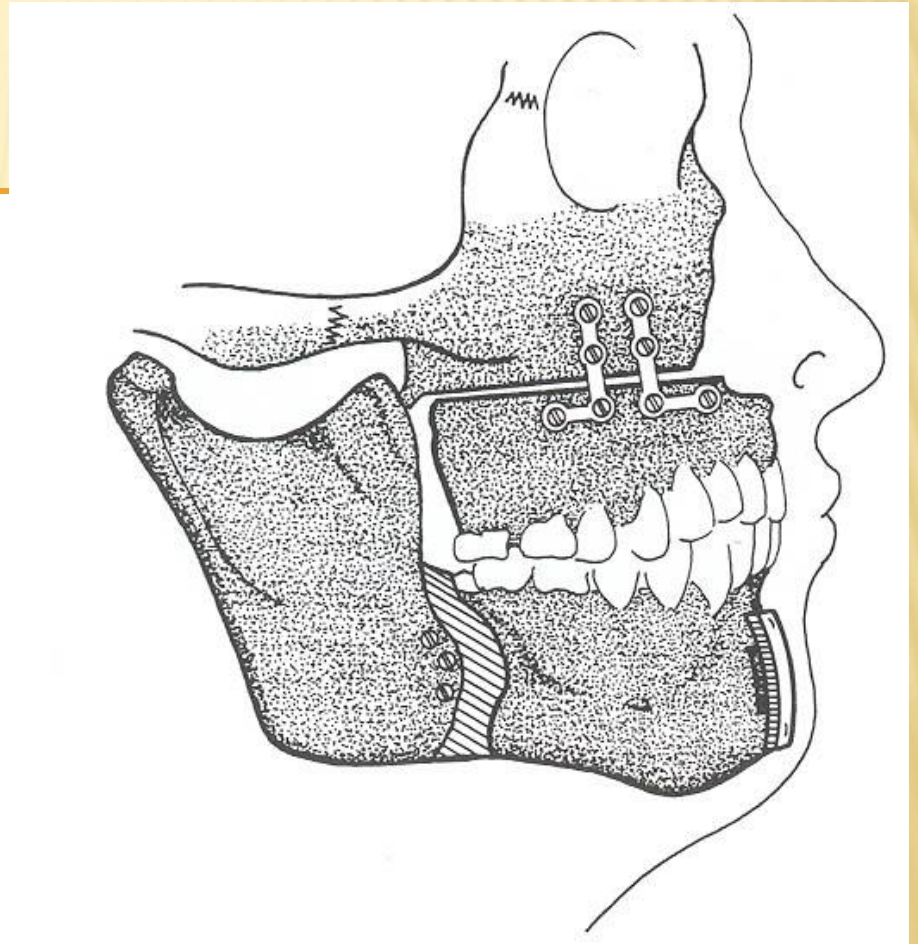
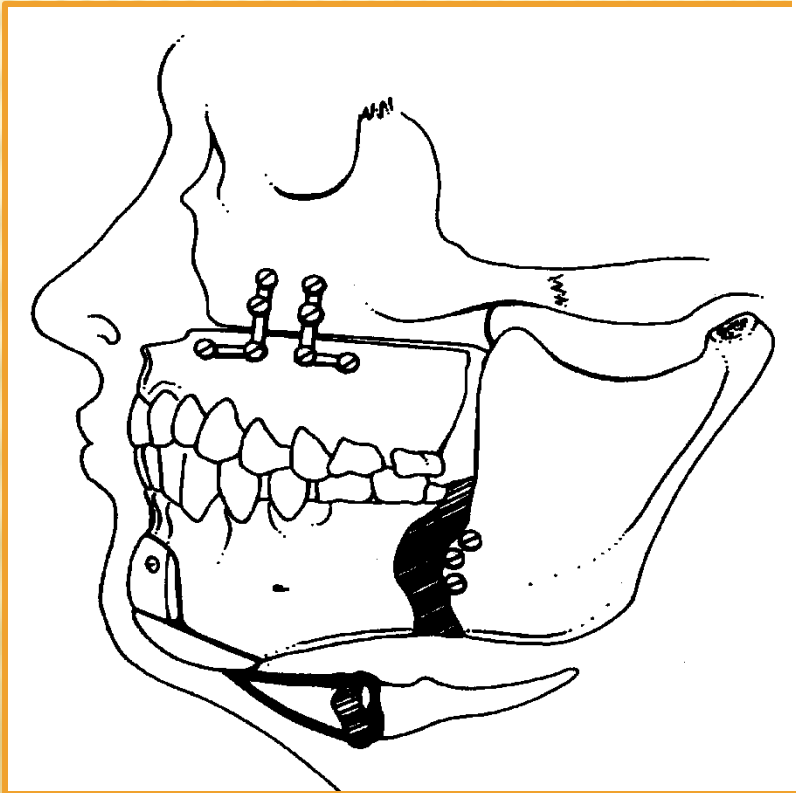
# GENIOGLOSSUS ADVANCEMENT



# LINGUAL SUSPENSION



# MAXILLARY-MANDIBULAR ADVANCEMENT



# MAXILLARY-MANDIBULAR ADVANCEMENT



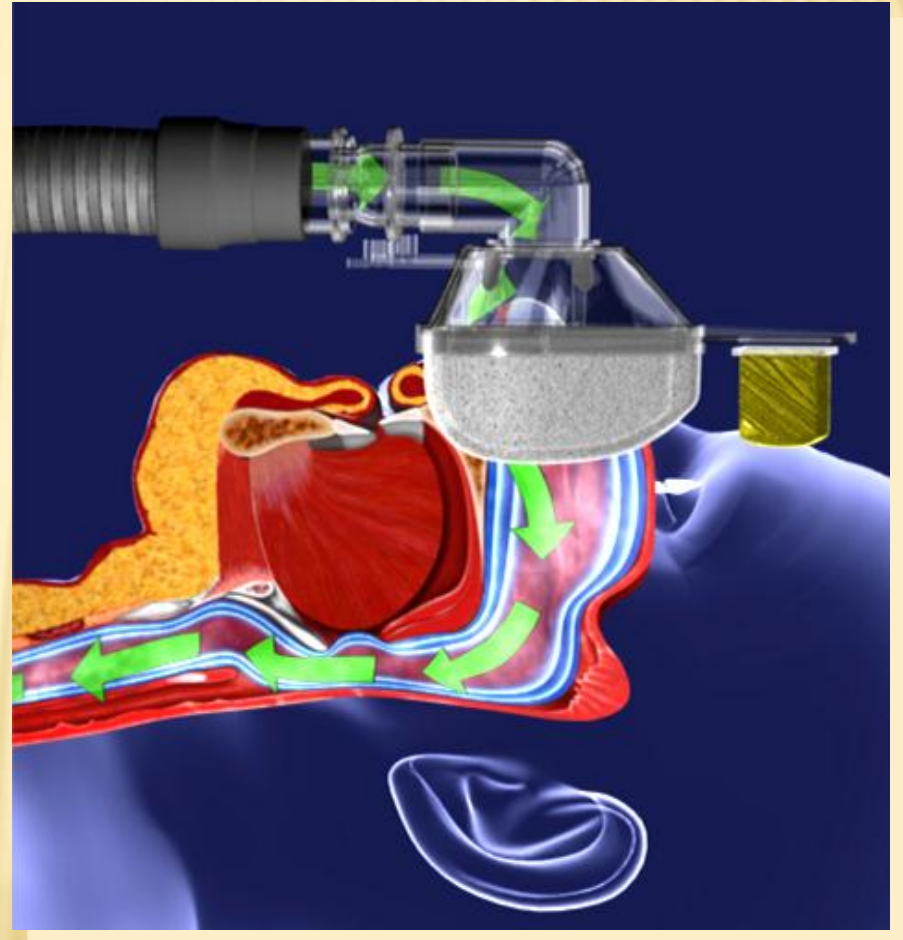
# MANAGEMENT OF OBSTRUCTIVE SLEEP APNEA (OSA)

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- ✘ Sleep hygiene
- ✘ Positional interventions
- ✘ Weight loss
- ✘ **Continuous Positive Airway Pressure (CPAP)**
- ✘ Oral appliances
- ✘ Surgical intervention

# CPAP THERAPY

- ✘ Least invasive, reversible AND most successful treatment modality for OSA
- ✘ Of those patients being treated, 80% utilize CPAP (continuous positive airway pressure therapy) with a nasal mask for treatment<sup>1</sup>
- ✘ CPAP provides positive pressure to provide a pneumatic splint for the patient's airway



<sup>1</sup> Frost & Sullivan, Sleep Apnea Models, 2001

# CPAP: ADVERSE EFFECTS

Mask marks on face	48%
Nasal bridge discomfort or breakdown	33%
Nasal congestion	26%
Dry nose/dry or red eyes	21-22%
Machine noise	17%
Ear pain	8%
Prolific rhinitis	7%
Facial acne under mask	6%
Difficulty exhaling	6%

# OTHER COMMON PROBLEMS

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- × Nose bleeds
- × Air-swallowing
- × Tube condensation
- × Claustrophobia/anxiety
- × “Temporary” treatment
- × Day-to-day inconvenience
- × Difficulty traveling/poor portability
- × Relationship discord... “CPAP is so *un-sexy*”



# WHY PATIENTS ABANDON CPAP?

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- ✘ Claustrophobia (Intermittent users felt more claustrophobic than consistent users)
- ✘ Humidification (Warm humidification better)
- ✘ Higher use related to active, not passive, coping with CPAP
  - + Confrontive coping
  - + Planful problem solving
- ✘ Treatment adherence not related to depression, anxiety, stress, social desirability
- ✘ Significant relationship of social cognitive constructs (perceived self-efficacy, outcome expectancy, knowledge, and social support)
- ✘ Patient vs. spouse motivation for treatment

# WHAT TO DO ABOUT MY SNORING (BEFORE I ASK MY DOCTOR ABOUT IT)

- ✘ Practice Good Sleep Hygiene (handout in the back)
- ✘ Open Nasal Passages {pick your nose NOW ;)}
- ✘ Stay Well Hydrated
- ✘ Stop Smoking [http://healthysleep.med.harvard.edu/video/sleep07\\_epstein\\_smoking/wm-hi](http://healthysleep.med.harvard.edu/video/sleep07_epstein_smoking/wm-hi)
- ✘ How about alcohol [http://healthysleep.med.harvard.edu/video/sleep07\\_amira\\_alcohol/wm-hi](http://healthysleep.med.harvard.edu/video/sleep07_amira_alcohol/wm-hi)
- ✘ Don't take sleep meds [http://healthysleep.med.harvard.edu/video/sleep07\\_epstein\\_otcmeds](http://healthysleep.med.harvard.edu/video/sleep07_epstein_otcmeds)

# WHAT TO DO ABOUT BED PARTNER SNORING

- ✘ The bed partner of a snorer loses, on average, an hour of sleep per night.
- ✘ Relationship issues, as well as health effects of sleep deficit for the partner.
- ✘ Earplugs 😊
- ✘ External earmuffs ☹️
- ✘ White noise generators.
- ✘ [http://youtu.be/V\\_gaa7RRT70](http://youtu.be/V_gaa7RRT70)

# RESTLESS SLEEPERS?



# RESTLESS SLEEPERS?



# THANKFUL

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- ✘ To GOD: who puts us to sleep
- ✘ To great souls who put on uniform
- ✘ Mother
- ✘ Wife



# Happy Snoring

A photograph of a pig lying down in a bed of straw. A large, white, ribbon-like banner with a brown outline is superimposed over the pig. The banner contains the text "Sweet Dreams !!!" in red, bold, sans-serif font with a white outline. The pig's skin is pink and its body is partially visible through the banner.

**Sweet Dreams !!!**