

Sleep Problems in the Primary Care Setting

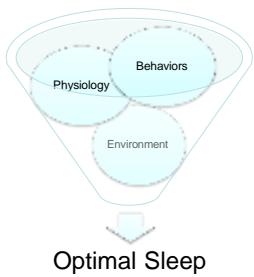
Eilis Boudreau M.D., Ph.D.

April 10, 2015

Overview

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

“Biopsychosocial” Model of Sleep



Circadian Process



Homeostatic Process



Sleep

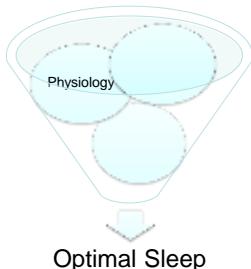
Sleep Requirements

- 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

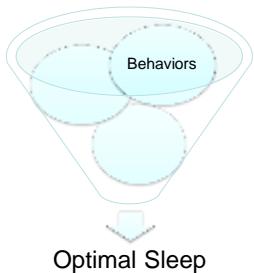
Age-Related Changes in Sleep: Elderly

- 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%)

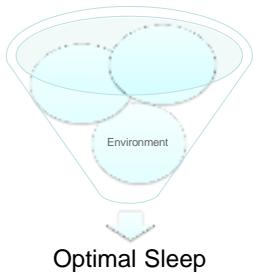
Factors Impacting Sleep



Factors Impacting Sleep

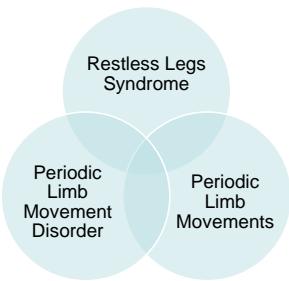


Factors Impacting Sleep



LEG MOVEMENTS

Restless Legs Syndrome & Periodic Limb Movements



How is Restless Legs Syndrome Diagnosed?

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.

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.

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.

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.

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 or complaint of daytime fatigue.

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

RLS vs PLMD vs PLMS?

- | | |
|---|---|
| <ul style="list-style-type: none">• Restless Leg Syndrome• Periodic Limb Movement Disorder• Periodic Leg Movements in Sleep | <ul style="list-style-type: none">• Clinical diagnosis• Clinical and sleep study diagnosis• Sleep study diagnosis |
|---|---|

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

What Causes RLS?

- Exact cause is not known.
- Several theories.

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.

What Causes RLS?

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

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

RLS: Approach to Therapy

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

RLS: Approach to Therapy

- 1st Line Therapy
 - Dopaminergic drugs
 - GABAergic

Sleep Disordered Breathing

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

Why Treat Sleep Disordered Breathing?

Daytime fatigue & poor performance

Prevent long-term complications

Clinical Features

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

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)

Risk Factors

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

SLEEP APNEA EPIDEMIOLOGY

# 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

SLEEP APNEA PATHOPHYSIOLOGY

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

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

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.

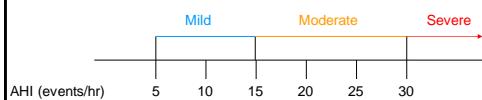
Definitions

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

Apnea-Hypopnea Index (AHI)

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

Apnea Severity



Treatments

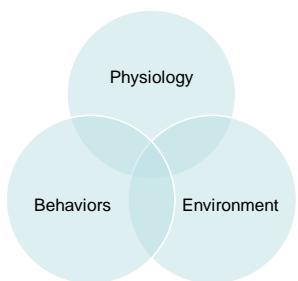
- CPAP/BiPAP therapy (considered optimal)
- Alternate
 - Oral appliance
 - Surgery (UPPP)
 - Tracheostomy

Why Treat Sleep Disordered Breathing?

Daytime fatigue & poor performance

Prevent long-term complications

Insomnia



Taking an Insomnia History

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

Treating Insomnia

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

Key Points

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

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.

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.

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.
