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: 4-5%

Stage 2: 45-55%
Breathing pattern and heart rate slows. Slight decrease in body temperature.

Stage 3: 4-6%
Deep sleep begins. Brain begins to generate slow delta waves.

Stage 4: 12-15%

Stage 5: 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 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)
Normal Sleep and Aging

- **Hormonal Changes**
  - ↓ Growth hormone (muscle/tissue repair)
  - ↑ Cortisol around 5th decade of life in the evening, rather than the morning
  - ↓ Estrogen → hot flashes
  - ↓ Melatonin

All of these changes may affect 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
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

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>55-64</th>
<th>65-74</th>
<th>75-84</th>
</tr>
</thead>
<tbody>
<tr>
<td>Insomnia</td>
<td>49%</td>
<td>46%</td>
<td>50%</td>
</tr>
<tr>
<td>Snoring</td>
<td>41%</td>
<td>28%</td>
<td>22%</td>
</tr>
<tr>
<td>Sleep Apnea</td>
<td>9%</td>
<td>6%</td>
<td>7%</td>
</tr>
<tr>
<td>Restless Legs Syndrome (RLS)</td>
<td>15%</td>
<td>17%</td>
<td>21%</td>
</tr>
</tbody>
</table>
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
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
Treatment

- Drug therapy should be complemented by behavioral strategies
- Two classes of antidepressant drugs have proved effective in controlling cataplexy:
  - Tricyclics including imipramine, desipramine, clomipramine, and protriptyline
  - Selective Serotonin Reuptake Inhibitors (SSRI) Prozac and Zoloft

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!