All About Sleep Apnea

A·S·N

Advanced Sleep &
Neurodiagnostics of
MMG

We will discuss:

- What is sleep apnea?
- Why does it happen?
- What are the symptoms and consequences?
- Who should get tested?
- How do we test for sleep apnea?
- What treatment options are there?
- Details and tips for using CPAP

What is Sleep Apnea?

- <u>You stop breathing during sleep!</u>

- This is a serious health problem that impacts the body in several ways

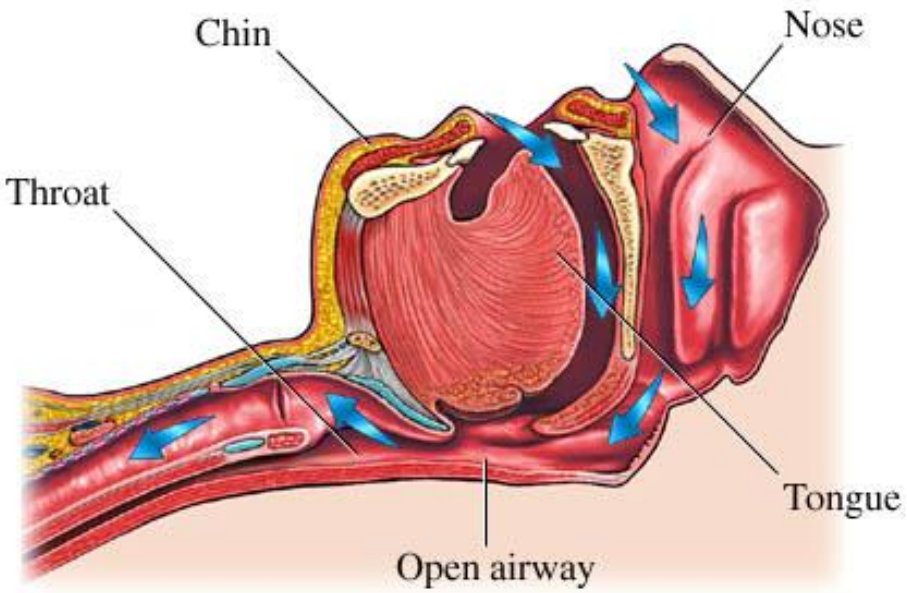
Obstructive Sleep Apnea

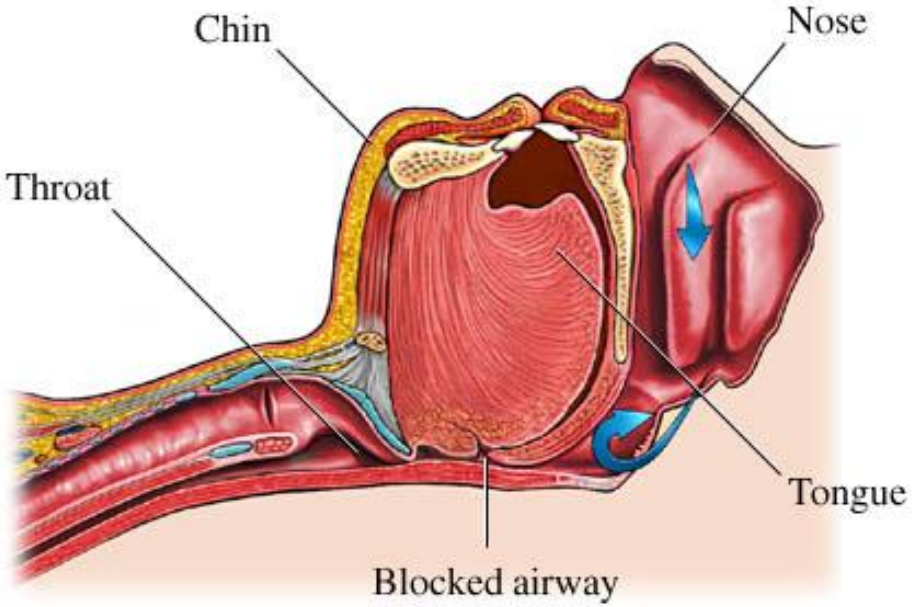
- OSA
- The airway collapses causing repeated airway obstruction during sleep
- You are still trying to breathe, but you can't

Why does OSA happen?

- When we sleep, our muscles relax
- This includes muscles of the upper airway and tongue

- Everything “falls back” and blocks the airway


Chin
Nose
Throat
Tongue
Open airway


Chin
Nose
Throat
Tongue
Blocked airway

What causes OSA?

Anything that makes the airway smaller or more “floppy”

Being overweight is the cause of most obstructive sleep apnea

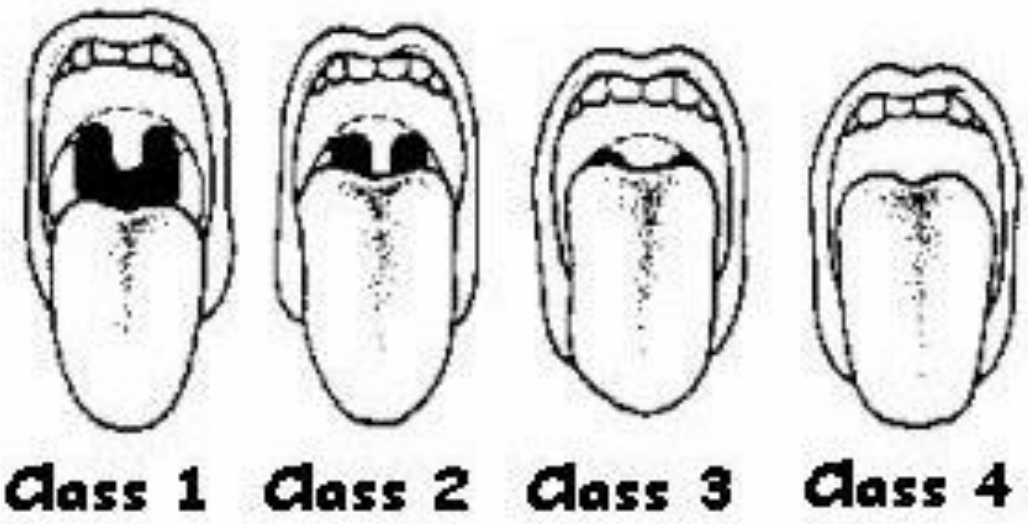
70% of people with OSA are overweight

- When you are overweight, you have more weight pressing down on your airway
- Your airway can't support the extra weight and it collapses
- You also have fatty deposits that grow around your airway that "smush" the airway

- Having a large neck is a risk factor for sleep apnea

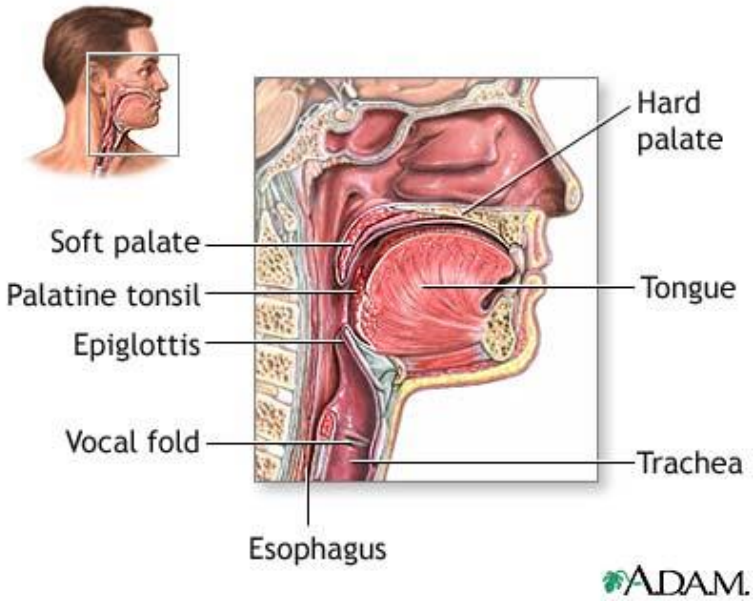
- > 17 inches in men
- > 16 inches in women

Anatomy has a lot to do with it



Mallampati classification

- Structural/anatomical risk factors:
  - Large tonsils
  - Long/thick uvula
  - Long or narrow palate
  - Small lower jaw
  - Large tongue



Other risk factors for OSA

- Aging
- Alcohol use before bed
- Medications
  - Muscle relaxers, sedatives, pain meds
- Heart failure
- Stroke
- Neuromuscular weakness
  - MS, ALS

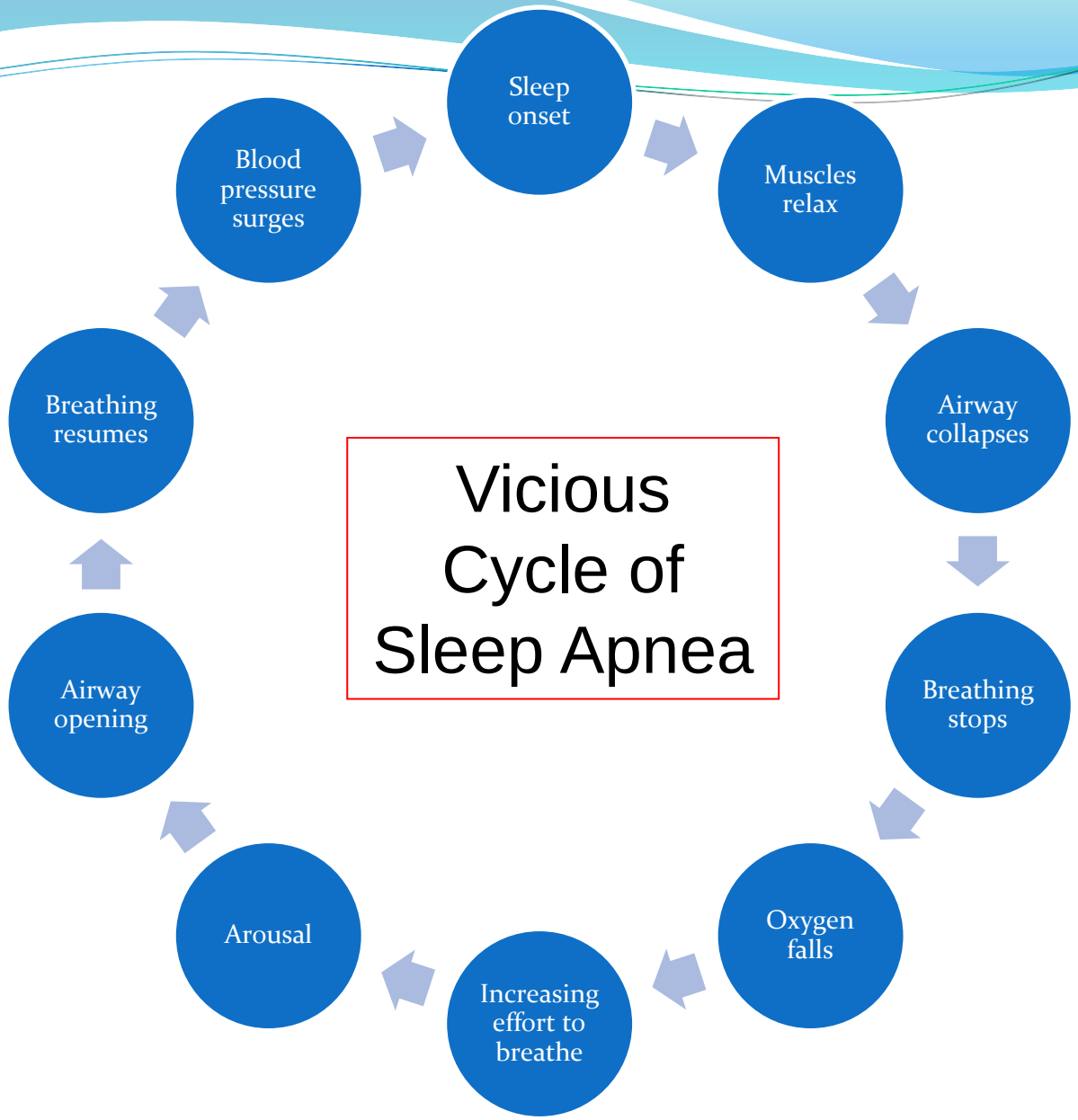
Sleep apnea is very common

- Current estimates:
  - 1 in 5 people
- As obesity rates continue to rise, we are seeing an increase in sleep apnea

What happens when you stop breathing?

- Oxygen levels fall
- Your brain will wake you up enough to open your airway so you can breathe again
- You likely won't realize that you are waking up

- You get an adrenaline surge
  - You are suffocating
  - “Fight or Flight” response
  - Causes increased blood pressure and heart rate
- Some people wake up gasping, sweating with a racing heart
- Increase in “stress” hormones


Vicious Cycle of Sleep Apnea
Sleep onset
Muscles relax
Airway collapses
Breathing stops
Oxygen falls
Increasing effort to breathe
Arousal
Airway opening
Breathing resumes
Blood pressure surges

Sleep apnea video

- http://www.youtube.com/watch?v=TgC_S09Xea4&feature=related

Central Sleep Apnea

- Has nothing to do with the airway
- The brain doesn't tell the body to breathe

- More common in Denver because of the high altitude
- Common in people with heart failure
- Can also be caused from prescription pain meds

What are the symptoms of OSA?

- The biggest complaint from people: “I’m sleepy!”
- Because you’re constantly getting woken up all night, you are actually sleep deprived

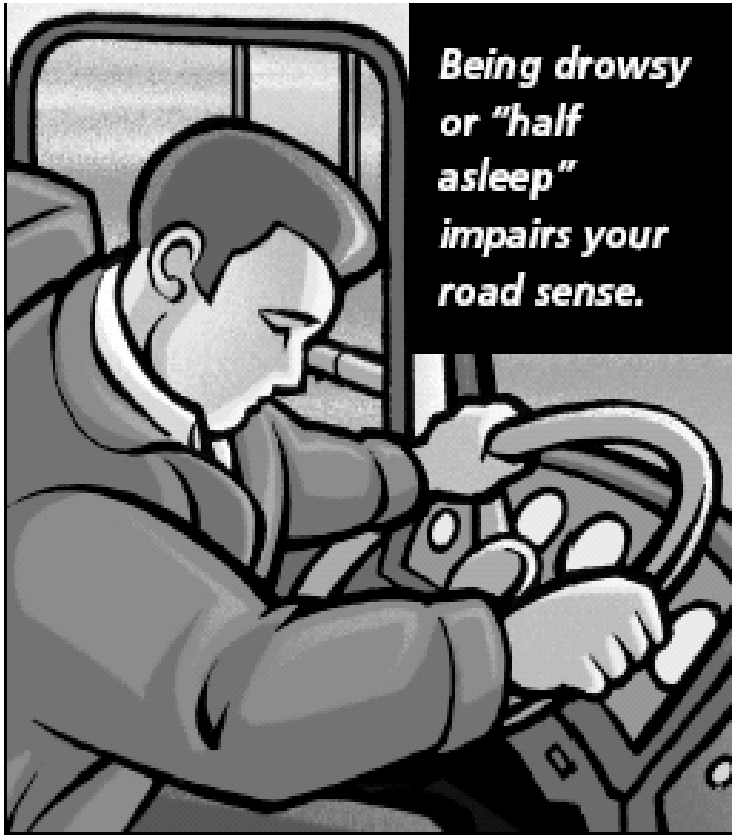
People complain of:

- Unrefreshing sleep
- Daytime sleepiness
- Frequent napping
- Falling asleep at inappropriate times:
  - Working
  - Meetings
  - Watching TV/movies
  - **Driving**
    - **This effects OTHERS, not just you**

- People who are sleepy have an increased risk

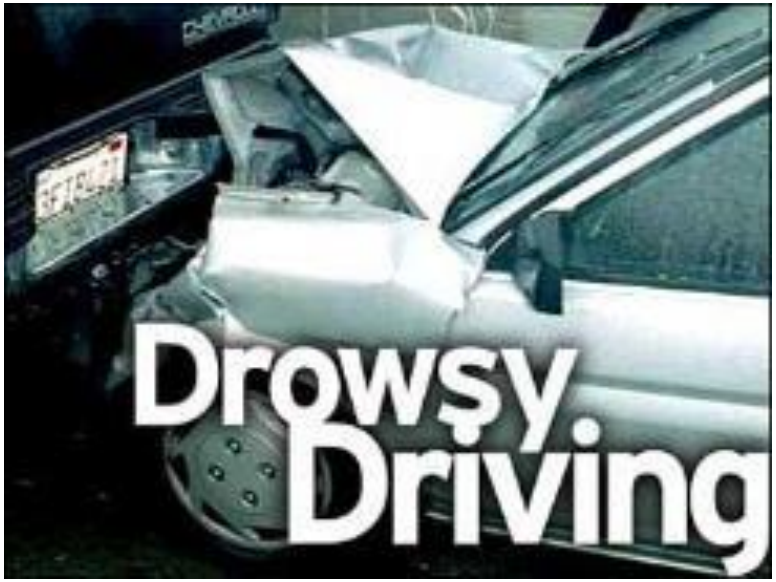
  of falling asleep at the wheel

- Even if you are not falling asleep, you are still impaired!



Drowsy Driving = Drunk Driving

- Impaired judgment
- Very slow reaction time
- Increased attention lapses
- Increased distractions
- Fast and sloppy driving
- Impaired memory



If you're feeling tired:

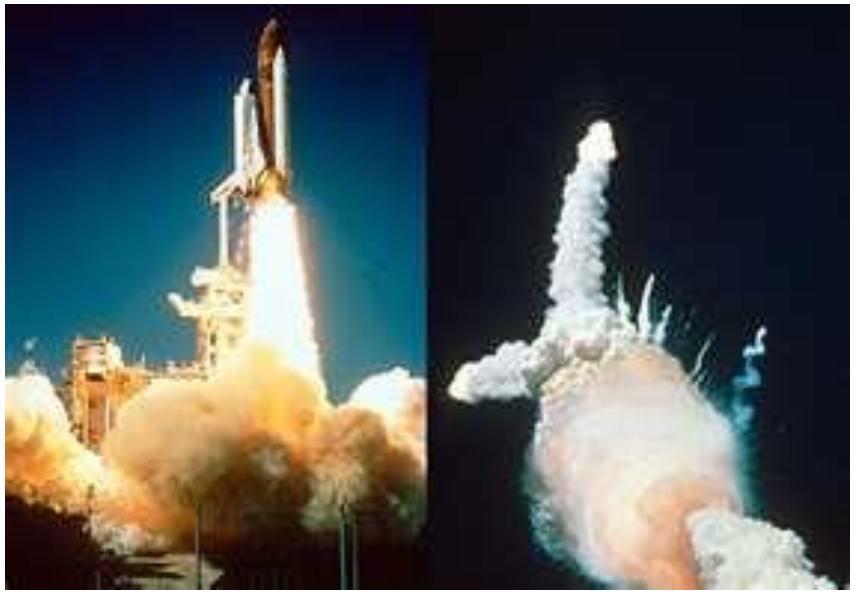
Do not drive!

- Get a ride
- Take the bus
- Call a taxi cab
- Stay home

Sleepiness affects work

- Sleepy people also have more work-related accidents
- Industrial accidents caused from sleepiness cost over $100 billion per year

- Many disasters attributed to people being sleepy
  - Exxon Valdez oil spill
  - Three Mile Island nuclear disaster
  - Challenger Space Shuttle disaster



Other symptoms of OSA

- Snoring
- Gasping/choking awakenings
- Insomnia
- Morning headaches
- Memory and concentration problems
- Moody, irritable, cranky
- Depression
- Heartburn
- Weight gain
- Increased nighttime urination
- Decreased sex drive/ ED

Long term consequences

- Permanent mental decline
- Diabetes
- Weakened immune system
- High blood pressure
- Pulmonary hypertension
- Irregular heartbeat
- Heart attack
- Heart failure
- Stroke

Who should get tested for OSA?

- If you have any of the following, talk to your doctor:
  - Obesity (BMI >30)
  - Snoring
  - Insomnia
  - Witnessed pauses in breathing
  - Complaints of sleepiness and/or fatigue
  - High blood pressure (especially if worsening, resistant to meds)
  - Diabetes
  - Atrial fibrillation
  - History of stroke, heart attack, heart failure

How do we test for Sleep Apnea?

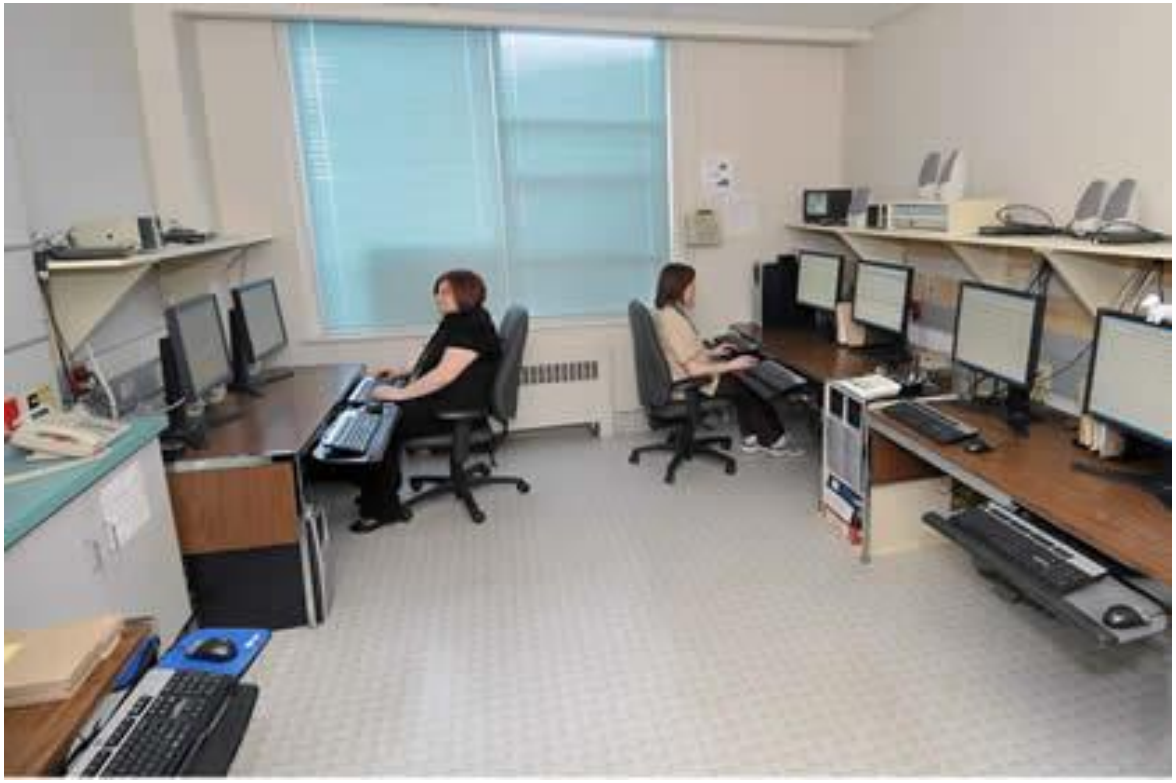
- SLEEP STUDY!

What is a sleep study?

- You go to a sleep laboratory and sleep overnight while being continuously monitored
- The testing is painless and noninvasive
- The sleep lab is specially equipped with computerized monitoring equipment
- Testing is done during your normal sleep time

- After changing into pajamas, a technician applies a number of sensors
  - Tube in the nose
  - Oxygen probe on finger
  - Electrodes on head, face, legs, chest
  - Flexible belts around the chest and abdomen

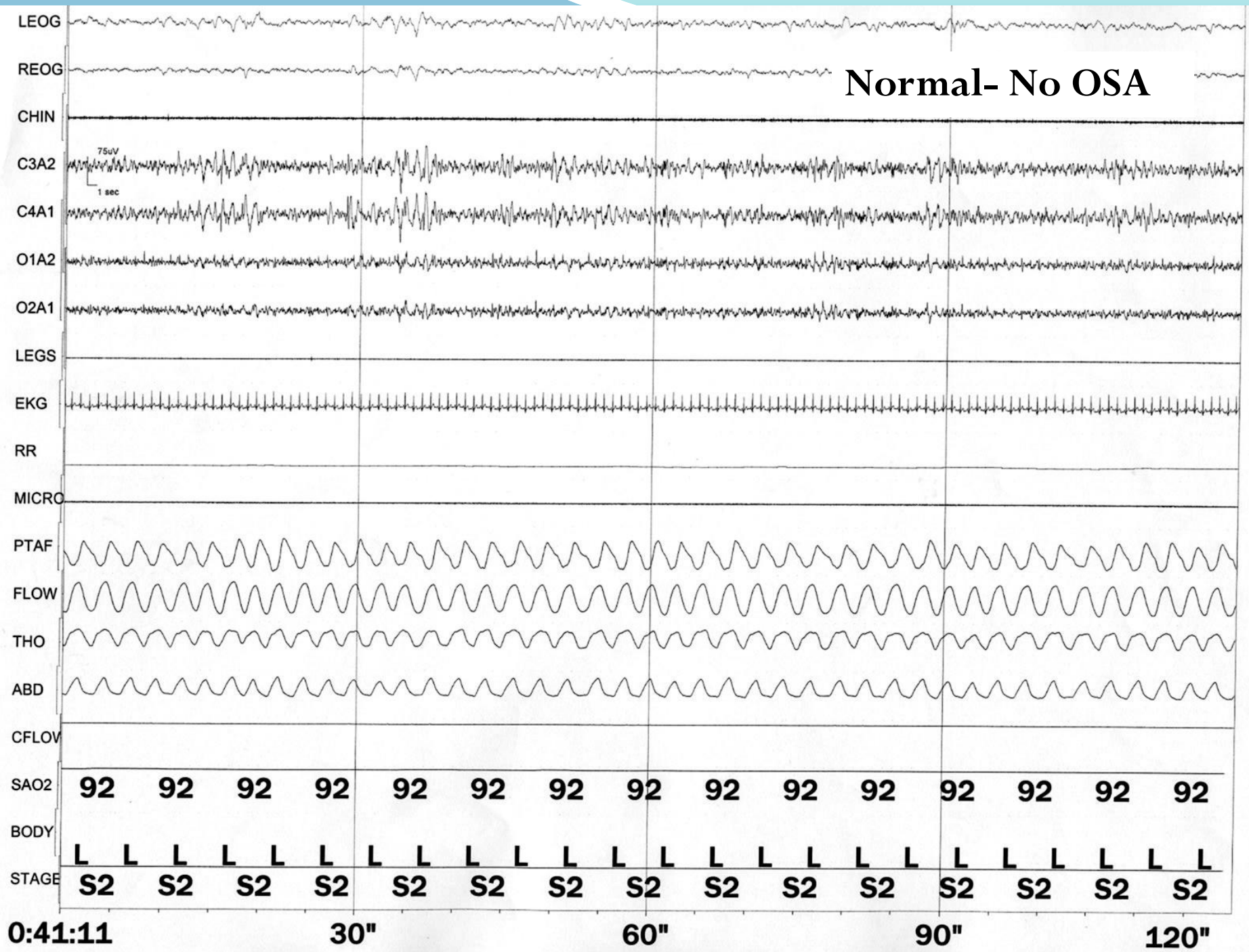
- Despite all of the equipment, most people say their sleep is not disrupted
- You can bring things from home to make them more comfortable
  - Special pillows or blankets



- A sleep technician, constantly monitors you from an adjoining room.
- You are watched on video/audio monitors

The technician monitors for:

- Pauses in breathing
- Low oxygen
- Heart abnormalities
- Seizures
- Sleep talking/sleep walking
- Arm or leg kicking during sleep
- Snoring
- Teeth grinding


Normal- No OSA
LEOG
REOG
CHIN
C3A2
C4A1
O1A2
O2A1
LEGS
EKG
RR
MICRO
PTAF
FLOW
THO
ABD
CFLOW
SAO2
BODY
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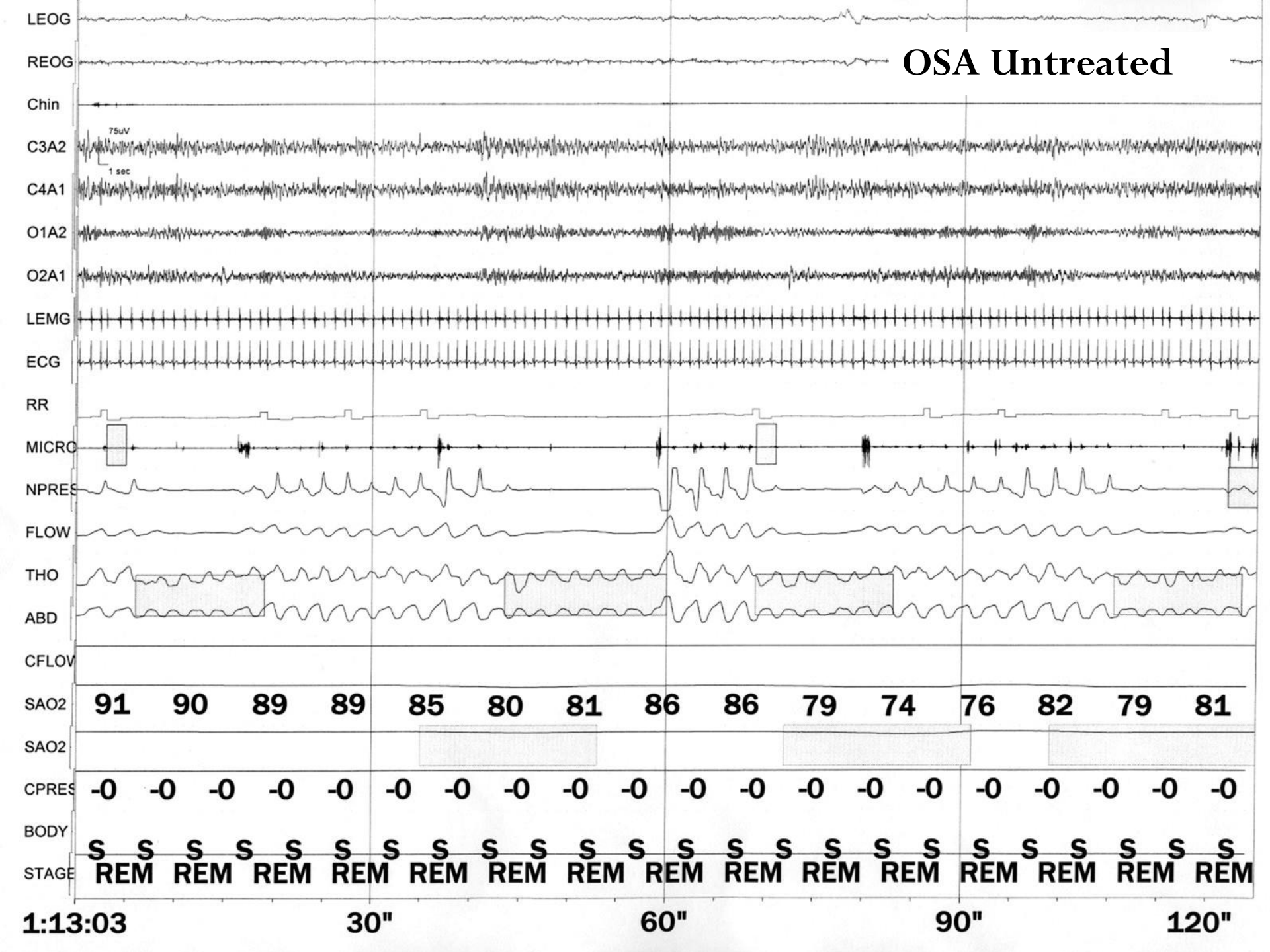
60"
90"
120"


OSA Untreated
LEOG
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75uV
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O2A1
LEMG
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SAO2
CPRES
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BODY
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STAGE
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1:13:03
30"
60"
90"
120"

- The sleep study is reviewed by a second sleep technician, then by a board certified sleep physician

- A report is sent to the ordering physician with the results and recommended treatment

How bad is it?

- AHI = # of times you stop breathing per hour of sleep

- <5 = normal
- 5-15 = mild
- 15-30 = moderate
- >30 = severe

There is home sleep testing

- You hook yourself up to a recording device and sleep at home
- Not as much data recorded, so limited information gained from the study

Home testing NOT recommended for the following people:

- History of/likely central apnea
- On oxygen
- Heart problems
- Seizure disorders
- Use of pain medications
- Color blind
- Not comfortable with technology
- Severe arthritis/limited use of the hands
- Have/may have other sleep disorders

What treatment is there?

- CPAP
  - BiPAP, APAP, ASV, AVAPS
- Dental Appliances
- Surgery
- Provent

CPAP is #1

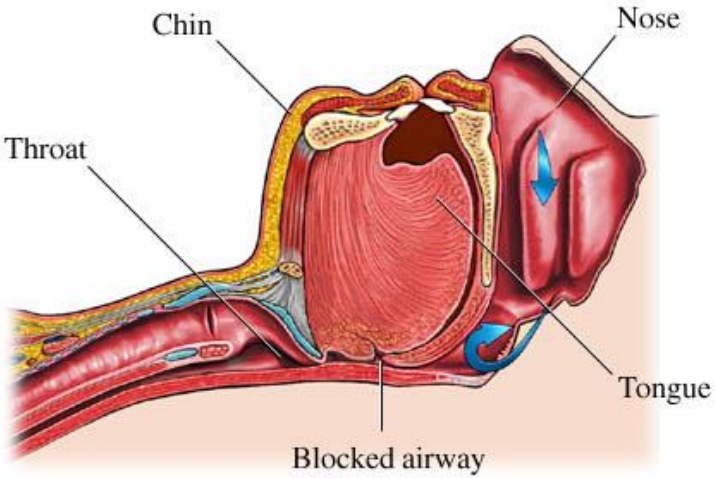
- CPAP is the best treatment available

- CPAP stands for:
  - Continuous
  - Positive
  - Airway
  - Pressure

- You wear a mask over your nose/mouth while you are sleeping
- Hooked up to a machine that blows air into your airway
- Air pressure holds your airway open so it can't collapse
- CPAP works for 98% of people

There are several mask types

- Full face mask
- Nasal mask
- Nasal pillows
- Other unique masks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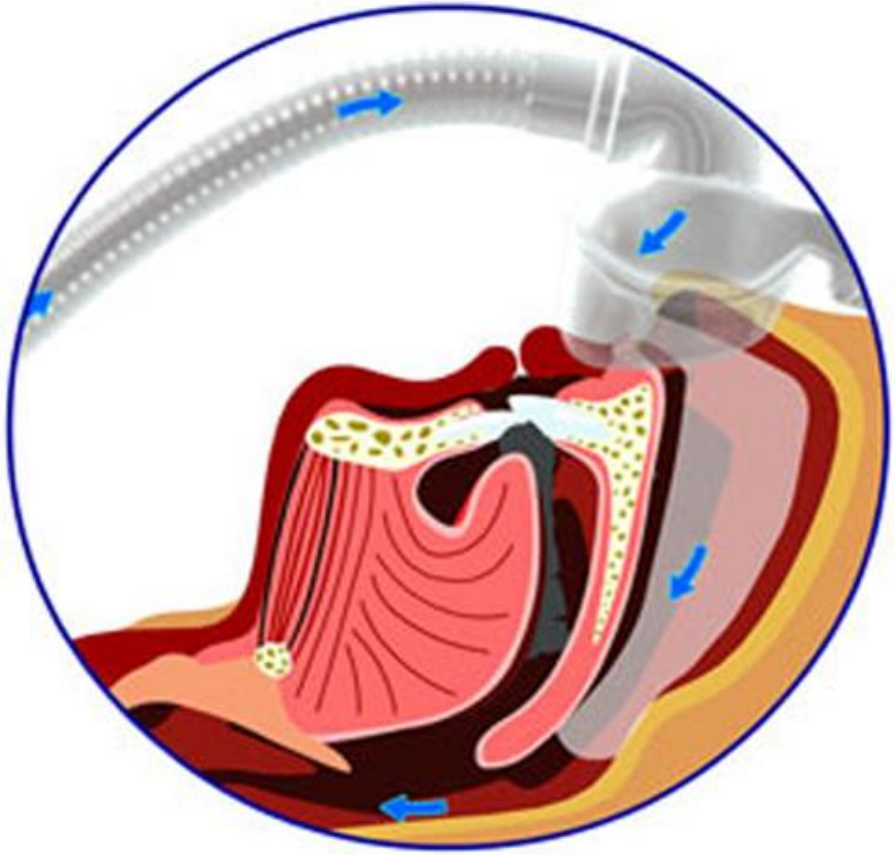
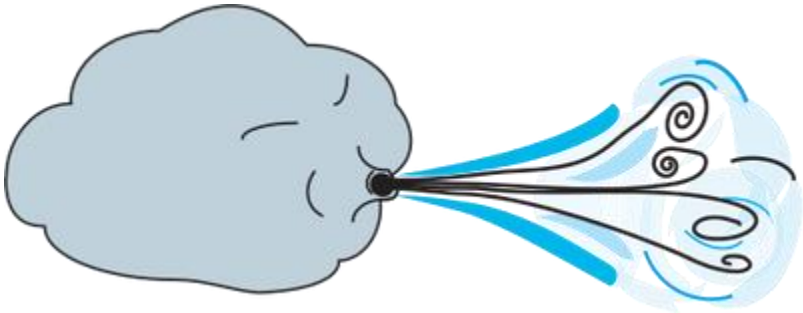


- Everyone has their own unique pressure need
- There is no way to tell by looking at you how much air pressure it will take to hold your airway open
- Pressure measured in cmH_2O
  - Most machines range from 5-20 cmH_2O



- CPAP pressures are usually determined in the sleep lab during the overnight sleep study
- Once it is determined that you have OSA, the sleep technician applies CPAP and starts at the lowest pressure
- The pressure is slowly increased throughout the night until your sleep apnea is gone and you are breathing normally

Don't give up on CPAP because of the mask!

There are lots of different masks to pick from

Work with your medical equipment company to find a mask that works for you

Many complaints about masks:

- Leaky
- Uncomfortable
- Cumbersome
- Painful- specially on the bridge of the nose

- These can all be corrected with the right mask that is fitted properly!

There are many things to consider when selecting a mask:

- Size and shape of your face, nose, nasal bridge and lower jaw
- Facial hair
- Skin allergies
- Do you breathe through your nose or mouth?
- Sleeping position (side sleeper vs. back sleeper)
- Claustrophobia or anxiety

Most important… WHAT IS COMFORTABLE FOR YOU?

Dental appliances

a.k.a

Mandibular Advancement Devices

- Work for 60-80% of patients

- A retainer you wear while sleeping
- Covers top and bottom teeth
- The device pulls the lower jaw forward to create more space in the back of your throat
- These are usually made by a “sleep dentist” though some general dentists will make them

Dental appliances

- Work best for people with mild/moderate sleep apnea

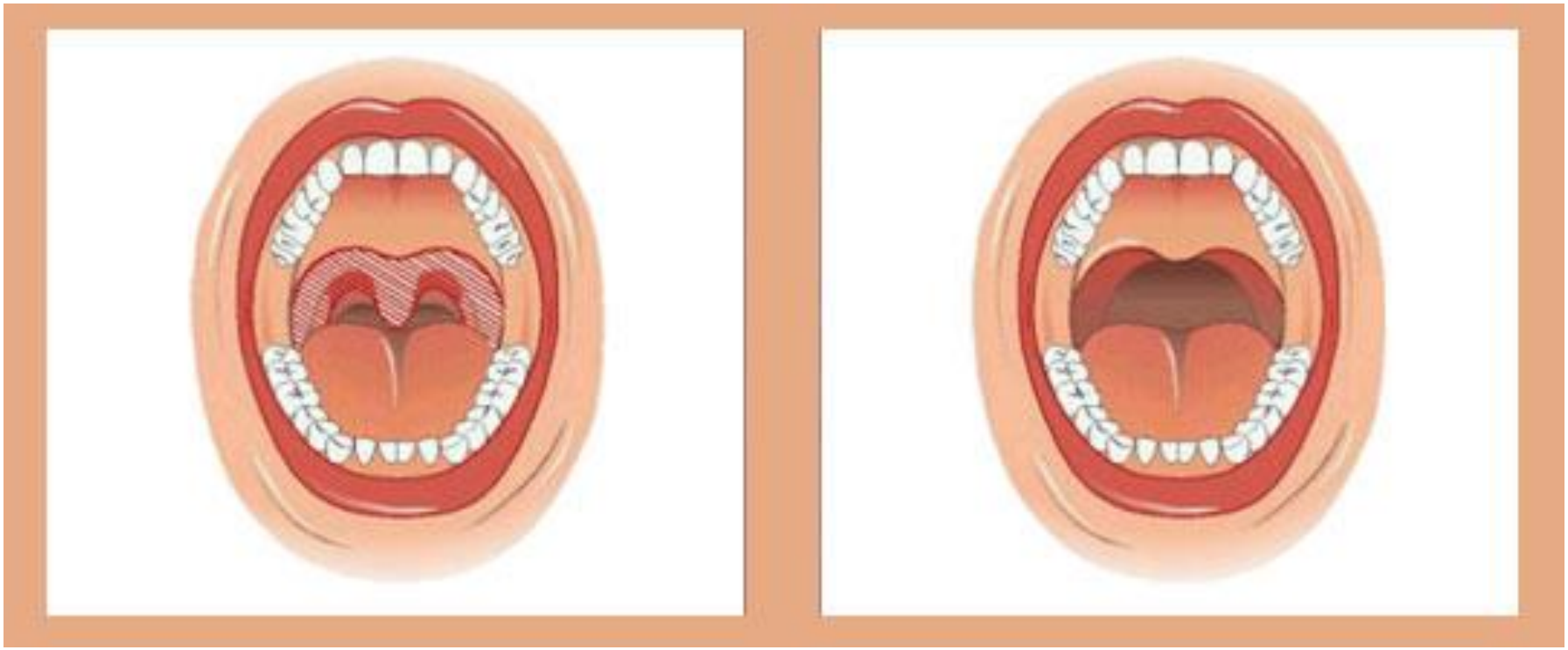
- You must have some teeth
  - OK if no teeth on top
  - Must have some teeth on the bottom to anchor

- The only way to know if it works is to go ahead and get the appliance, then have another sleep study while wearing it

Upper Airway Surgery

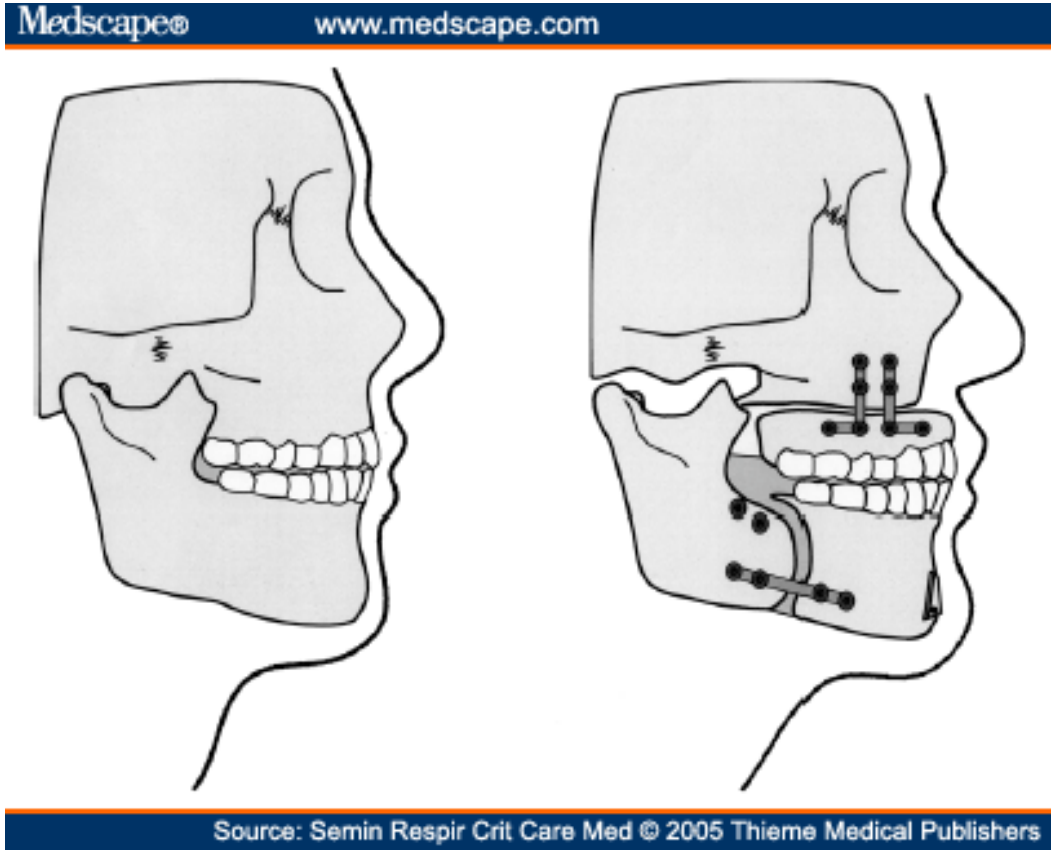
- Try to make upper airway bigger, so less likely to obstruct/collapse
- Success rate depends on type of surgery done

Uvulopalatopharyngoplasty



- UPPP has ~50% “success” rate
- Recovery is very painful
- Years after surgery, patients often get scar tissue
  - End up back on CPAP, dental appliance or having a revision surgery

Maxillomandibuloplasty

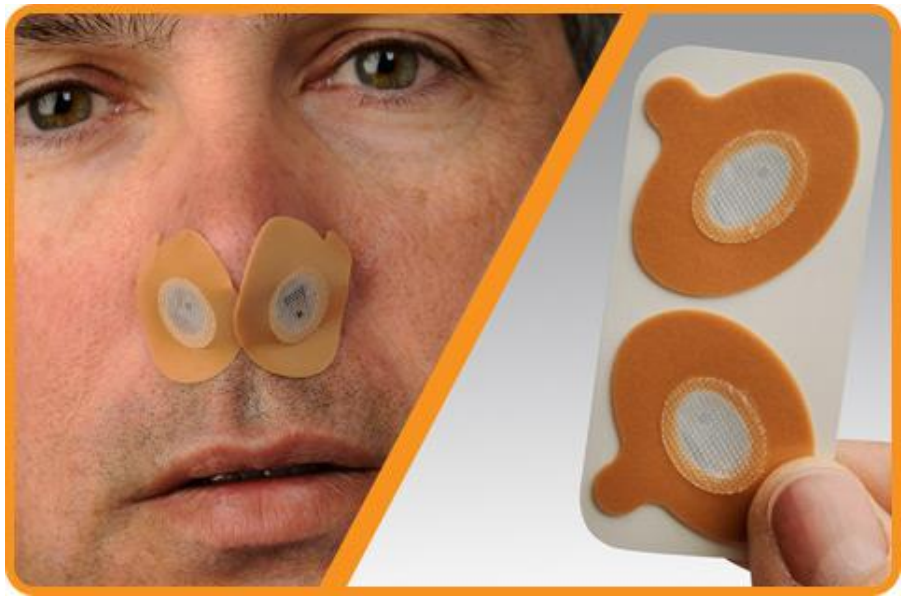


- 92-98% effective
- Better for mild/moderate sleep apnea
- Less painful than UPPP!
- Extensive surgery
  - Changes appearance permanently
  - Orthodontic braces often needed

- After having any sleep apnea surgery, you will need to have another sleep study to see if it worked

Provent Therapy

"Sticky things for the nose"



- One-way valve attached to adhesive
- When you inhale: you breathe normally
- When you exhale: the valve closes
  - creates a build up of pressure that holds the airway open

- Must be able to breathe through your nose
- Must have sleep study while wearing Provent to see if it works
- Decreases sleep apnea by about 50%

Cannot be used if:

- Severe respiratory disorder
- Severe heart disease, CHF
- Low blood pressure
- Upper respiratory infection
- Ear infection
- Perforation of the ear drum
- You can't breathe through your nose
  - Congestion, allergies

Oxygen is NOT a treatment option for OSA

- If airway closed, oxygen won't help
- You still have frequent awakenings and cardiovascular risks/complications

- Sometimes used to treat central sleep apnea

Other things that are helpful…

- Regardless of which treatment you choose, there are other things that will help your OSA

Lose weight!

- Even small amounts of weight loss can help!
  - 10-20 pounds can make a big difference
  - For every 1% of body weight lost, AHI decreases ~3%
  - Will lower CPAP pressure needs

- Consider seeing a dietician

- Avoid alcohol before bed

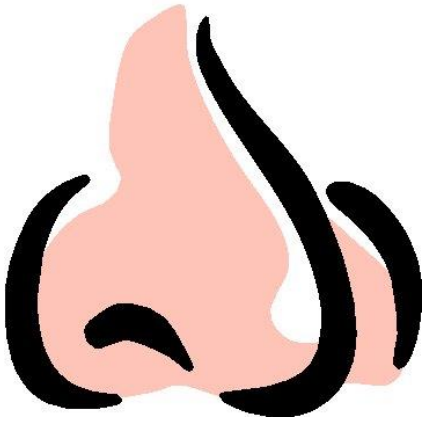
- If possible, stop medications that make sleep apnea worse
  - Talk to your doctor before stopping any medications

Avoid sleeping on your back

- Wear a fanny pack/backpack with tennis balls inside
- Lots of options available online

Deal with your nose

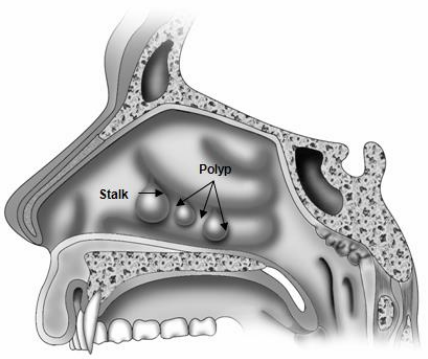
- Talk to your doctor about:
  - Allergies
  - Sinus congestion
  - Nasal blockages

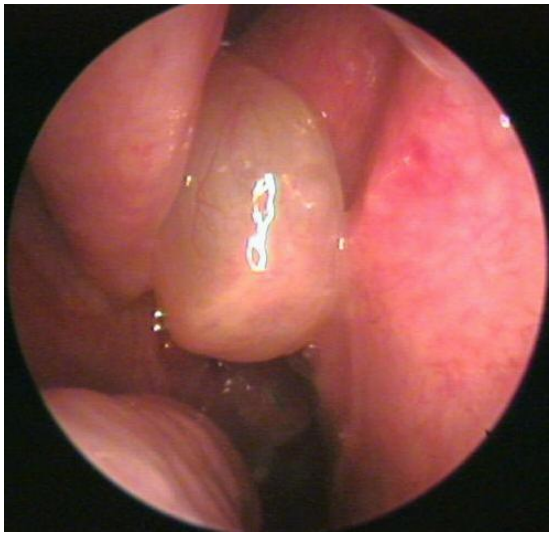


- Nasal problems can:
  - Worsen sleep apnea
  - Increase CPAP pressure needs
  - Make CPAP more difficult to tolerate

Sinus surgeries are often helpful

- Don't usually cure OSA
- Can decrease CPAP pressures
- Make CPAP easier to tolerate





- After having any nasal/sinus surgery, you will need to have another sleep study to reassess your sleep apnea and CPAP pressure needs

Take home message:

- Sleep apnea is common
- Sleep apnea is serious
- There is treatment available

- CPAP is the best and most common treatment
- Sleeping with CPAP is an adjustment
- There is help out there!

QUESTIONS???

Please visit:

www.advancedsleeplabs.net