

# Sleep Problems in the Primary Care Setting

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## Overview

- What is normal sleep?
- How is sleep regulated?
- What are the most common sleep disorders?
  - Restless Legs Syndrome
  - Sleep Apnea
  - Insomnia

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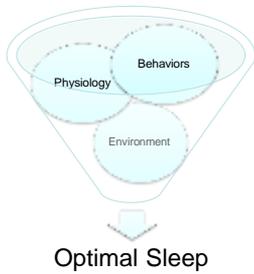
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## “Biopsychosocial” Model of Sleep



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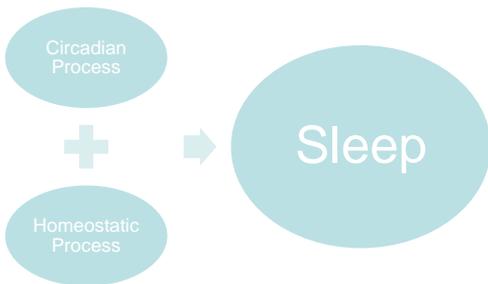
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## Sleep Requirements

- Average adult: 8 - 9 hours
- Epidemiology: sleep >9 hours or <4 hours have higher chance of death secondary to CAD, stroke and cancer vs 7 - 8 hour/night sleepers

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## Age-Related Changes in Sleep: Elderly

- ⑩ ↑ in variability from individual to individual
- ⑩ ↑ in sleep apnea
- ⑩ ↑ in Restless Legs Syndrome
- ⑩ ↑ in pain
- ⑩ ↑ in nocturia
- ⑩ ↓ in sleep efficiency (80-85%)

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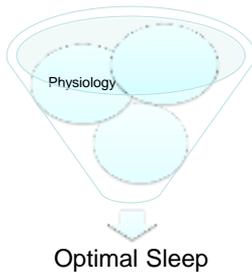
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## Factors Impacting Sleep



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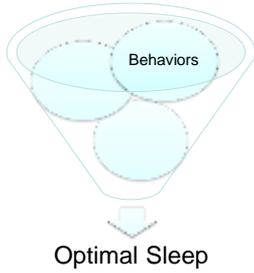
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## Factors Impacting Sleep



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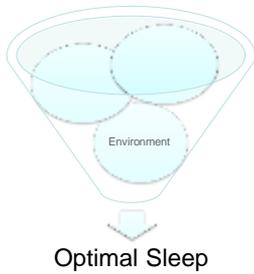
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## Factors Impacting Sleep



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## LEG MOVEMENTS

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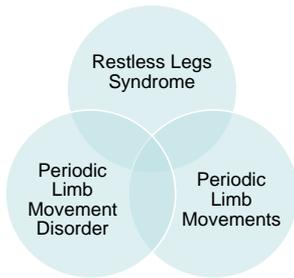
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## Restless Legs Syndrome & Periodic Limb Movements



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## How is Restless Legs Syndrome Diagnosed?

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## Restless Legs Syndrome

- Urge to move legs, usually accompanied or caused by uncomfortable and unpleasant sensations in the legs.
- Urge to move or the unpleasant sensations begin or worsen during periods of rest or inactivity.

Taken from International Classification of Sleep Disorders, third version, 2014.

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## Restless Legs Syndrome

- Urge to move the legs or unpleasant sensations are partially or totally relieved with movement.
- Urge to move or unpleasant sensations in the legs are worse, or only occur, in the evening or night.

Taken from International Classification of Sleep Disorders, third version, 2014.

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## RLS is Clinical Diagnosis

- Urge to move legs
- Urge starts while resting
- Worst at night
- Relieved with movement

No Sleep Study is Needed for Diagnosis.

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## Periodic Limb Movement Disorder

- Sleep study demonstrates repetitive, highly stereotyped, limb movements (0.5 to 5 seconds in duration; sequence of at least 4 leg movements in less than 90 sec)
- Patient has a sleep disturbance or complaint of daytime fatigue.

Taken from International Classification of Sleep Disorders, third version, 2014.

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## Periodic Limb Movements in Sleep

- Sleep study demonstrates repetitive, highly stereotyped, limb movements (0.5 to 5 seconds in duration; sequence of at least 4 leg movements in less than 90 sec)
- Patient DOES NOT have a sleep disturbance of complaint of daytime fatigue.

Taken from International Classification of Sleep Disorders, third version, 2014.

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## RLS vs PLMD vs PLMS?

- |                                   |                                      |
|-----------------------------------|--------------------------------------|
| • Restless Leg Syndrome           | • Clinical diagnosis                 |
| • Periodic Limb Movement Disorder | • Clinical and sleep study diagnosis |
| • Periodic Leg Movements in Sleep | • Sleep study diagnosis              |

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## Relationship Between RLS, PLMD, and PLMS

- 30% of patients with periodic limb movements in sleep have clinical symptoms of Restless Leg Syndrome
- 80% of patients with symptoms of RLS have Periodic Limb Movements in Sleep

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## What Causes RLS?

- Exact cause is not known.
- Several theories.

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## What Causes RLS?

- Iron Deficiency
  - Ferritin is measure of iron stores in the body.
  - Ferritin levels may be low in individuals with RLS.
  - Iron replacement may help some people with symptoms.
  - Iron levels in parts of the brain (substantia nigra) may be lower in RLS.

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## What Causes RLS?

- Not exactly known.
- Dopamine and iron seem to be important.
- Genetics component
- Single Nucleotide Polymorphisms (SNPs) identified

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## RLS

- Genetic contribution to RLS
- 1/3 patients have symptoms prior to age 20
- Limb movements can start before RLS symptoms
- Family members of individuals with RLS have more limb movements

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## RLS: Approach to Therapy

- Co-morbidities
- Medications
- Caffeine, alcohol, nicotine

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## RLS: Approach to Therapy

- 1<sup>st</sup> Line Therapy
  - Dopaminergic drugs
  - GABAergic

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## Sleep Disordered Breathing

- International Classification of Sleep Disorders (Third Edition, 2014)
- Definition = “disordered breathing during sleep”

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## Why Treat Sleep Disordered Breathing?

Daytime fatigue & poor performance

Prevent long-term complications

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## Clinical Features

- Snoring
- Witnessed apneas
- Excessive Daytime Sleepiness
- AM Headaches
- Nocturia
- Poorly refreshing sleep

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## Risk Factors

- Weight
  - 10% increase in weight ---> 6-fold increased risk in going from mild to moderate/severe apnea
  - 1% ↑ in weight → 3% ↑ in AHI

Peppard PE et al., JAMA 2000 (Wisconsin Cohort)

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## Risk Factors

- Neck circumference (>16 inches F; > 17 inches M)
- Body Mass Index (BMI)
- Age
- Gender
- Craniofacial abnormalities

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## SLEEP APNEA EPIDEMIOLOGY

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# subjects	Age (years)	Prevalence AHI ≥ 5	Prevalence AHI ≥ 15	Authors
629	30-60	24% (M) 9% (F)	9% (M) 4% (F)	Young et al. 1993 (Wisconsin)
1741	20-99	17% (M)	7% (M) 2% (F)	Bixler et al. 1998, 2000 (Pennsylvania)
400	30-70	26% (M) 28% (F)	14% (M) 7% (F)	Duran et al. 2001 (Spain)

Adapted from Young et al., 2002, Am J Respir Crit Care Med

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## SLEEP APNEA PATHOPHYSIOLOGY

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Organ System	Pathophysiology	Consequences
Cardio-vascular	<ul style="list-style-type: none"> <li>•Increased preload &amp; afterload</li> <li>•Left-shift of IV septum</li> <li>•Decreased left ventricular compliance</li> </ul>	<ul style="list-style-type: none"> <li>• Hypertension</li> <li>• Supraventricular and ventricular ectopies,</li> <li>• Increased A-fib</li> <li>• Opening of PFO</li> <li>• Exacerbation of CHF</li> </ul>
Pulmonary	<ul style="list-style-type: none"> <li>•Hypoxemia</li> </ul>	<ul style="list-style-type: none"> <li>•Transient or sustained pulmonary hypertension</li> </ul>

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Organ System	Pathophysiology	Consequences
Hematologic	<ul style="list-style-type: none"> <li>•Increased platelet adhesiveness</li> <li>•Decreased fibrinogen levels</li> <li>•Decreased fibrinolytic activity</li> </ul>	<ul style="list-style-type: none"> <li>• Stroke</li> </ul>
Endocrine	<ul style="list-style-type: none"> <li>•Increased leptin levels</li> <li>•Increased insulin resistance</li> <li>•Increased atrial natriuretic peptide secretion</li> </ul>	<ul style="list-style-type: none"> <li>•Weight regulation</li> <li>•Poor glucose control</li> <li>•Nocturia</li> </ul>
Immune	<ul style="list-style-type: none"> <li>•Increased secretion of inflammatory mediators</li> <li>•Increased oxidative stress</li> </ul>	<ul style="list-style-type: none"> <li>•?</li> </ul>

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### Case – Mr. Smith

- Mr. Smith underwent split-night polysomnography and was found to have an apnea-hypopnea index of 50 events/hr and was subsequently started on CPAP therapy.

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### Definitions

- Apnea: absence of airflow for at least 10 sec
- Hypopnea: ↓ in airflow for at least 10 secs (with desaturation or arousal)

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## Apnea-Hypopnea Index (AHI)

- Apnea-Hypopnea Index:  
(# apneas + # hypopneas)/total sleep time (hrs)  
(30 apneas + 90 hypopneas)/6 hrs = 20

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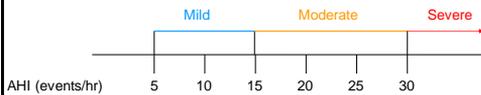
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## Apnea Severity



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## Treatments

- CPAP/BiPAP therapy (considered optimal)
- Alternate
  - Oral appliance
  - Surgery (UPPP)
  - Tracheostomy

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## Why Treat Sleep Disordered Breathing?

Daytime fatigue & poor performance

Prevent long-term complications

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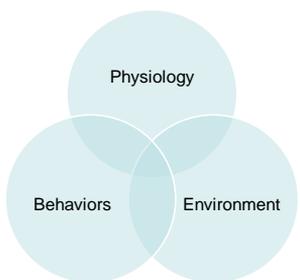
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## Insomnia



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## Taking an Insomnia History

- When did it start?
- How is it impacting their daily life?
- Mitigating factors (psychosocial triggers, medication changes, family history)?

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## Treating Insomnia

- Behavioral therapies
  - Cognitive Behavioral Therapy (CBT)
  - Optimizing Sleep Hygiene
- Medications
  - Zolpidem
  - Melatonin
  - Trazadone

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## Key Points

- RLS
  - Clinical diagnosis
- Sleep Apnea
  - Treat to improve wakefulness & prevent complications
- Insomnia
  - Identify underlying etiology and contributing factors

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## Case

- Mr. Jones is a 55 yr-old veteran who complains of problems getting to sleep and feeling poorly rested in the morning. He has hypertension, diabetes, coronary artery disease, PTSD, and atrial fibrillation.

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### Case – Mr. Jones

- Mr. Jones reports that when he watches T.V. in the evening he feels he has to shift positions frequently to get comfortable. This also happens when he is riding as a passenger in a car for prolonged periods of time.

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### Case – Mr. Jones

- Mr. Jones' wife reports he has to get up multiple times at night to use the bathroom, feels poorly rested in the morning, and has a dull AM headache that last 30-60 minutes.

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