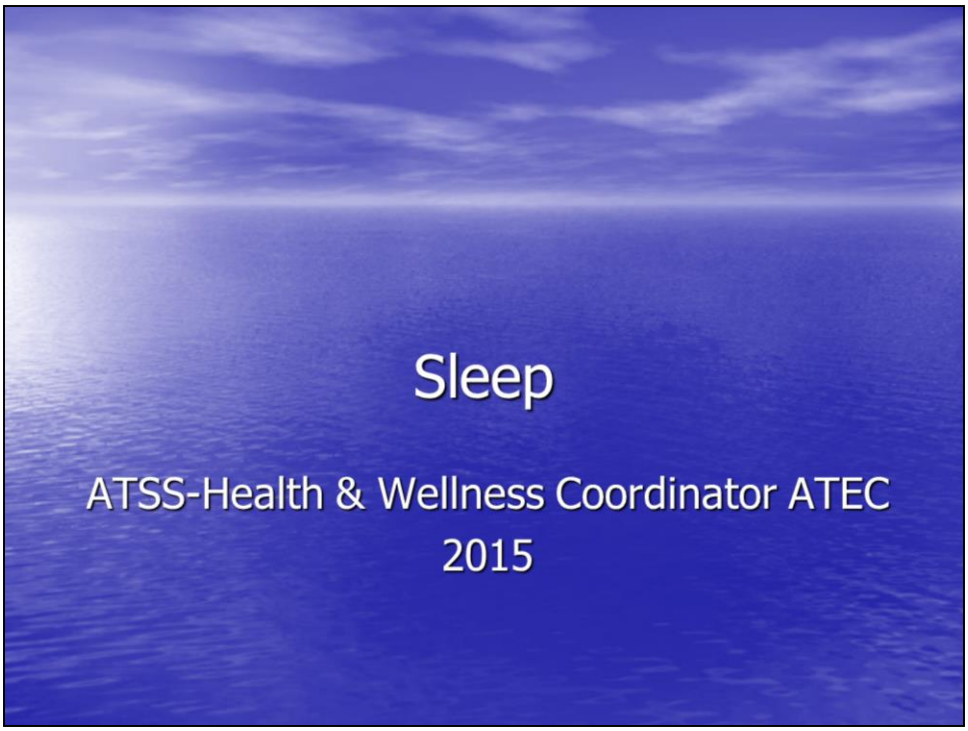


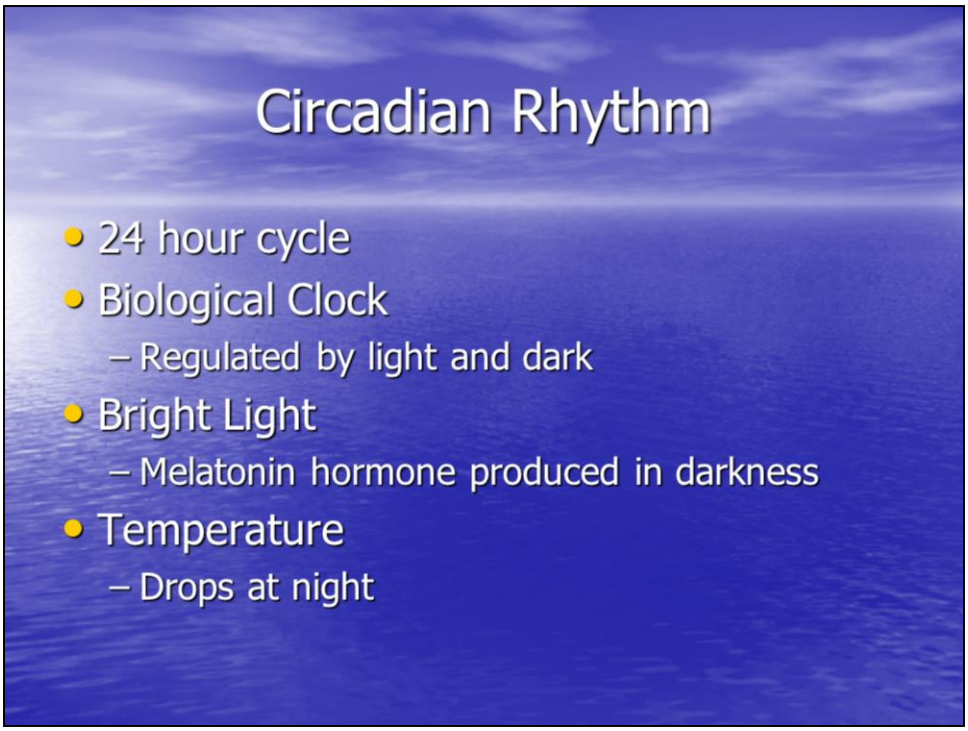
Sleep is a biological requirement that effects our health productivity safety and quality of life. It restores our brain and body which makes it as necessary as air water and food.

Biological Requirement

- Effects our health, productivity, safety and quality of life
- Restores our brain and body
- As necessary as air water and food

Topics

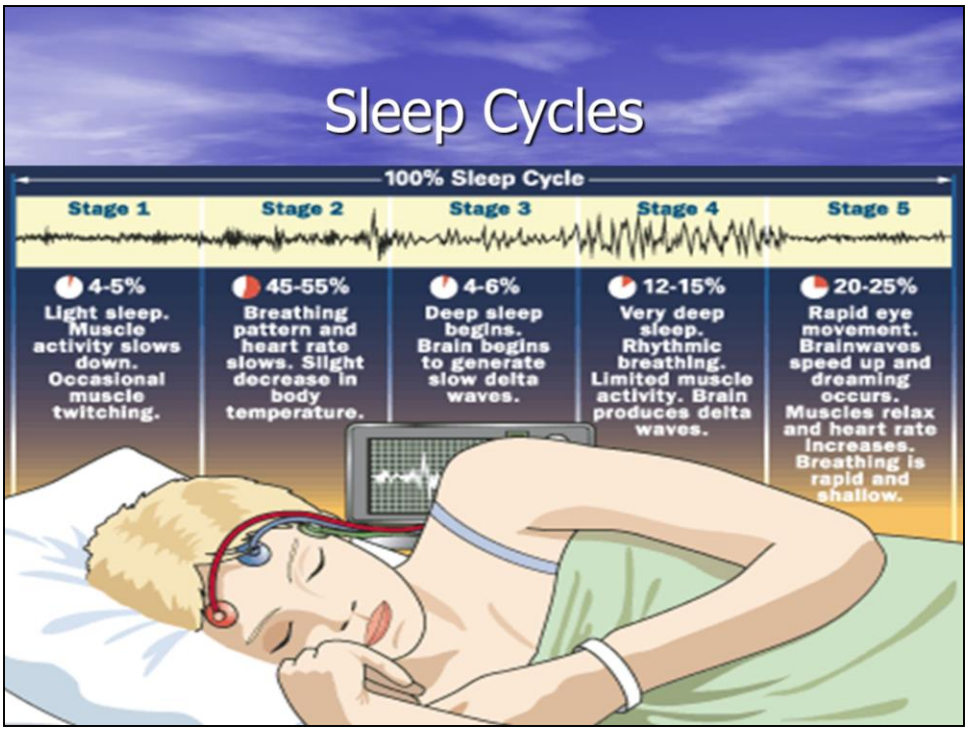
- Sleep Patterns
- Sleep Hygiene
- Snoring
- Sleep Disorders
- Treatments
- Resources



Light from the TV, Computer, lights from cell phones and alarm clocks can interrupt the Circadian Rhythm.

Normal Sleep Cycles

- During sleep, the brain passes through five stages: 1, 2, 3, 4, and REM (rapid eye movement)
- One complete sleep cycle lasts about 90 to 100 minutes
- During an average night's sleep, a person will experience about four or five cycles

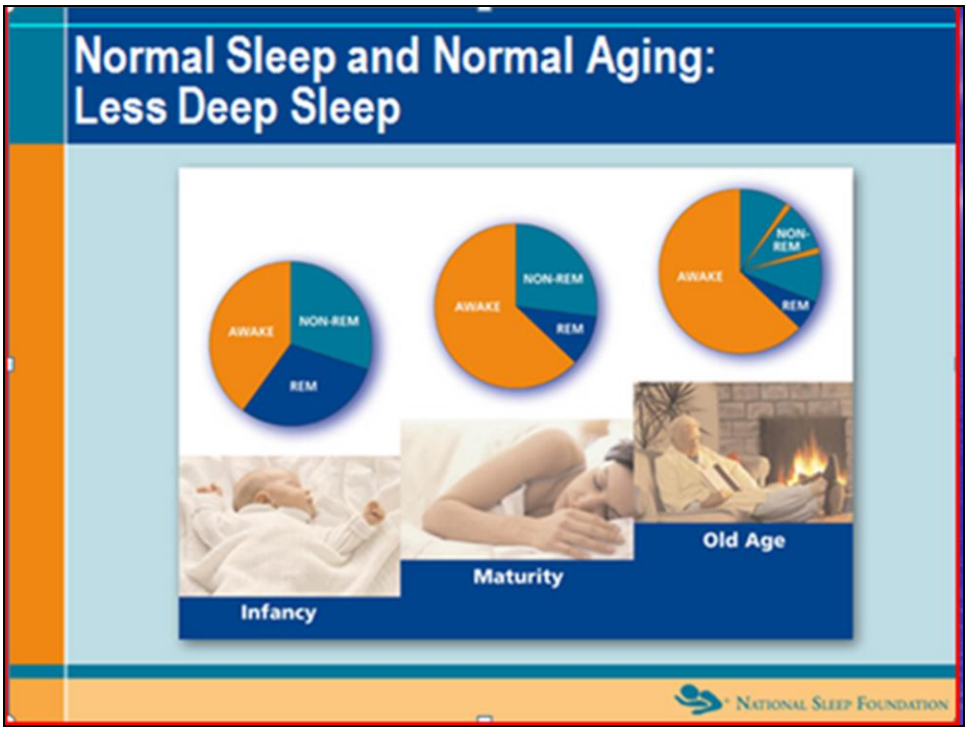

Sleep Cycles
100% Sleep Cycle
Stage 1
Stage 2
Stage 3
Stage 4
Stage 5
4-5%
Light sleep. Muscle activity slows down. Occasional muscle twitching.
45-55%
Breathing pattern and heart rate slows. Slight decrease in body temperature.
4-6%
Deep sleep begins. Brain begins to generate slow delta waves.
12-15%
Very deep sleep. Rhythmic breathing. Limited muscle activity. Brain produces delta waves.
20-25%
Rapid eye movement. Brainwaves speed up and dreaming occurs. Muscles relax and heart rate increases. Breathing is rapid and shallow.

Sleep Cycles

- All stages of sleep are important
  - Tissue growth and repair occur
  - Energy is restored
  - Learning or memory is consolidated

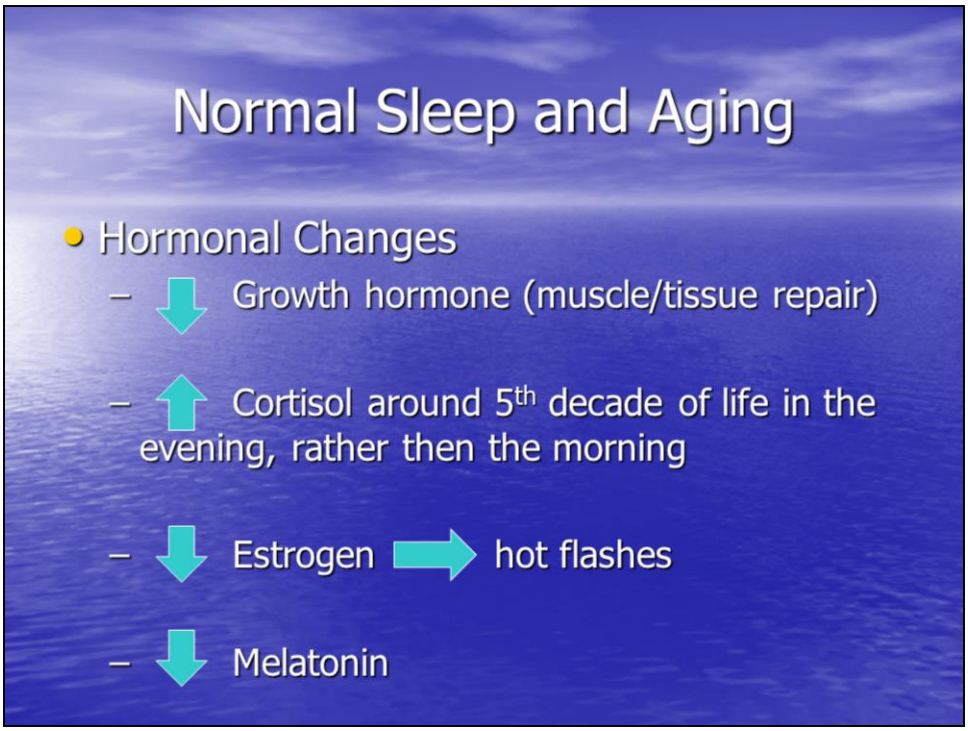
Sleep Needs Over the Life Cycle

- **Infants/Babies**: 10 to 16 hours
- **Children/Teenagers**: about 9 hours
- **Adults/Elderly**: 7 to 8 hours but some people may need as few as 5 hours or as many as 10 hours
- **Pregnant Women**: 8+ hours


Normal Sleep and Normal Aging:
Less Deep Sleep
AWAKE
NON-REM
REM
AWAKE
NON-REM
REM
AWAKE
NON-REM
REM
Infancy
Maturity
Old Age
National Sleep Foundation

Normal Sleep and Aging

- As we age, our brain waves change
- Less time is spent in stages 3 and 4
- Stage 1 sleep may increase 8-15%
- Changes are associated with the aging process, but the disruptions in sleep are likely due to the impact of medical or psychiatric conditions (i.e. arthritis, GI)



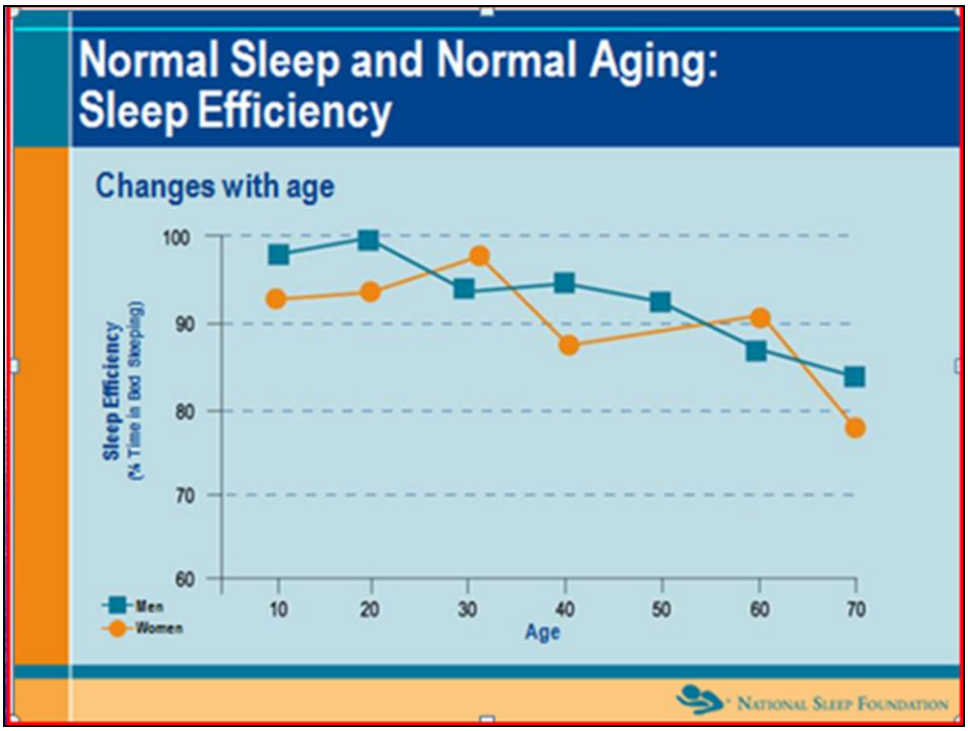
All of these changes may effect the quality of sleep

Normal Sleep and Aging

- ↑ Sensitivity to environment
  - Noise light and temperature
  - Shift work, jet lag

Sleep Hygiene Techniques

- Establish a regular relaxing bedtime routine
  - Avoid emotionally upsetting situations
  - Don't dwell on, or bring your problems to bed
- Associate your bed with sleep
  - Try not to use your bed to watch TV, listen to the radio, or reading
- Make sure that the sleep environment is pleasant and relaxing
  - Lighting, temperature
  - Color and clutter


Normal Sleep and Normal Aging:
Sleep Efficiency
Changes with age
Sleep Efficiency
(% Time in Bed Sleeping)
100
90
80
70
60
10
20
30
40
50
60
70
Age
Men
Women
National Sleep Foundation

Sleep Hygiene Techniques

- Avoid stimulants such as caffeine, nicotine, and alcohol too close to bedtime
- Exercise
  - Vigorous exercise is recommended in the morning or late afternoon
  - Relaxing exercise, like yoga, can be done before bed to help initiate a restful night's sleep
- Avoid napping

Food and Beverage Effects

- Some carbohydrates contain the amino acid tryptophan that causes sleepiness
  - Parmesan & cheddar cheese, turkey
  - Large meals can make a person feel sleepy
- Food can be disruptive right before sleep

Food and Beverage Effects

- Caffeine blocks the action of hormones in the brain that make us sleepy
- Most energy drinks are made with caffeine, essential amino acids, and loads of sugar
  - No drink allows you to safely skimp on sleep
- Alcohol may help you to relax and fall asleep in the short term, but it can disrupt sleep over the course of the night

Nicotine

- Greatest effect during withdrawal
- May increase nightmares
- Can disturb brain's ability to regulate breathing during sleep
- May make falling asleep difficult taken too close to bedtime

Sleep Problems/Disorders Prevalent Among Older Persons

SYMPTOMS OF SLEEP PROBLEMS BY AGE

Symptoms: a few nights a week or more	55-64	65-74	75-84
Insomnia	49%	46%	50%
Snoring	41%	28%	22%
Sleep Apnea	9%	6%	7%
Restless Legs Syndrome (RLS)	15%	17%	21%

National Sleep Foundation

Insomnia

- Problem falling asleep, maintaining sleep, or experience non-restorative sleep on a regular or frequent basis
- May be temporary or chronic (> 1 mo.)
- Affects 1 in 10 Americans
  - 1 in 4 has difficulty sleeping sometimes
  - 48% older population effected several nights per week

Insomnia and Aging

- Change in sleep patterns
  - Sleep becomes less restful as you age.
  - With age you tend to get tired earlier in the evening and wake up earlier in the morning.
- Change in activity
  - May become less physically or socially active.
  - Activity helps promote a good night's sleep.

Insomnia and Aging

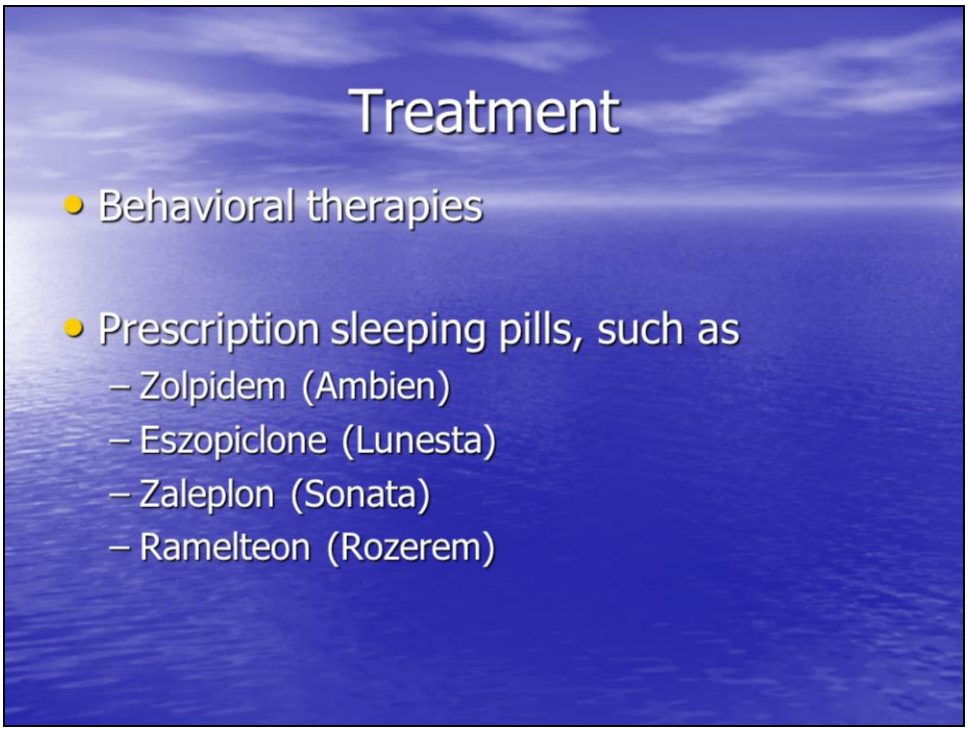
- Change in health
  - Chronic pain related to arthritis, back problems
  - Depression, anxiety, stress
- Children and teenagers
  - Resist regular bedtimes related to their natural (circadian) rhythms
  - Guides your wake-sleep cycle, metabolism and body temperature

Symptoms

- Difficulty falling asleep at night
- Waking up during the night
- Waking up too early
- Daytime fatigue or sleepiness
- Daytime irritability

Causes

- Stress, anxiety, or depression
- Stimulants (prescription or OTC drugs)
- Change in your environment or work schedule
- Eating too much before bedtime



Discuss all treatments with physician

Treatment-Behavioral

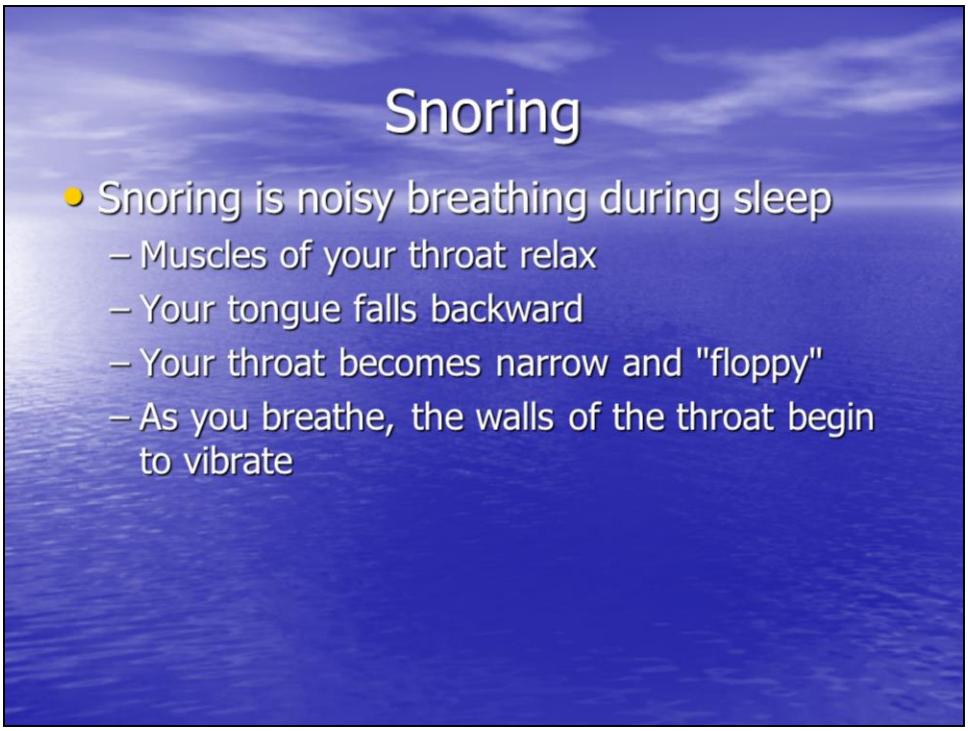
- Associate the bed with sleep
- Restrict time in bed to only when sleepy
- Relaxation training, anxiety reduction
- Develop positive attitudes about sleep

Treatment-Pharmaceutical

- Hypnotics
  - Proven effective in hastening sleep onset, reducing number and duration of awakenings and/or improving overall self-reported sleep quality
  - Fewer side effects with appropriate dosage
- Evidence that women tend to sleep better overall, they demonstrate a higher use of hypnotics.

Treatment-Complementary

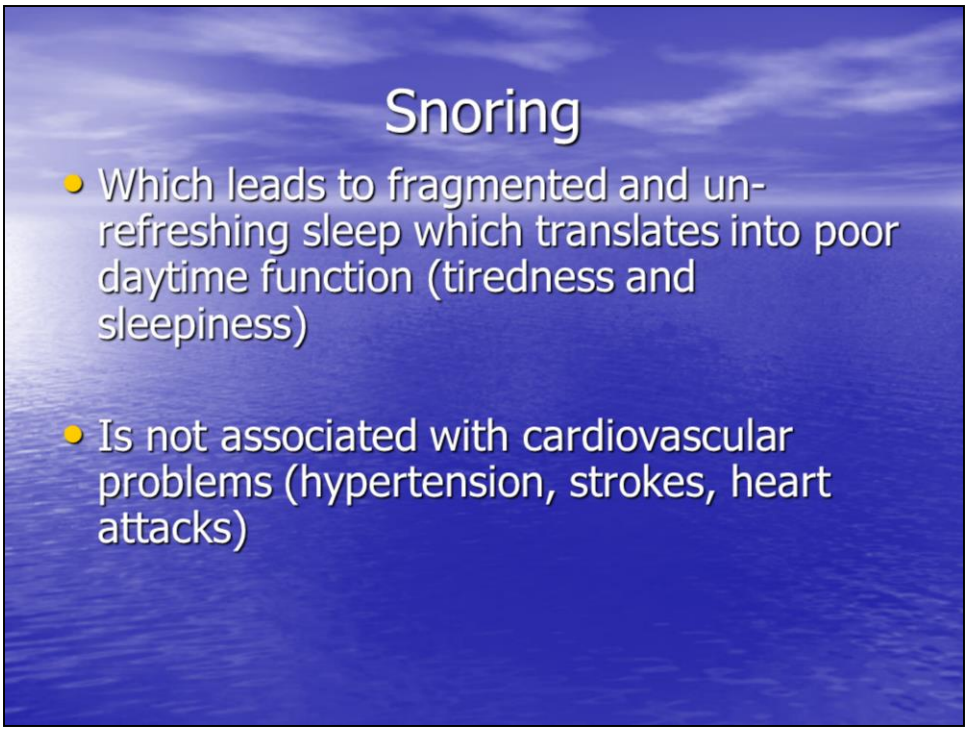
- Valerian and herbal products
- Melatonin may be helpful for falling asleep and jet lag
  - No conclusive evidence as to its safety and effectiveness, especially for long-term use
- No rigorous testing of these products
- No regulations regarding the manufacturing or prescribing of products


Snoring
Snoring is noisy breathing during sleep
Muscles of your throat relax
Your tongue falls backward
Your throat becomes narrow and "floppy"
As you breathe, the walls of the throat begin to vibrate

-

Snoring

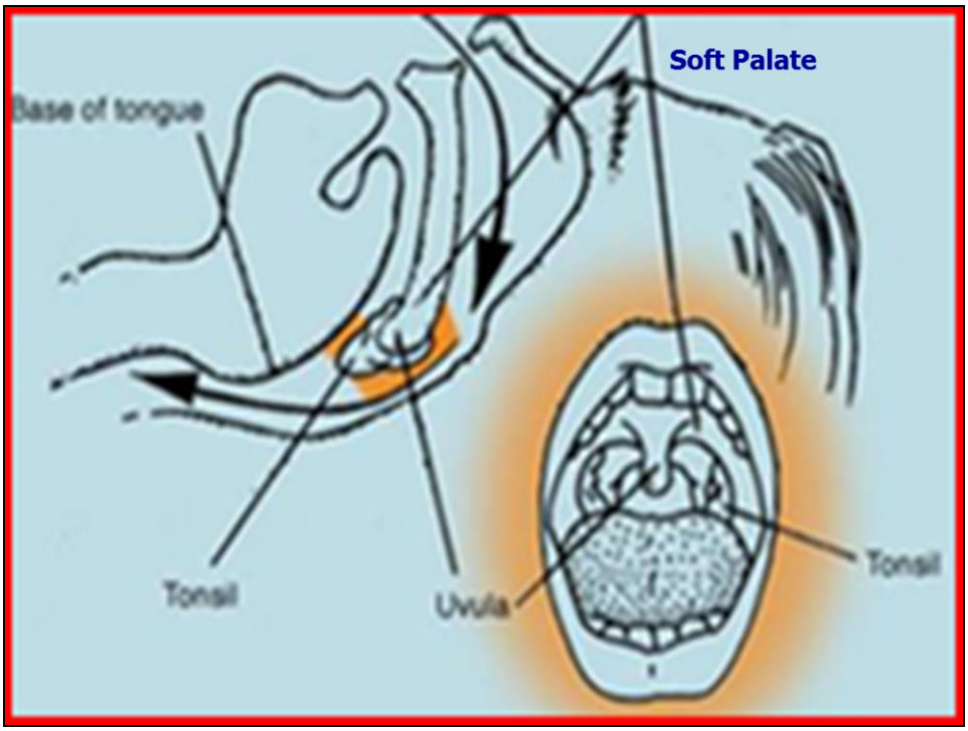
- A common problem among all ages and both genders, affecting approximately 90 million American adults — 37 million on a regular basis
- Snoring may occur nightly or occasionally, usually becoming more serious with age


Snoring
Which leads to fragmented and un-refreshing sleep which translates into poor daytime function (tiredness and sleepiness)
Is not associated with cardiovascular problems (hypertension, strokes, heart attacks)

-

Risks for Snoring

- Aging process
- Nose and throat abnormalities:
  - Enlarged tonsils or adenoids
  - Nasal polyps
  - Deviated nasal septum



While breathing in, the air passage between the upper soft palate and the throat or base of the tongue opens and closes. As muscles relax, there is a partial obstruction to the air passage - the area colored orange in the diagram - causing the tissues to vibrate and make the snoring noise.

Snoring

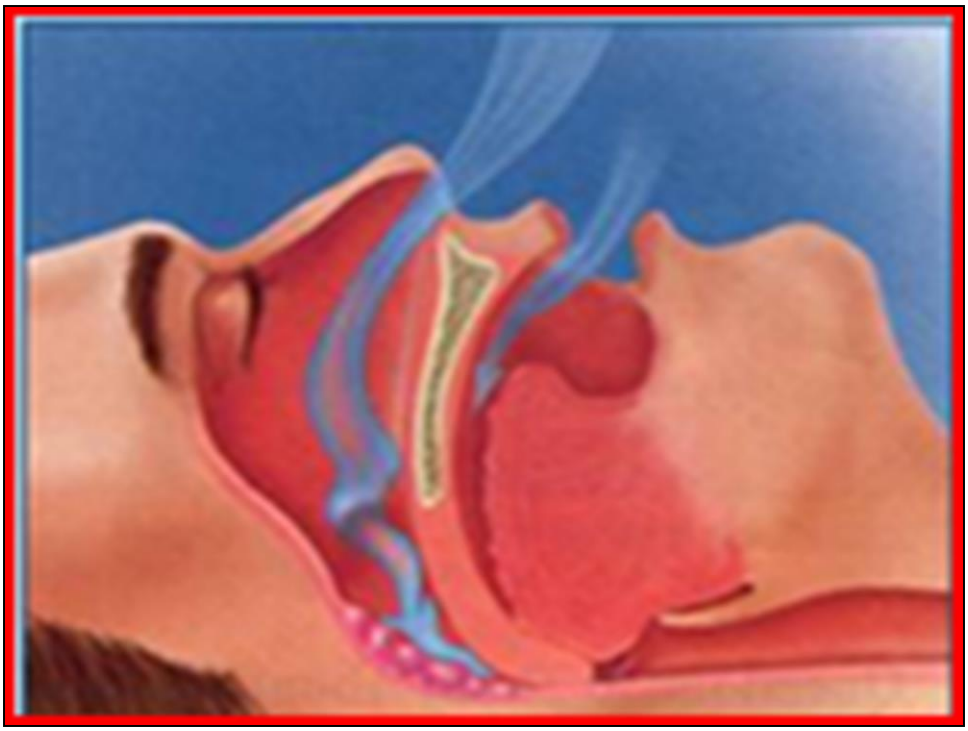
- Sleeping on your back
- Alcohol or muscle relaxants in the evening
- Obesity, particularly fatty tissue around the neck

Sleep Apnea

- Obstructive Sleep Apnea Syndrome (OSAS)
  - Airway narrows so much that it closes, and the person can't breathe (most common type)
- Central Sleep Apnea
  - Airway stays open, brain stops using the muscles to control breathing (rarest type)
- Mixed
  - Involves both a blocked airway and a brain signal problem

Sleep Apnea

- Affects 18 million Americans
  - 4% of middle-aged men
  - 2% of middle-aged women
- Older men and women may even experience more episodes of apnea.



Sleep Apnea

- Air is blocked, breathing pauses - sometimes >60 seconds
- Oxygen levels drop alerting brain to cause an arousal, breathing resumes
  - Snoring often accompanies this event
- 20-60 of these events can occur in an hour causing multiple sleep disruptions and daytime sleepiness

Untreated Sleep Apnea

- Increases the risk of
  - High blood pressure
  - Heart attack
  - Stroke
  - Obesity
  - Headaches

Untreated Sleep Apnea

- Increases the risk of
  - Diabetes
  - Heart Failure
  - Irregular heart rhythms
  - Work related or driving related accidents
  - Depression

Diagnosing Sleep Disorders

- Medical and family history
- Physical exam
- Sleep Study

Sleep Study

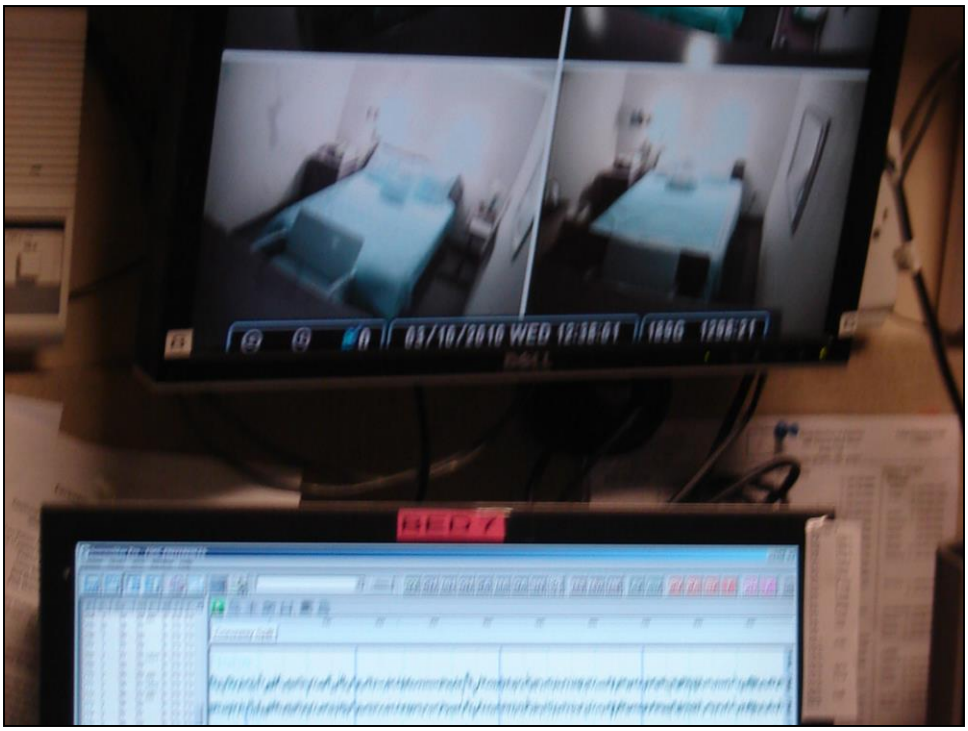
- Polysomnography:
  - Performed at night to study normal sleep patterns
  - Electrodes placed on the chin, scalp, and the outer edge of your eyelids
  - Must remain in place while you sleep

Sleep Study

- Polysomnography Records:
  - Brain waves
  - Eye movements
  - Breathing
  - Heart beat
  - Muscle activity
  - Body's oxygen level

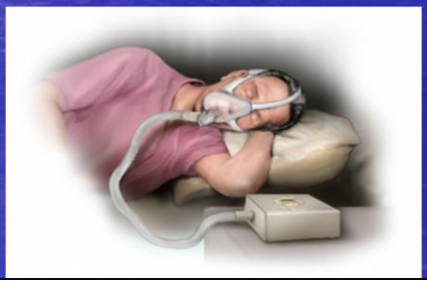
Sleep Center

- Offers privacy and comfort in a hotel-like setting
- Expert Care:
  - Referred to the center by primary care physician or medical specialist
  - Registered Polysomnographic Technologist (RTSGT)
  - Physician with special credentials in Sleep Medicine
  - State-of-the-art equipment



Treatment

- Moderate to Severe Cases:
  - Continuous Positive Airway Pressure (CPAP)
    - A steady stream of air pumped through a small facial mask keeps the airway open




RESPIRONICS


OptiLife


Pulse Oximeter
RESPIRONICS
OmniLab
HELIX HEALTH, INC.

Periodic Limb Movement Disorder (PLMD)

- Neurological movement disorder
  - Periodic episodes of leg or upper extremity movements/jerks that occur during sleep
- Tend to cluster in episodes that may last from a few minutes to several hours

Periodic Limb Movement Disorder (PLMD)

- Very different from the normal spasms often experienced when first falling asleep
- Cause unknown
- People with a variety of medical problems, (Parkinson's disease, narcolepsy) may have frequent periodic limb movements during sleep

Symptoms

- Leg movements with extension of the big toe in combination with partial flexing of the ankle, knee or hip
- Often causes a partial or full brief awakening
- Patients are frequently unaware of these movements

Restless Leg Syndrome (RLS)

- Neurological movement disorder characterized by irresistible urge to move limbs
- Unpleasant, tingling, creeping or pulling feelings occurring mostly in the legs
- Worse in the evening making it difficult to fall asleep

Restless Leg Syndrome (RLS)

- Prevalence increases with age
- Affects about 12 million people
- About 80% of people with RLS also have PLMS

Treatment

- Include several classes of drugs:
  - Parkinson's disease drugs
  - Anticonvulsant medications
  - Benzodiazepines
  - Narcotics
- Use of caffeine, alcohol, nicotine and many antidepressants may increase PLMD
- No cure, medical treatment must continue to provide relief

Treatment

- Regular exercise
- Establishing a regular sleep-wake schedule

Narcolepsy

- The brain is unable to regulate sleep-wake cycles normally
- At various times throughout the day sleep urges occur and an individual may fall asleep for a few seconds, several minutes or several hours

Symptoms

- Excessive daytime sleepiness (EDS)
- Cataplexy: sudden loss of voluntary muscle tone
- Vivid hallucinations during sleep onset or upon awakening
- Brief episodes of total paralysis at the beginning or end of sleep

Diagnosis

- Not definitively diagnosed in most patients until 10 to 15 years after the first symptoms appear
- Cause remains unknown

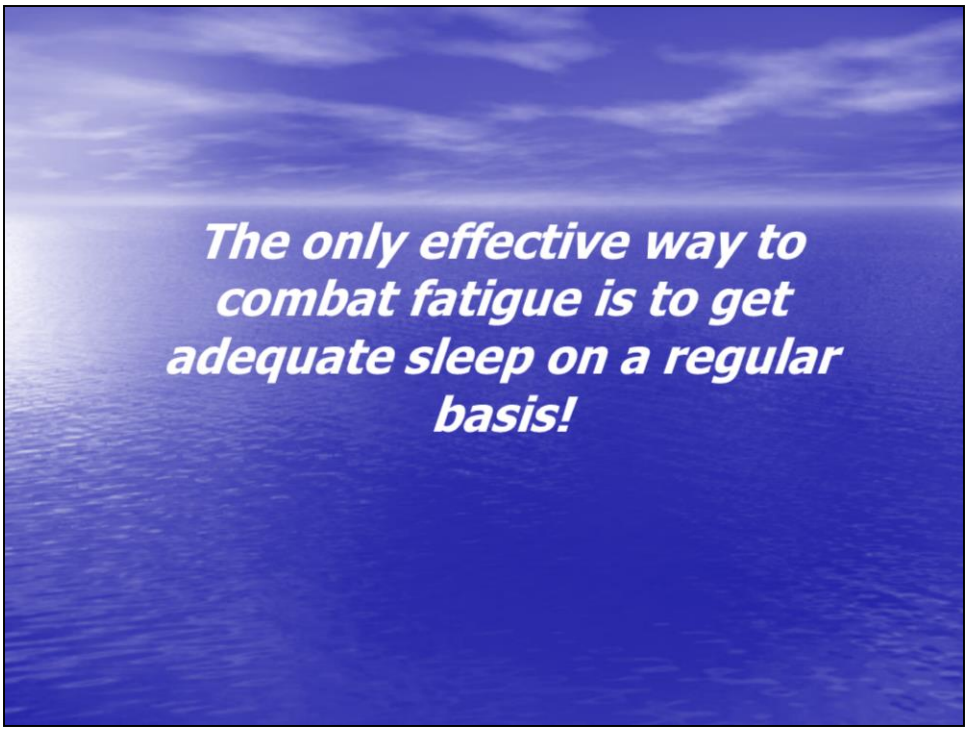
Treatment

- There is no cure
- Schedule a regular nap time
  - We naturally feel tired at two different times of the day: about 2:00 AM and 2:00 PM
- Maintain regular sleep schedule
- Avoid alcohol and caffeine beverages before bedtime

All treatments must be discussed with a physician

Treatment

- Doctors generally don't recommend relying on prescription sleeping pills for more than a few days:
  - May be habit-forming
  - Become less effective over time


The only effective way to combat fatigue is to get adequate sleep on a regular basis!