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Science Transforming Life®

“All About Sleep Apnea”
National Jewish Health Sleep Medicine Department

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We Will Discuss:

- Healthy sleep and benefits
- Sleep disorders
- What is sleep apnea?
- Who should get tested?
- How does sleep apnea affect your health?
- How do we test for sleep apnea?
- What treatment options are there?
- Optimal living with sleep apnea

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What is Healthy Sleep?

- You fall asleep within 15-20 minutes of lying down
- You regularly sleep a total of 6 to 10 hours in a 24 –hour period
- Your sleep is continuous
- You wake feeling refreshed
- You feel alert

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Benefits of Good Sleep

- Sleep may:
  - Prevent cancer
  - Reduce stress
  - Reduce inflammation
  - Increase alertness
  - Improve memory
  - Help lose weight
  - Reduce risk of depression
  - Help the body repair itself

Journal of Internal Medicine, vol. 1, 2003 & vol. 2, 2007

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8 Healthy Sleep Tips

- Stick to a sleep schedule
- Practice a relaxing bedtime ritual
- Avoid naps (especially in the afternoon)
- Exercise daily
- Evaluate the room to ensure ideal temp (60-67 degrees), sound and light
- Sleep on a comfortable mattress and pillows
- Avoid alcohol, cigarettes, and heavy meals in evening
- Turn off electronics before bed

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Top 10 Sleep Disorders

- Insomnia
- Snoring
- Obstructive Sleep Apnea
- Sleep hypoventilation
- Restless Legs Syndrome (Daytime)
- Bruxism
- Narcolepsy
- Sleep walking and sleep talking
- Nightmares and night terrors
- REM Behavior Disorder

Sleep Health FOUNDATION

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What is Sleep Apnea?

- One or more pauses in breathing or shallow breathing while you sleep
- Pauses could last a few seconds up to a couple of minutes
- Can occur 5-100 times or more an hour
- 18 million Americans are diagnosed with sleep apnea according to the National Sleep Foundation

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Types of Sleep Apnea

- Two main types
  - Central Sleep Apnea
  - Obstructive Sleep Apnea

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Central Sleep Apnea

- The brain does not send proper signals to the muscles that control breathing
- Common reasons
  - High altitude
  - Heart failure
  - Neurological disease, i.e. Parkinson's or Alzheimer's
  - Prescription pain medication
  - Brain trauma or injuries

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Obstructive Sleep Apnea

- During sleep the muscles relax which causes the airway to narrow or collapse
- This includes:
  - Muscles of the upper airway
  - Tongue
- Repeated over and over

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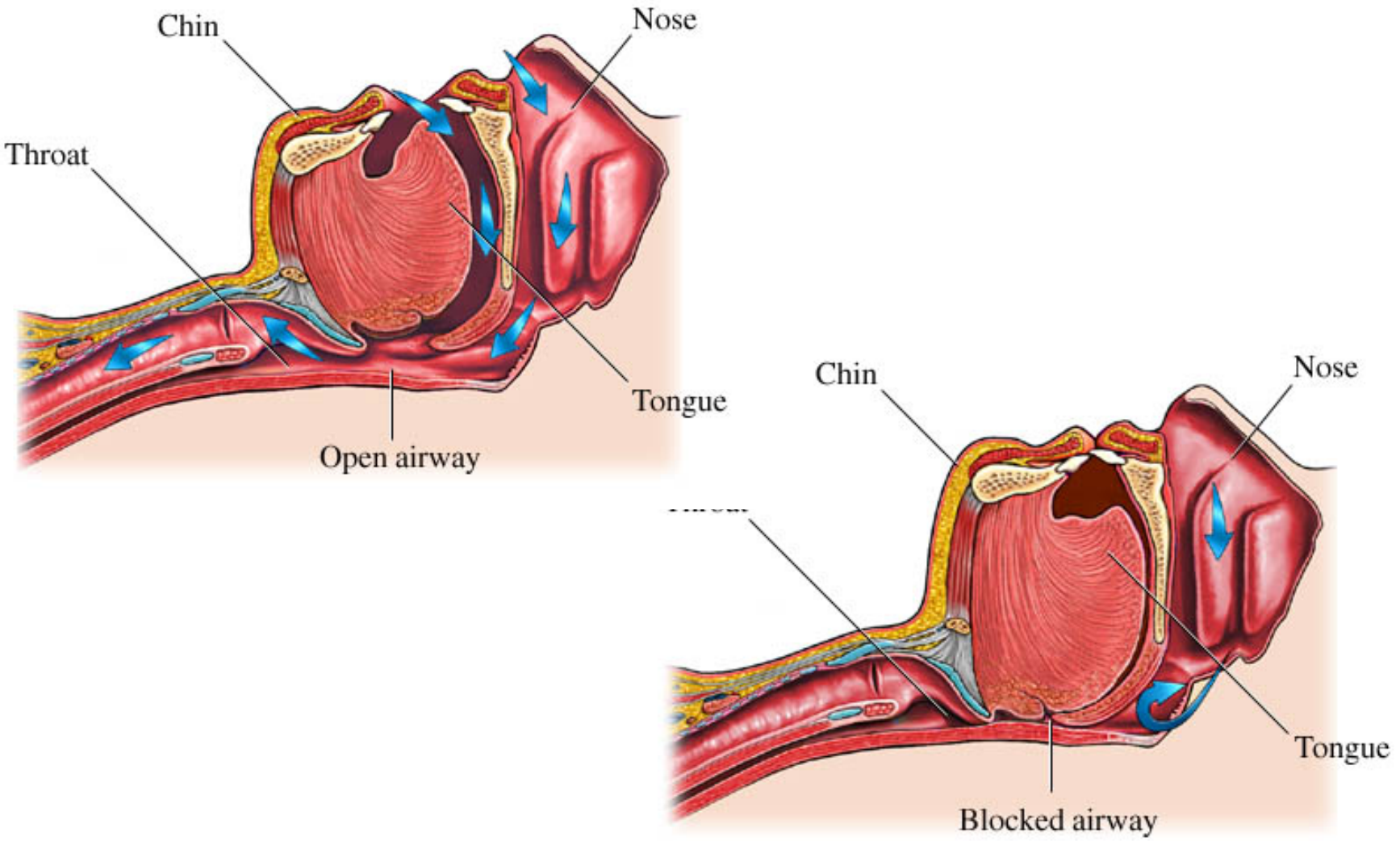

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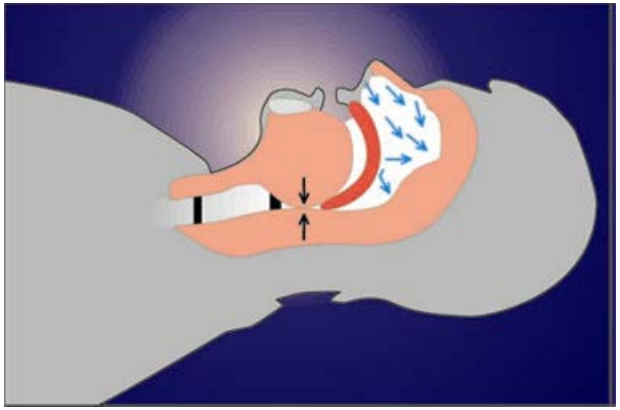

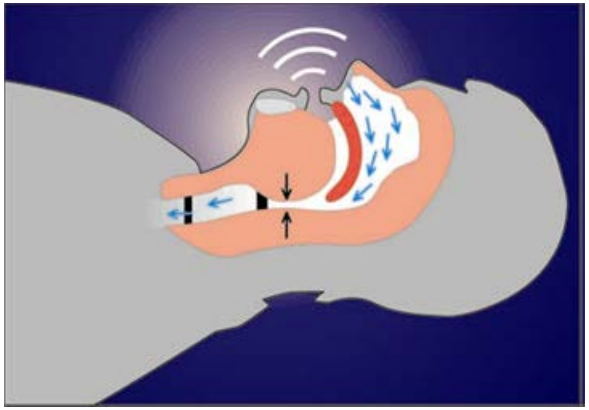

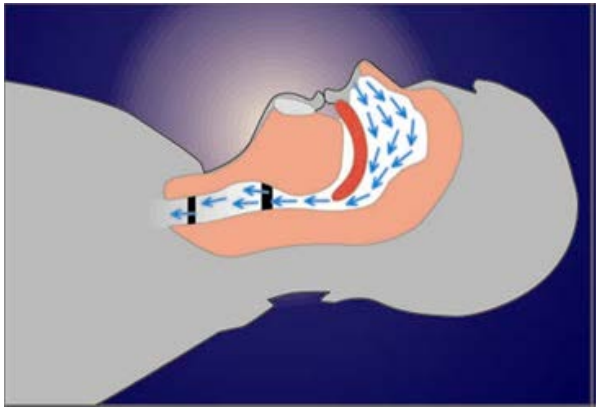

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Symptoms of Apnea

- Snoring
- Gasping/choking awakenings
- Increased nighttime sweating
- Morning headaches
- Moodiness/irritability
- Depression
- Heartburn
- Weight gain
- Increased nighttime urination
- Decreased sex drive/ED

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Symptoms of Apnea

- The biggest complaint is

  "I'm sleepy!"

- Daytime sleepiness
  - Frequent napping
- Falling asleep during activities
  - Work, meetings, watching TV, and driving

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Symptoms of Apnea

- Untreated OSA leads to an increased risk for impaired and drowsy driving
- Driving while drowsy is equivalent to driving while drunk
  - 18 hours awake is equivalent to a blood alcohol content of 0.08
  - 10,000 crashes caused by fatigued drivers

Drowsydriving.org/about/detection-and-prevention/

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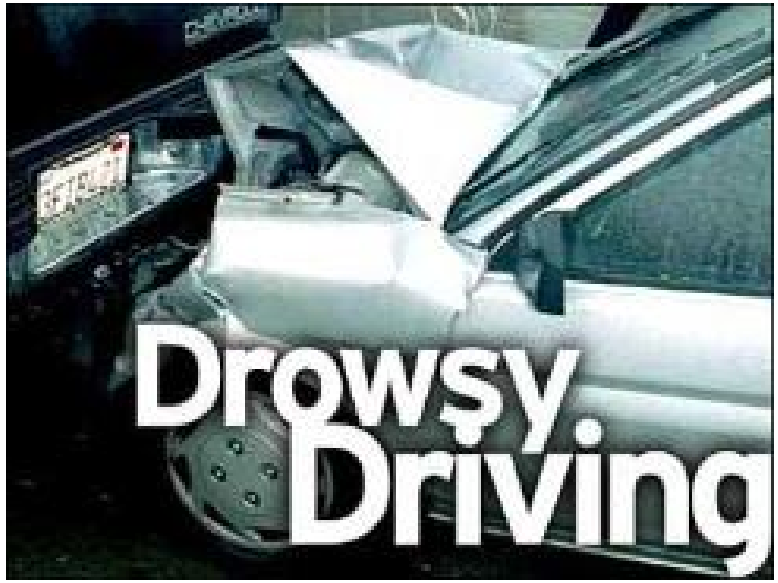
Drowsy Driving = Drunk Driving

- Signs of drowsy driving
  - Impaired judgment
  - Slow reaction time
  - Attention lapses
  - Distraction
  - Fast/sloppy driving
  - Impaired memory



- If you are tired - DO NOT DRIVE!

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Sleepiness Affects Work

- Sleepy people have more work-related accidents
- 53% of work accidents can be attributed to sleepiness

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Sleepiness Affects Work

- Notable disasters caused by sleepiness
  - Three Mile Island nuclear disaster, March 1979
  - Exxon Valdez Oil Spill, March 1989
  - Michigan Train Wreck, Nov 2001
  - Spuyten Duyvil Metro-North Derailment, Dec 2013
  - New Jersey Train Crash, Sept 2016

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What Causes OSA?

- OSA can be caused by many different environmental and genetic factors
  - Excess weight
  - Anatomy
  - Gender
  - Age
  - Medications
  - Medical issues

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What Causes OSA?

- Being overweight is the most common cause of obstructive sleep apnea
- 65% of Americans are currently overweight according to the CDC
- A weight gain of 10% increases the odds of developing moderate OSA six fold

Epidemology of OSA: A Population-based Perspective, 2009

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What Causes OSA?

- When you are overweight, there is more force pressing down on your airway
- Your airway cannot support the extra weight and it collapses
- You may also have fatty deposits around your respiratory tract that narrow the airway

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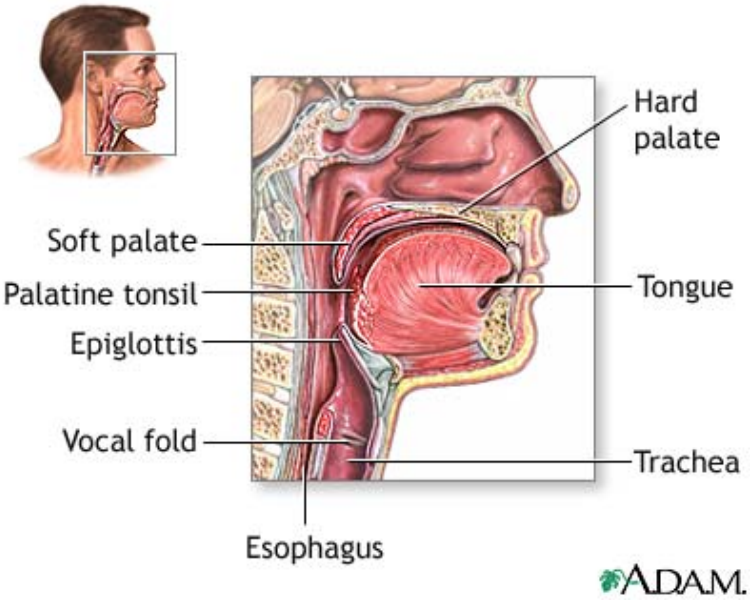
What Causes OSA?

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



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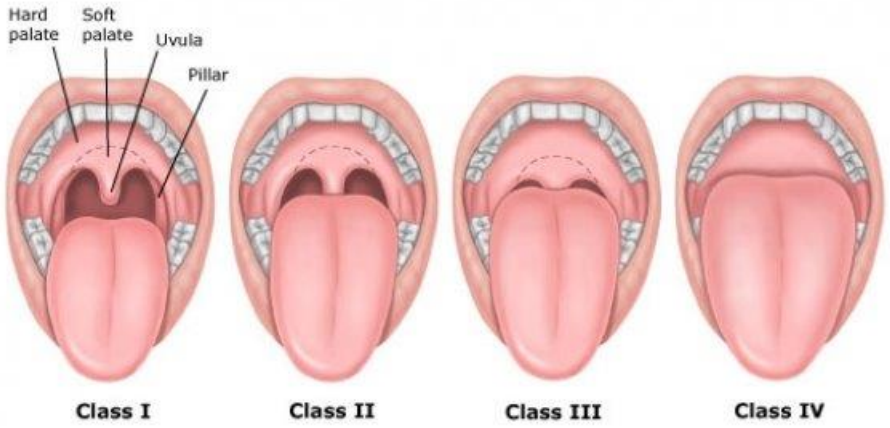
What Causes OSA?



Mallampati classification

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What Causes OSA?

- Anatomical risk factors
- Neck circumference
  - > 17 inches in men
  - > 16 inches in women

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What Causes OSA?

- OSA in Men vs Women
  - Men are twice as likely as women to be diagnosed with OSA
  - Signs in women may not be as obvious
  - More likely to affect mood and decision-making in women
  - Chances of developing OSA increase after menopause

http://www.eossleep.com/2015/05/11/how-men-and-women-are-different-when-it-comes-to-snoring-sleep-apnea/

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What Causes OSA?

- Men and women often experience varying symptoms
  - Men report
    - Snoring
    - Waking up gasping for air
    - Snorting

http://www.eossleep.com/2015/05/11/how-men-and-women-are-different-when-it-comes-to-snoring-sleep-apnea/

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What Causes OSA?

- OSA in women is mistaken for depression, hypertension, hypochondria or other disorders
- Women report
  - Shortness of breath
  - Snoring
  - Fatigue
  - Anxiety
  - Depression

http://www.eossleep.com/2015/05/11/how-men-and-women-are-different-when-it-comes-to-snoring-sleep-apnea/

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What Causes OSA?

- Additional Risk Factors
  - Age
  - Alcohol use before bed
  - Medications
    - Muscle relaxers, sedatives, pain meds
  - Heart failure/stroke
  - Neuromuscular weakness
    - MS, ALS

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What Happens During an Apnea

- You stop breathing
- Oxygen levels fall as your body suffocates
- Your brain will wake you up briefly to open your airway
- You may not realize that you are waking up or falling asleep
- Increased blood pressure and heart rate
- “Fight or flight” response
  - Increased stress hormones and adrenaline

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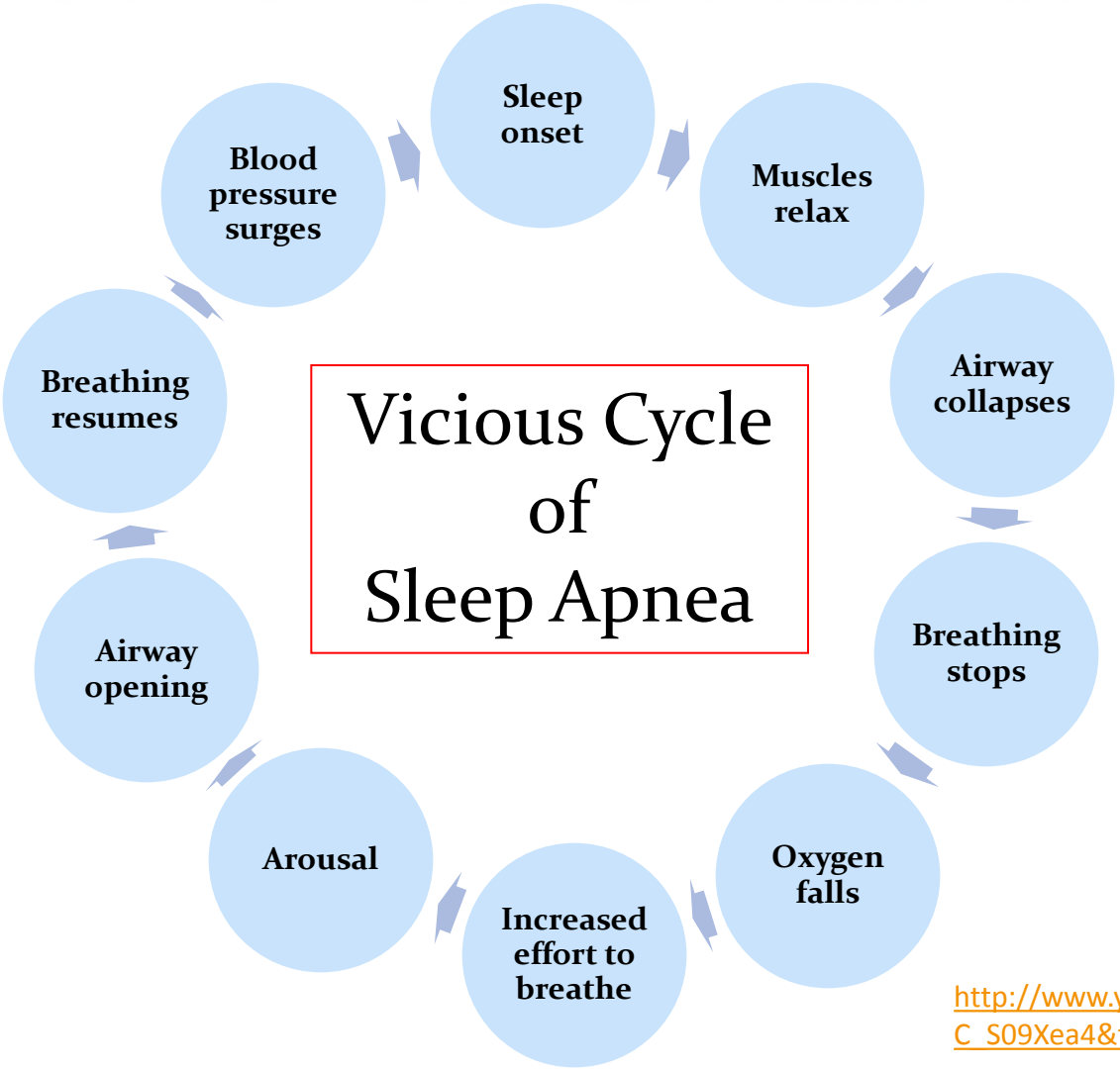

http://www.youtube.com/watch?v=TgC_S09Xea4&feature=related

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Long Term Consequences

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

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Testing for Sleep Apnea

- If you have any of the following symptoms, please talk to your doctor
  - Obesity (BMI >30)
  - Excessive sleepiness and/or insomnia
  - Snoring or witnessed pauses in breathing
  - High blood pressure (resistant to medication)
  - Diabetes
  - Atrial fibrillation
  - History of stroke, heart attack, heart failure

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Testing for Sleep Apnea

- How do we test?
- SLEEP STUDY!
  - In-Lab Sleep Study
  - Home Sleep Test

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Testing for Sleep Apnea

- A qualified sleep technologist will perform testing
- Specialized monitoring equipment is used
- Painless and noninvasive
- Done during your normal sleep time

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Testing for Sleep Apnea

- After changing into pajamas, sensors are applied
  - Cannula in your nose
  - Oxygen sensor on your finger
  - Sensors on your head, face, legs, chest
  - Flexible belts around your chest and abdomen

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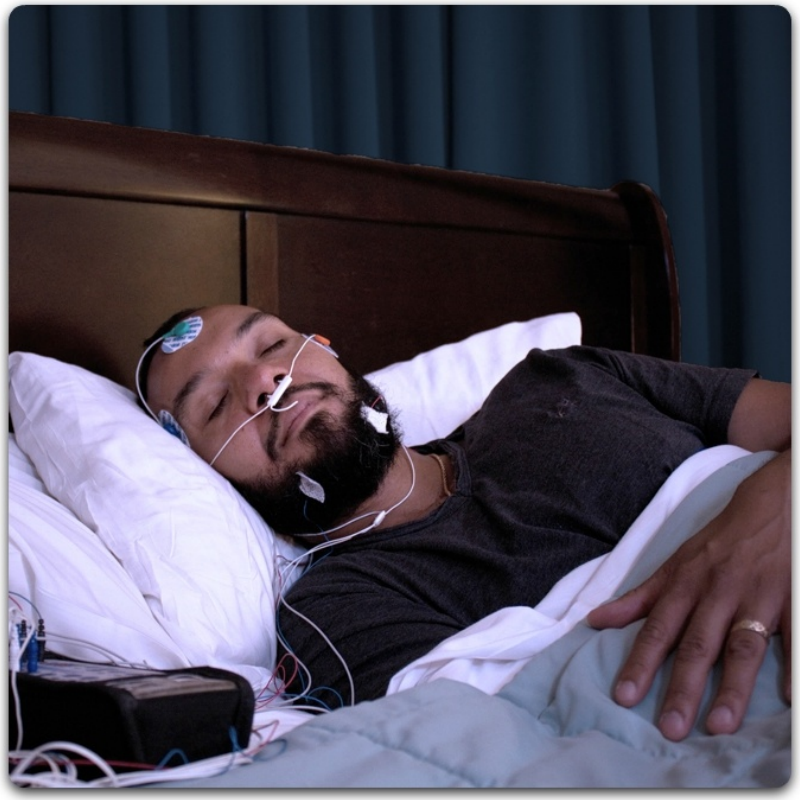
Testing for Sleep Apnea



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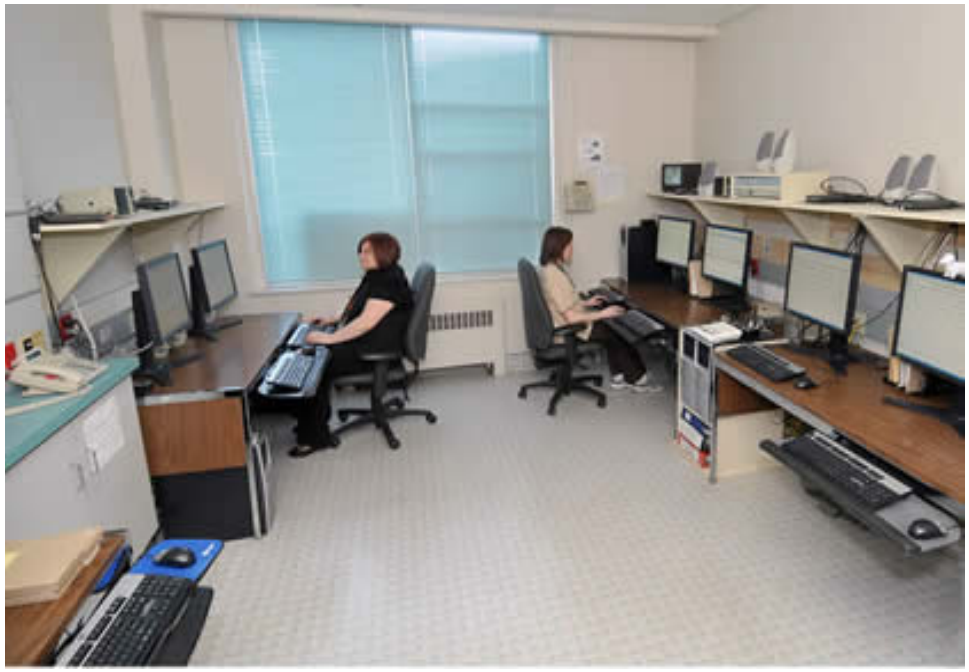
Testing for Sleep Apnea

- Your technologist will monitor you via audio/video from an adjoining room



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Testing for Sleep Apnea

- You will be monitored for
  - Pauses in breathing
  - Changes in oxygen levels
  - Heart abnormalities
  - Sleep talking/walking
  - Limb movements
  - Snoring
  - Teeth grinding

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Testing for Sleep Apnea

- How will I be able to sleep?
  - Despite all of the sensors most people are able to sleep
  - Extremely rare to not sleep at all
  - You can bring things from home to make testing more comfortable

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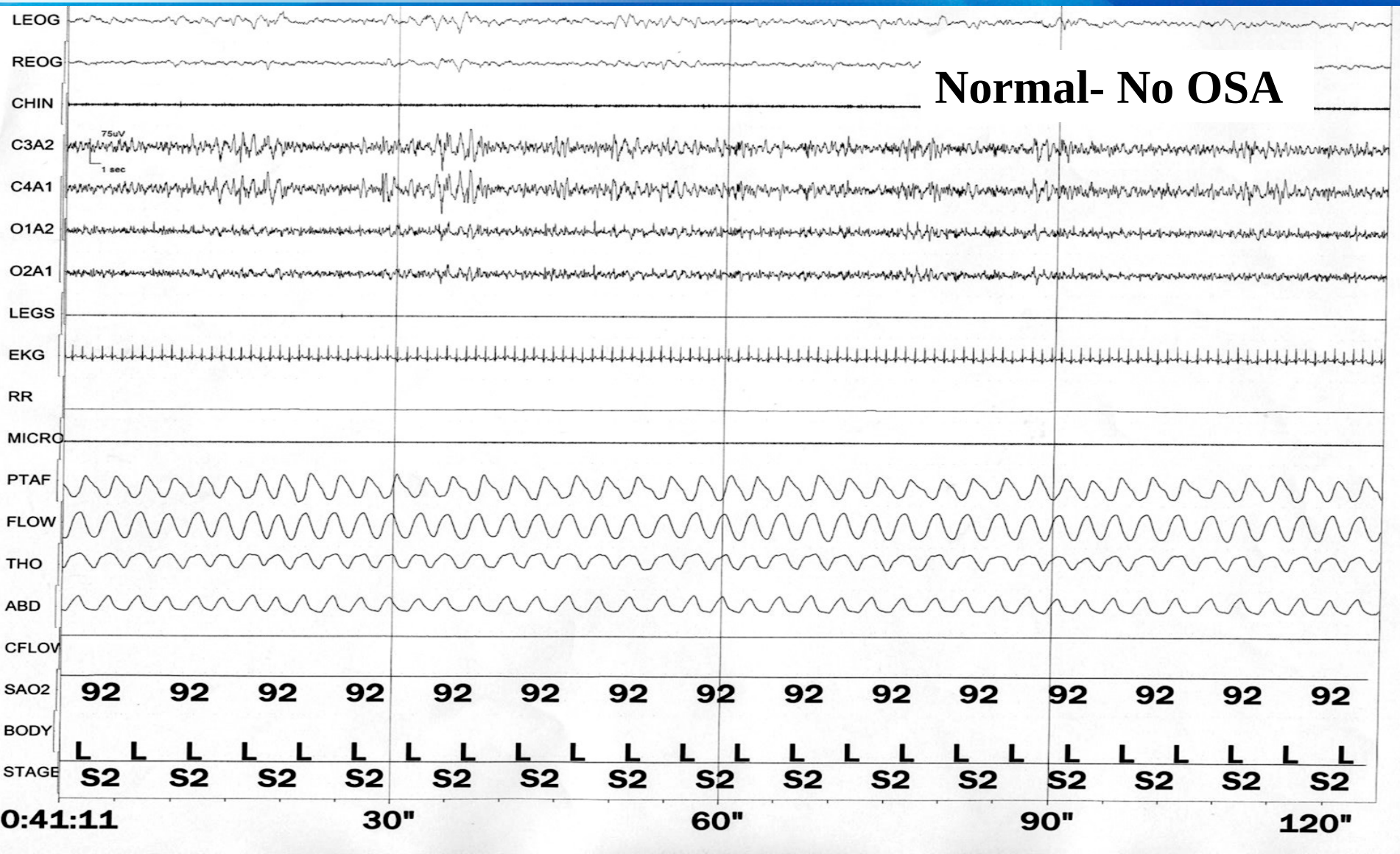

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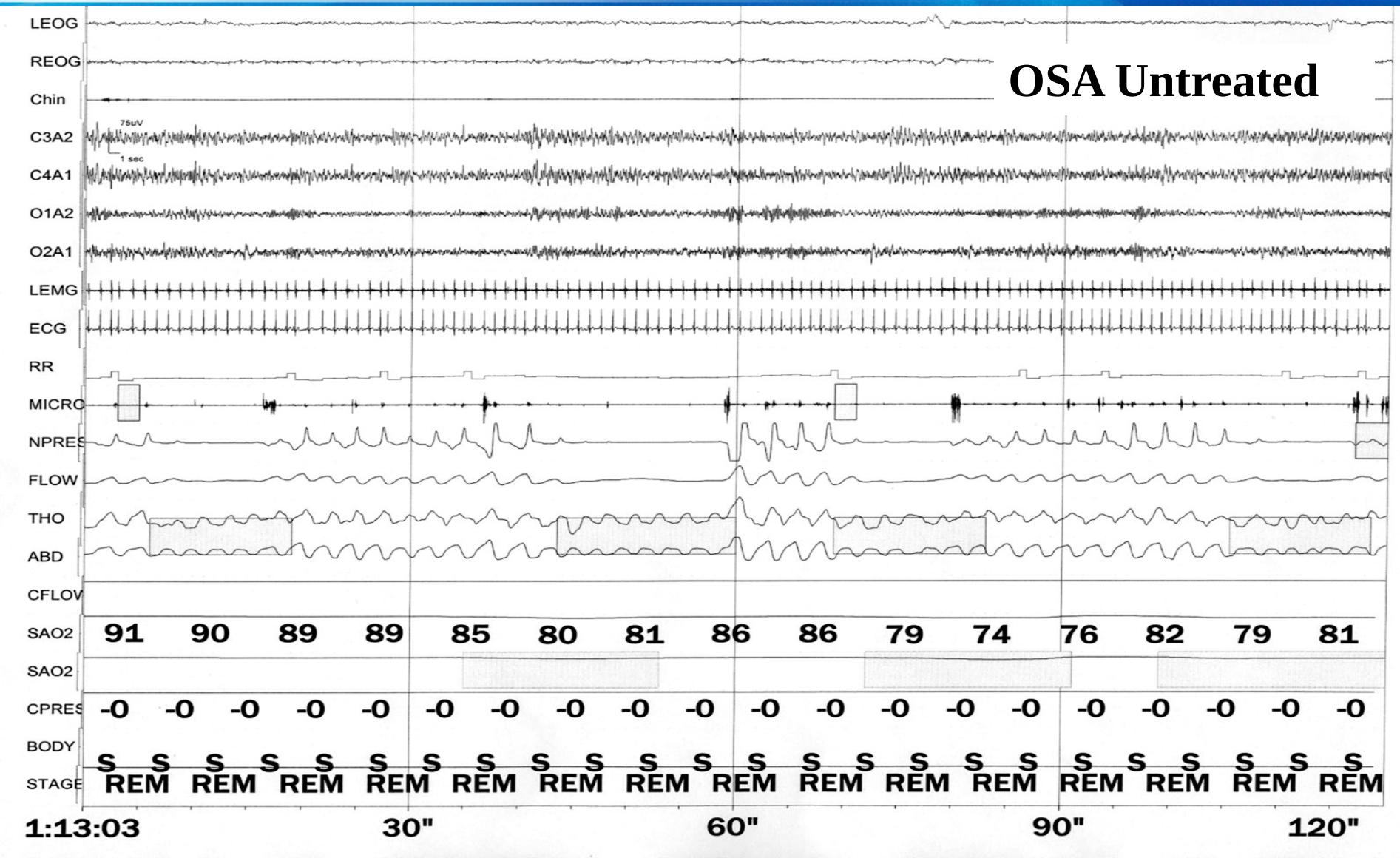

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Testing for Sleep Apnea

- AHI (Apnea-Hypopnea Index) - number of times you stop breathing per hour of sleep
  - <5 = normal
  - 5-15 = mild
  - 15-30 = moderate
  - >30 = severe

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Testing for Sleep Apnea

- During the test if you are having symptoms of apnea your technologist may start CPAP
- The goal is to provide data so your doctor can prescribe the correct treatment
- Reviewed by a board certified sleep physician
- Results are sent to the ordering physician with recommended treatment

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Testing for Sleep Apnea

- Home Sleep Testing
  - Small device
  - Instructed by a qualified sleep technologist
  - Take home overnight
  - Limited information obtained

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Testing for Sleep Apnea

- May not be appropriate for all patients
  - Probability of central apnea
  - Using oxygen
  - Heart problems
  - Seizure disorders
  - Use of pain medications
  - Severe arthritis/limited use of the hands
  - Suspected of other sleep disorders

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Treatment Options

- CPAP Therapy
- Oral Appliances
- Surgery

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CPAP Therapy

- CPAP is the best treatment available

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

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CPAP Therapy

- You wear a mask over your nose and/or mouth while you are sleeping
- This mask is connected by a hose to a CPAP machine which blows air into your airway
- Air pressure holds your airway open so it can't collapse

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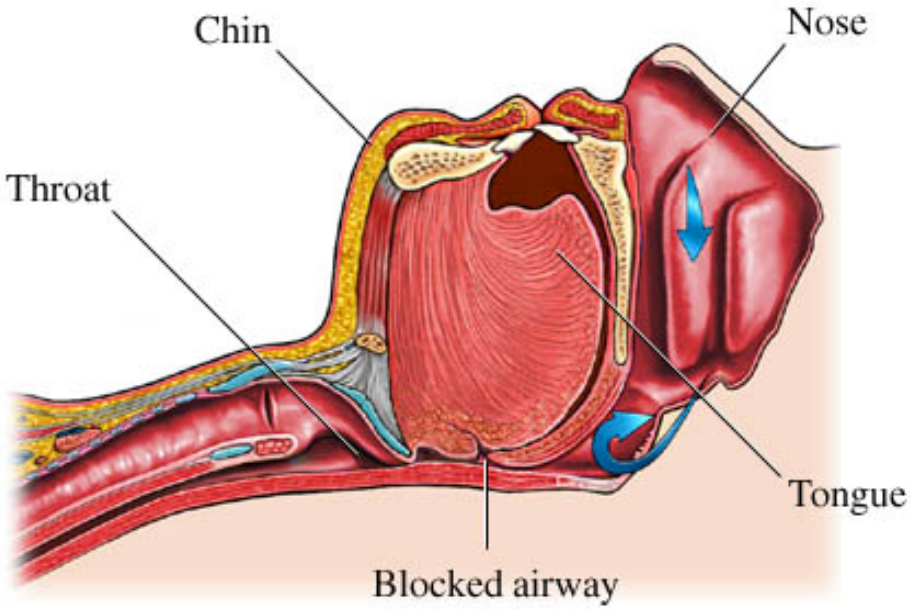
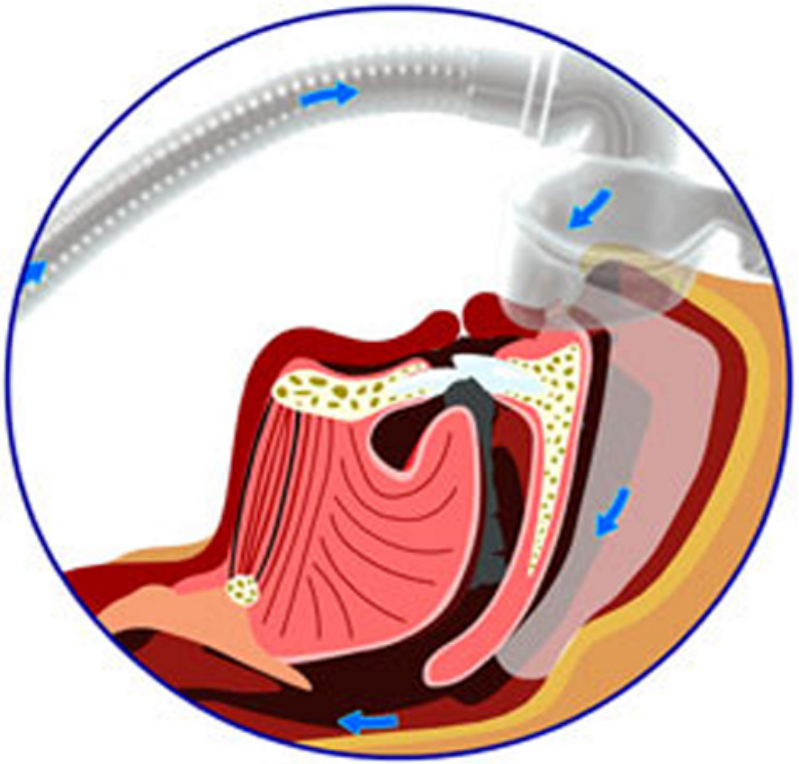
CPAP Therapy





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CPAP Therapy

- There are several mask styles and options
  - Full face mask
  - Nasal mask
  - Nasal pillows

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CPAP Therapy

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CPAP Therapy

- Pressures are measured in cmH2O
  - Most CPAP machines range from 5-20 cmH2O
- Pressure needs are individual
  - Everyone needs a different setting to keep their airway open
- CPAP pressure is a prescription that is ordered by a doctor

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CPAP Therapy

- DME companies supply medical equipment that a doctor prescribes for use at home
- Your durable medical equipment company (DME) can work with you to address your concerns and find a mask that best works for you

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CPAP Therapy

- Many factors influence mask selection
  - Size and shape of your face, nose/nasal bridge and lower jaw
  - Facial hair
  - Skin allergies
  - Sleeping position (side sleeper vs. back sleeper)
  - Claustrophobia or anxiety

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CPAP Therapy

- If you have any of the following concerns about your CPAP mask – please contact your DME company
  - Leaky
  - Uncomfortable
  - Cumbersome
  - Painful- especially on the bridge of the nose

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CPAP Therapy

- **Don't give up!**
- **Get help!**
  - from your provider, DME Company and NJH CPAP support group.
- There is an adjustment period with CPAP
- It may take several weeks to get used to the mask/pressure

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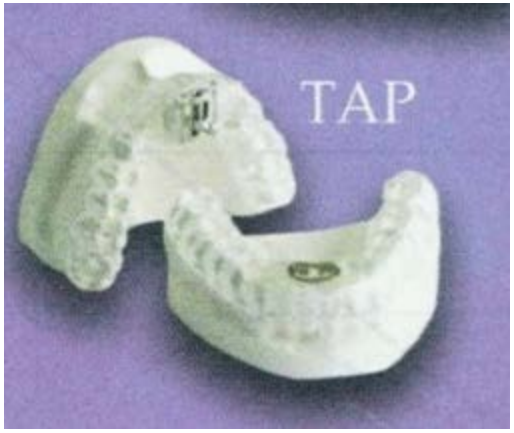
Oral Appliances



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Oral Appliances

- Over 100 styles are FDA approved
- May be used with CPAP
- Effective for 60-80% of patients
- Treats mild/moderate OSA
- Made by a Dentist specializing in sleep

http://www.sleepsilently.com/sleep-apnea/oral-appliance-therapy

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Surgical Treatment Options

- UPPP (Uvulopalatopharyngoplasty)
- Maxillomandibuloplasty

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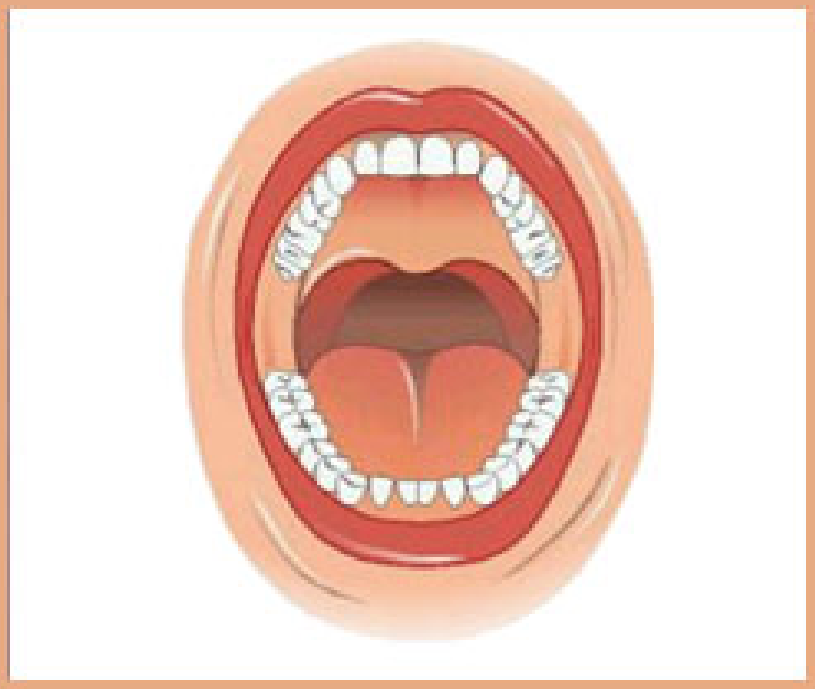
Uvulopalatopharyngoplasty



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Uvulopalatopharyngoplasty

- UPPP (Uvulopalatopharyngoplasty)
  - 18-86% effective
  - Recovery may be painful
  - Scar tissue may form leading to additional surgery/CPAP
  - Effective mainly for mild/moderate sleep apnea

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2735429

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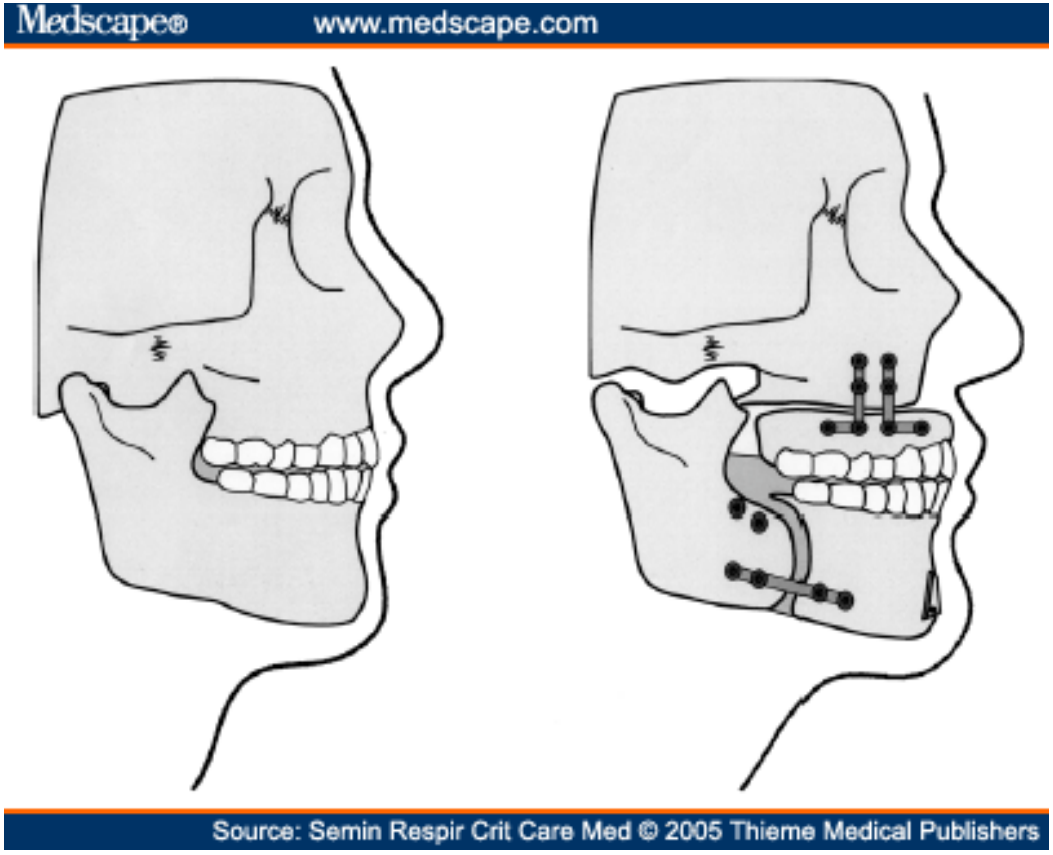
Maxillomandibuloplasty



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Maxillomandibuloplasty

- 86% success rate
- Less painful than UPPP
- Orthodontic braces may be needed
- Effective for mild, moderate, and severe sleep apnea

Barker, Jones. *Obstructive Sleep Apnea, An Issue of Sleep Medicine Clinics, Volume 8, Number 4*. Retrieved from http://books.google.com

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What about Oxygen?

- Oxygen alone will not treat OSA
  - If your airway is closed, oxygen won't help
  - You will still have frequent awakenings and cardiovascular risks/complications
  - Oxygen is sometimes used with CPAP

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Optimal Living with OSA

- Regardless of which treatment you choose, there are other things you can do in order to help your OSA

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Optimal Living with OSA

- Get Healthy!
  - Even small amounts of weight loss can help!
    - 10-20 pounds makes a big difference
    - Lower BMI = decreased severity of OSA
    - May lower CPAP pressure needs

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Optimal Living with OSA

- Avoid alcohol before bed
- Speak with your doctor about stopping any medications that worsen OSA

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Optimal Living with OSA

- Avoid sleeping on your back
  - Wear a fannypack/backpack with tennis balls inside
  - Search online for available options

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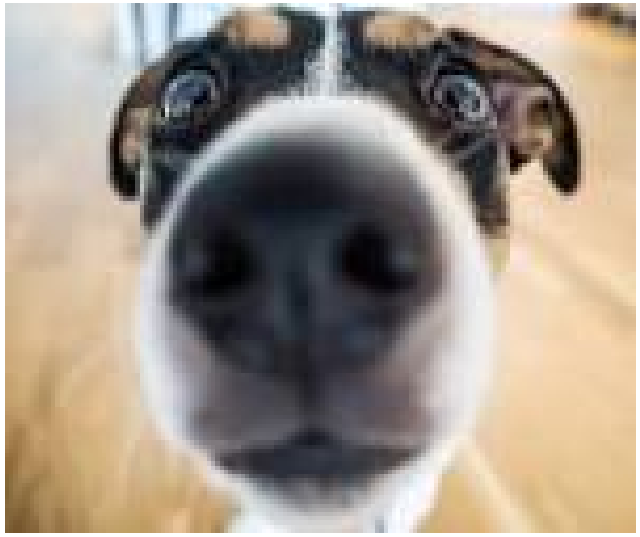
Optimal Living with OSA

- Take care of your nose!
  - Nasal problems may
    - Worsen sleep apnea
    - Increase CPAP pressure needs
    - Make CPAP difficult to tolerate



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Optimal Living with OSA

- Talk to your doctor about
  - Allergies
  - Sinus congestion
  - Nasal blockages
- Sinus surgery may be helpful
  - Deviated septum
  - Nasal Polyps

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We Want You to Know

- Sleep apnea is
  - Common
  - Serious
  - TREATABLE!
- CPAP is the best and most common therapy
- Sleeping with CPAP will be an adjustment
- We are here to help!

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Questions???

- For more information please visit us at:

www.njhealth.org/sleep-ed