Sleep

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Circadian Rhythm of Sleep

Body temperature

Wake

7 AM

Sleep

7 AM

Time

Courtesy of R. Bogan, MD.
Sleep Stages and Function

<table>
<thead>
<tr>
<th>States</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>(NREM)</td>
<td>Body’s rest and metabolic restoration</td>
</tr>
<tr>
<td>Stage 1</td>
<td></td>
</tr>
<tr>
<td>Stage 2</td>
<td></td>
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<tr>
<td>Stage 3</td>
<td></td>
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<tr>
<td>Stage 4</td>
<td></td>
</tr>
<tr>
<td>(REM)</td>
<td>Active state of brain functions in learning</td>
</tr>
<tr>
<td>Phasic eye movements</td>
<td></td>
</tr>
<tr>
<td>Loss of muscle tone</td>
<td></td>
</tr>
<tr>
<td>EEG neutral</td>
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</tbody>
</table>

Typical Progression of Sleep Over the Course of the Night

REM = rapid eye movement.


Please see important safety information on accompanying slides and full prescribing information.
Sleep and Age

Epworth Sleepiness Scale (ESS)

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired? This refers to your way of life in recent times. Even if you have not done some of these things recently, try to work out how they would have affected you. Use the following scale to choose the most appropriate number for each situation.

<table>
<thead>
<tr>
<th>Situation</th>
<th>Chance of Dozing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting and reading</td>
<td></td>
</tr>
<tr>
<td>Watching TV</td>
<td></td>
</tr>
<tr>
<td>Sitting, inactive in a public place (e.g., a theater or a meeting)</td>
<td></td>
</tr>
<tr>
<td>As a passenger in a car for an hour without a break</td>
<td></td>
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<tr>
<td>Lying down to rest in the afternoon when circumstances permit</td>
<td></td>
</tr>
<tr>
<td>Sitting and talking to someone</td>
<td></td>
</tr>
<tr>
<td>Sitting quietly after a lunch without alcohol</td>
<td></td>
</tr>
<tr>
<td>In a car, while stopped for a few minutes in traffic</td>
<td></td>
</tr>
</tbody>
</table>

0 = would never doze
2 = moderate chance of dozing
1 = slight chance of dozing
3 = high chance of dozing

Sleepiness: Clinical Presentation

- Pervasive drowsiness
- Sleep attacks
- Fatigue
- Microsleep episodes
- Visual disturbances
- Apathy
- Mood changes

- Automatic activity
- Impaired alertness
- Lethargy
- Impaired memory and concentration
- Poor performance in work/school
- Accident prone

Sleep Patterns in Insomnia

INSOMNIA
- More than 1 type of disturbance may be present\(^1\)
- Symptoms may vary over time\(^1\)

- **Sleep-Onset Insomnia\(^2\)**
  - Difficulty falling asleep
  - Longer time to sleep onset

- **Sleep-Maintenance Insomnia\(^2\)**
  - Difficulty staying asleep
  - Frequent nocturnal awakenings

- **Sleep-Offset Insomnia\(^2\)**
  - Waking too early in the morning

- **Nonrestorative Sleep\(^2\)**
  - Persistent sleepiness despite adequate sleep duration

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Please see important safety information on accompanying slides and full prescribing information.
Self-Reported Prevalence of Insomnia in US

No Insomnia (64%)
Occasional Insomnia (27%)
Chronic Insomnia (9%)

N = 1,000


Please see important safety information on accompanying slides and full prescribing information.
The Two-process Model of Sleep Regulation

- **Process S (Homeostatic Process)**
  - Increases during waking and decreases during sleep

- **Process C (Circadian Process)**
  - Clock-like process that is independent of sleep and waking
Insomnia: Differential Diagnosis

- Environmental
- Behavioral
- Psychiatric Disorders
- Neurological Disorders
- Sleep-Wake Pattern Timing Disorders
- Movement Disorders
- Respiratory Disorders
- Miscellaneous Medical Conditions
- Sleep State Misperception
- Idiopathic
Behavioral Insomnia

- Adjustment Sleep Disorder
- Psychophysiological Insomnia
- Inadequate Sleep Hygiene
- Limit-setting Sleep Disorder
- Sleep-onset Association Disorder
Psychiatric Disorders Causing Insomnia

- Mood Disorders
- Anxiety Disorders
- Panic Disorder
- Alcohol and Drug Dependency
- Psychoses
Neurological Disorders Causing Insomnia

- Parkinson Disease
- Nocturnal Epilepsy
- Degenerative Brain Disorders
- Fatal Familial Insomnia
Sleep-Wake Pattern Timing Disorders Causing Insomnia

- Time Zone Change
- Shift Work
- Delayed Sleep Phase Syndrome
- Advanced Sleep Phase Syndrome
- Non-24 Hour Sleep-Wake Syndrome
- Irregular Sleep-Wake Pattern
- Short Sleeper
Movement Disorders Causing Insomnia

- Restless Legs Syndrome
- Periodic Limb Movement Disorder
- Sleep Starts
- Nocturnal Seizures
Respiratory Disorders Causing Insomnia

- Obstructive Sleep Apnea
- Central Sleep Apnea
- Obesity-Hypoventilation Syndrome
- Nocturnal Asthma
- Chronic Lung Diseases
- High Altitude
Miscellaneous Medical Conditions Causing Insomnia

- Gastroesophageal Reflux
- Hyperthyroidism
- Fibromyalgia
- Pregnancy
- Menopause
Craniofacial Abnormality

OSA Identification
Maxillary/Mandibular Advancement

OSA Intervention - Surgical
Mandibular Repositioners

OSA Intervention - Mechanical

Courtesy of Sleep Disorders Dental Society