

Five Minute Sleep Consult for the Primary Care Provider

Introduction

The Five-Minute Sleep Consult for the Primary Care Provider is a quality improvement project from the Medical University of South Carolina's Sleep Fellowship Program. This content was developed to provide a brief consult or reference point for day-to-day practice with a goal of improving the sleep health of South Carolinians. A national survey showed that most physicians receive less than two hours of sleep education during medical school. Survey results, previously sent to primary care providers across the state of South Carolina, favored an educational platform with reading material. Five sleep disorders were chosen as being high yield in the primary care setting. Sleep disorders are separated into adult and pediatric categories. The team included a sleep fellow, an adult sleep specialist and a pediatric sleep specialist. Please be on the lookout for a brief follow up survey that will be sent in the next several weeks. Further sleep educational content will be supplied based on follow up surveys.

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1. Obstructive Sleep Apnea in Adults

Definition:

Obstructive sleep apnea (OSA) is defined as repetitive complete or partial collapse of the upper airway that may include respiratory effort-related arousals. Each respiratory event lasts 10 seconds or longer. Changes in breathing may be associated with desaturations and EEG-defined arousals from sleep. These arousals from sleep are often unrecognized by the patient with sleep apnea. OSA may be more severe when the patient sleeps supine and during REM stage sleep.

How is obstructive sleep apnea measured in adults?

Obstructive sleep apnea is measured by the number of apneas, hypopneas (or partial apneas), and may include effort related arousals. The apnea-hypopnea index or AHI includes apneas and hypopneas. The respiratory disturbance index or RDI includes respiratory effort-related arousals plus the events included in the AHI.

The severity of sleep apnea is based on the number of events per hour.

- * Mild sleep apnea -AHI or RDI greater than or equal to 5 per hour and up to 14 per hour
- * Moderate sleep apnea -AHI or RDI of 15-29 per hour
- * Severe sleep apnea - AHI or RDI greater than or equal to 30 per hour

What medical disorders are associated with obstructive sleep apnea in adults?

There is increasing evidence linking hypertension with obstructive sleep apnea. Obstructive sleep apnea is commonly seen in patients with stroke, atrial fibrillation, and coronary artery disease. Sleep apnea has been associated with cognitive dysfunction. Research has supported obstructive sleep apnea as a risk factor in Alzheimer's dementia and diabetes. OSA has also been associated with CKD, cardiomyopathy, and glaucoma. Patients with OSA may have more GERD, nocturia, erectile dysfunction and mood disorders. Parasomnias are more common in patients with obstructive sleep apnea.

Sleepiness is common in this patient population. It may only be recognized when sedentary or idle. Interestingly, some patients may not report or have symptoms of sleepiness despite severe obstructive sleep apnea.

Who is at risk for obstructive sleep apnea in adults?

OSA increases with age, the presence of obesity, menopause, acromegaly, hypothyroidism, trisomy 21, some neurologic disorders, ESKD, with ETOH, sedating agents, and others.

What are the symptoms of obstructive sleep apnea in adults?

Symptoms include nonrestorative sleep, snoring, sleep related choking or gasping, insomnia, nocturia, am headaches, sleepiness, daytime impairments, and others. Patients may not have obvious symptoms of OSA.

How to screen for obstructive sleep apnea and sleep disorders in adults?

Some examples of screening tools include the STOP-BANG, Global Sleep Assessment Questionnaire, and the Epworth Sleepiness Scale.

*The **STOP BANG** sleep apnea screening questionnaire is used to screen patients at risk for sleep apnea. This test is specific for obstructive sleep apnea. The provider is involved in the questionnaire completion.

*The **Global Sleep Assessment Questionnaire (GSAQ)** is a relatively short tool (11 items) with questions screening for obstructive sleep apnea, restless legs syndrome, periodic limb movements, shift work and insomnia. The GSAQ includes a question on mood. This is a limited screening tool but may be a good start for screening several sleep disorders in the primary care setting in adults. This is a patient self-administered tool that may be completed in a waiting room.

*The **Epworth Sleepiness Scale** may provide a measure of sleepiness and help distinguish from fatigue. This tool alone is not adequate to screen for obstructive sleep apnea. This is a patient self-administered tool and could be completed in a waiting room.

How to evaluate for obstructive sleep apnea in adults?

The in-lab sleep study remains the gold standard for diagnosing obstructive sleep apnea.

Home sleep apnea testing is often more cost effective than an in-lab sleep study. Home testing options may be more likely to underestimate the severity of OSA or miss the diagnosis. Overestimation of sleep apnea may also occur depending on the testing modality. Home sleep apnea testing was designed to diagnose obstructive sleep apnea and is not routinely used to diagnose other sleep disorders.

The American Academy of Sleep Medicine (AASM) recommends, via clinical practice guidelines, home sleep apnea testing in patient with a pretest probability of moderate to severe sleep apnea. Home testing is not recommended to screen in asymptomatic individuals. Home sleep apnea testing is not recommended in patients with significant cardiorespiratory disease, chronic opioid use, stroke history, severe insomnia, and concerns for hypoventilation which may include muscle weakness related to a neuromuscular condition. After a negative home sleep apnea test, an in-lab test is recommended by the AASM.

What are the treatment options for obstructive sleep apnea in adults?

*Positive airway pressure modalities (includes CPAP, APAP, BIPAP and others) remain the gold standard treatment for obstructive sleep apnea. This treatment is highly effective and consistently lowers the AHI (often normalizes the AHI) but may be difficult for some patients to tolerate. Education with attention toward mask fit and mask type may be helpful with CPAP compliance. CPAP improves both subjective and objective daytime sleepiness. CPAP may improve neurocognitive deficits associated with OSA. CPAP may improve mood. CPAP may have a mild impact on HTN. There are data showing reduced recurrence of atrial fibrillation, improvement in ejection fraction in congestive heart failure and stroke outcome in patients with OSA treated with CPAP.

*Another choice for treating obstructive sleep apnea includes a mandibular positioning device with fit from a dentist who has expertise in sleep apnea. This device resembles a retainer. Adherence may be improved over positive airway pressure devices. Around one-third of patients will not respond to therapy and therapy may not normalize the AHI even with benefit.

*Surgical therapies are most often used in patients who have been unable to use positive airway pressure devices. A successful obstructive sleep apnea surgery is defined by a reduction in AHI by 50 % or below 20 apneas per

hour. The AHI may not normalize. An otolaryngologist, with expertise in sleep apnea surgery, is highly recommended. A hypoglossal nerve stimulator implant has been shown to be effective in a properly screened population and is increasing in popularity. Many insurance providers now include this device on their plans. The FDA has approved this device in patients with an AHI of 15-100/hr and a BMI up to 40.

*Pharmacologic therapies may be on the horizon including medications that focus on weight loss and increased muscle tone in the throat.

*Weight loss may reduce sleep apnea severity.

*There are other less well studied options including upper airway exercises, positional therapy and more.

What is our differential diagnosis in obstructive sleep apnea in adults?

The differential diagnosis includes isolated snoring, central sleep apnea, other disorders of sleepiness including narcolepsy, insufficient sleep, nocturnal dyspnea (includes panic attacks, CHF, pulmonary disease and more), insomnia and others.

What should I discuss with the adult patient who I am concerned may have obstructive sleep apnea?

*We recommend asking about driving safety and educating patients not to drive or take part in activities that may be dangerous in the setting of sleepiness.

*Educating patients about the risk of untreated OSA and associated medical considerations may help to motivate your patient with treatment adherence.

*The gold standard is positive airway pressure (CPAP, APAP, BIPAP and more) but other treatments exist, and new ones are on the horizon.

*Home sleep testing may underestimate the severity and or miss the diagnosis. Consider an in-lab sleep study if the home test is negative.

2. Restless Legs Syndrome in Adults

Definition:

Restless legs syndrome is a sensory disorder characterized by an irresistible urge to move that is associated with discomfort that is most often seen in the legs. Movements often reduce discomfort temporarily. It is most common at night. The discomfort may be described as creepy-crawly, ants crawling, burning, itchy, electric, grabbing, throbbing, hard to describe and more.

Who is at risk for restless legs syndrome in adults?

RLS is more common in the following patients: lower iron levels, during pregnancy, women, those with a family history, history of kidney disease, neuropathy, and others.

Is there a screening mnemonic for restless legs syndrome in adults?

Yes, URGE may be used to screen for restless legs syndrome.

Urge to move.

Rest induced.

Gets better with activity.

Evening and night accentuation

What is the differential diagnosis for restless legs syndrome in adults?

The differential diagnosis includes nocturnal leg cramps, neuropathy, radiculopathy, nervousness, leg injury, pain syndromes and others. Periodic limb movements* are often confused with restless legs syndrome but occur primarily during sleep.

*Periodic limb movements are diagnosed in adults when 15 or more periodic limb movements per hour are present during the sleep study. They may not be clinically significant. Most patients with periodic limb movements are asymptomatic.

In contrast, periodic limb movement disorder is diagnosed in adults when there are 15 or more periodic limb movements per hour during the PSG AND the patients has daytime symptoms suggestive of poor sleep quality. Treatment should be considered in this scenario.

What are the treatment options for restless legs syndrome in adults?

First consider removal of medications that may exacerbate RLS (diphenhydramine, certain antidepressants, antiemetics and more). Avoiding caffeine and alcohol in the late afternoon and evening may significantly improve symptoms.

Check ferritin and consider replacing iron when levels are less than 75 ng/ml.

Maintain healthy sleep (including treating sleep apnea and getting adequate sleep time).

Medications including gabapentin, pregabalin and gabapentin enacarbil are considered first line therapy by many experts. Dopamine agonists are also quite effective. They may have side effects that develop at the start or after years of treatment including augmentation (worsening of RLS), sleep attacks, compulsive behaviors and others. These medications should be used with caution and with close monitoring.

What will worsen restless legs syndrome in adults?

Caffeine, certain medications, ETOH, sleep debt, untreated OSA, prolonged activity and prolonged inactivity may all exacerbate RLS.

What else should I know about restless legs syndrome in adults?

RLS may be quite distressing to patients and significantly affect quality of life. It may prevent the patient from sleeping and shares features of insomnia.

3. Chronic Insomnia in Adults

Definition:

Insomnia is defined as difficulty getting to sleep and/or staying asleep that is associated with waketime impairment that may include cognitive complaints, inattention, fatigue, mood disturbance, impaired performance in social, occupational, or academic settings, reduced motivation, subjective sleepiness, irritability, and others. Per the *International Classification of Sleep Disorders (ICSD-3-TR)*, chronic insomnia occurs at least 3 days a week for 3 months or longer.

Are there any associated conditions with chronic insomnia in adults?

Associated conditions commonly include medical disorders, mental health disorders, substance abuse disorders and other sleep disorders.

In adults, who is at risk for developing insomnia?

Estimates suggest that 10% of the population may experience chronic insomnia. Insomnia may be more common in the following groups: women, geriatrics, lower socioeconomic status, psychiatric disorders, trauma history, and substance abuse history. Keep in mind that around thirty percent of patients with insomnia may also have sleep apnea and approximately forty percent of patients with sleep apnea may present with complaints of trouble sleeping.

What is the differential diagnosis for chronic insomnia in adults?

The differential diagnosis includes restless legs syndrome, obstructive sleep apnea, sleep-disruptive environmental circumstances, chronic insufficient sleep syndrome*, narcolepsy (these patients may have fragmented sleep), and circadian rhythm disorders (including delayed sleep phase, advanced sleep phase and shift work).

* Chronic insufficient sleep syndrome is inadequate sleep duration related to work, recreation and social. This is quite common in the United States. Most adults need 7-9 hours of sleep consistently to feel refreshed.

What are the treatment options for chronic insomnia in adults?

The gold standard treatment is cognitive behavioral therapy for insomnia (CBT-I). Not all psychologists are trained in CBT-I. There are online options that are available if access is an issue. Medications listed in the clinical practice guideline for the treatment of chronic insomnia in adults (by the AASM) includes: eszopiclone, ramelteon, zaleplon, zolpidem, doxepin (low dose), suvorexant and others. Diphenhydramine, melatonin, and trazodone are not suggested for use in insomnia for sleep onset and or maintenance based on this adult guideline. Medications should be chosen based on the duration of action and whether the patient has sleep onset difficulties, sleep maintenance difficulties or both.

What else do I need to know about chronic insomnia in adults?

Untreated insomnia has been shown to increase the risk of new onset or recurrence of comorbid conditions including but not limited to depression, psychotic disorders, substance abuse, suicidality, work disability and

possibly HTN (sleep duration under 6 hours). When left untreated, it may worsen over time.

4. Obstructive Sleep Apnea in Children

Definition:

Obstructive sleep apnea (OSA) includes episodes of partial or complete collapse of the airway resulting in a decrease in oxygen saturation or arousal from sleep. This disturbance, which occurs only during sleep, results in fragmented, nonrestorative sleep. Symptoms can include snoring, breathing difficulty, gasping, restlessness, and bedwetting during sleep. It can cause daytime symptoms of sleepiness, morning headaches, irritable mood, and lack of concentration. OSA can affect cardiovascular health, mental health, behavior, quality of life, and driving safety.

Why is OSA important in children?

OSA is a treatable condition. It can have dramatic effects on childhood behavior, brain development, metabolism, and overall health. It is more common in certain populations including children with obesity, muscle weakness, craniofacial abnormalities, Angelman syndrome, Prader-Willi syndrome, achondroplasia, and Down syndrome. Early recognition, evaluation, and treatment are important to prevent long-term consequences that may include cognitive dysfunction, behavioral problems, mood disorders, and cardiovascular complications.

How is OSA diagnosed in children?

Children at risk and with symptoms should be screened for OSA. An overnight sleep study (PSG) is the best test to diagnose OSA. The PSG will determine how many times the child stops breathing per hour. If OSA is present, it will be graded as mild, moderate, or severe. Home sleep testing is not recommended by the American Academy of Sleep Medicine (AASM) in children less than 18 years of age.

Obstructive sleep apnea is measured by the number of apneas, hypopneas (or partial apneas), and may include effort-related arousals. The apnea-hypopnea index or AHI includes apneas and hypopneas. The respiratory disturbance index or RDI includes respiratory effort-related arousals plus the events included in the AHI.

The severity of sleep apnea is based on the number of events per hour.

- * Normal- AHI up to 1 per hour
- * Mild sleep apnea -AHI greater than 1 up to 5 per hour
- * Moderate sleep apnea -AHI equal to or greater than 5 up to 10 per hour
- * Severe sleep apnea - AHI equal to or greater than 10 per hour

How is OSA treated in children?

Snoring alone does not require treatment. Snoring itself is not a disease. If snoring is the result of nasal congestion, it can be treated with over-the-counter medication like nasal saline spray.

Treatment for mild OSA includes nasal steroid spray or other nasal decongestants. If the child is overweight or obese, diet and exercise management are encouraged. A trial of montelukast (Singulair) may be considered for mild-moderate OSA.

Treatment for moderate or severe OSA includes a referral to the otolaryngologist for a surgical consultation. The most common surgeries are tonsillectomy and adenoidectomy. If the child is overweight, weight loss through diet and exercise management is recommended. Continuous positive airway pressure (CPAP) therapy is another treatment option if the child does not qualify for surgery or has moderate or severe OSA after surgery. Families should avoid smoke exposure in the home, particularly when there is a child with OSA as this may worsen disease severity.

5. Parasomnias in Children

Definition:

Parasomnias are unwanted abnormal movements, behaviors, emotions, and activity during transitions from sleep to wake, between sleep states, or during arousals from sleep. Parasomnias occur during two main stages of sleep: NREM (non-rapid-eye movement) and REM (rapid-eye movement). NREM parasomnias include sleepwalking, sleep terrors, and confusional arousals which occur more commonly in the first half of the night. REM parasomnias consist of nightmares, sleep paralysis, and REM behavior disorder (RBD) which occur more commonly later in the night.

Why are parasomnias in children important?

Parasomnias are common in children. They are often benign. They tend to improve as the child gets older and typically resolve spontaneously by puberty or into adulthood. When parasomnias are frequent and/or severe they may cause sleep disruption and stress for the whole family. Triggers for parasomnias include sleep deprivation, caffeine use, anxiety, and fever/infection. Sleep conditions such as obstructive sleep apnea (OSA) or sleep movement disorders can also function as triggers. There is a genetic predisposition. Parasomnias may also mimic epileptic seizures, gastroesophageal reflux (GERD), and panic attacks.

How are parasomnias diagnosed?

Parasomnias are mainly diagnosed through history. The physical exam is usually normal. Typically, the child is not tired during the day and is functioning well. Nighttime symptoms may include screaming, confusion, increased activity, agitation; sleepwalking, sleep talking, and nightmares. An overnight sleep study may be needed to rule out another sleep disorder or may be used when the pattern of the parasomnia is atypical. This may include nightly recurrence, several events in a single night, prolonged episodes, presence of jerks or other worrisome movements, concerns for seizures and others. A referral to a sleep specialist may be needed in complex or severe cases.

How are parasomnias treated?

Parents mainly need education and reassurance. Safety issues should be discussed to prevent injuries. These may include a safe bedroom environment, securing doors and windows, placing a mattress on the floor if needed, and alarms on doors and windows to alert family members. Triggers should be addressed, including management of anxiety, having an adequate amount of sleep, reducing caffeine and alcohol use, and treatment of underlying sleep disorders. Medications are rarely needed.

Behavioral treatment can also be effective. Anticipatory awakening is a behavioral technique that includes waking the child 15-20 minutes prior to the usual time of the parasomnia to alter the sleep cycle and prevent the event. During a parasomnia, the parents should not try to awaken or stimulate the child as this may prolong the episode. Medication management with a low-dose benzodiazepine (such as clonazepam at bedtime), tricyclic antidepressants, or selective serotonin reuptake inhibitors may be considered when parasomnias do not improve with removal of triggers, there are safety concerns or substantial household bedtime disruptions.

6. Insomnia in Children

Definition:

Insomnia is a persistent problem with sleep initiation, duration, or consolidation that occurs despite adequate opportunity and circumstances for sleep. The insufficient sleep results in concern, dissatisfaction, or perceived daytime impairment, such as fatigue, decreased mood or irritability, general malaise, or cognitive impairment. In children, insomnia may also be behavioral in origin. This includes bedtime resistance and inability to sleep independently.

In children less than 5 years old, behavioral insomnia is common. There are two main types. With sleep-onset association disorder the child cannot fall asleep without parent participation with rocking, holding, cuddling, feeding, and more. With limit-setting sleep disorder, the child has a seemingly endless, time-consuming list of demands at bedtime (“five more minutes”). Older children and teens are typically affected by chronic insomnia which may be associated with attention-deficit/hyperactivity disorder (ADHD), autism spectrum disorder (ASD), anxiety and other medical conditions. Delayed sleep phase syndrome is a circadian rhythm disturbance commonly confused with insomnia. Delayed sleep phase syndrome is commonly seen in adolescents. Delayed sleep phase syndrome is often treated with slowly advancing the bedtime and focusing on sleep hygiene. Melatonin and light therapy may be used.

Why is insomnia important in children?

Insomnia affects up to 25-40% of children between ages 4-10 years old and 11% of adolescents. Lack of sleep affects health and functioning. Children need to sleep sufficiently and have good sleep quality to prevent impairment in physical, mental, and social health. A child’s insomnia may also negatively impact other household members. Insomnia may be caused or worsened by obstructive sleep apnea (OSA), sleep movement disorders, anxiety, and depression. Chronic insomnia can lead to long-term sleep deprivation, which is linked to lower quality of life, behavioral and learning problems, impulse control, increased risk of substance use, and chronic pain.

How is insomnia diagnosed in children?

Diagnosis of insomnia includes a detailed sleep history. Sleep diaries may be helpful. Actigraphy may also be useful in objectively capturing sleep duration. An overnight sleep study (polysomnogram or PSG) may be useful in assessing other contributing sleep disorders such as OSA or a movement disorder.

How is insomnia treated in children?

Childhood insomnia is generally treated with a combination of interventions. The first step is improving sleep hygiene. We recommend consistent bedtimes and wake times, maintaining a bedtime routine without TV or electronics, avoidance of daytime naps and avoidance of caffeine.

Behavioral interventions are indicated for young children. Behavioral techniques include unmodified extinction, graduated extinction, and scheduled awakenings. In unmodified extinction, the child is put to bed at a set time at night and “ignored” until a set time in the morning. In graduated extinction, the caregiver “ignores” the child for specific periods with minimal interaction until the next check-in. With scheduled awakenings, the caregiver

would wake up the child before their typical nighttime awakening and eventually increase the time between these awakenings. This last technique is not very popular. A combination of techniques may be used.

If more help is needed to treat insomnia, cognitive behavioral therapy with a psychologist has been studied and shown to be helpful for children who are old enough to cooperate. Medication management is not commonly used in children because of safety concerns and lack of evidence. There is no FDA-approved sleep-promoting medication for children. Frequently used medications may include sedating antihistamines, clonidine, gabapentin, trazodone, mirtazapine, melatonin, and doxepin. If melatonin or antihistamine preparations are not effective, it is prudent to seek guidance from a sleep medicine provider.

7. Sleep Movement Disorders in Children

Defined

Restlessness during sleep is a common symptom reported by parents. It can manifest with frequent large muscle movements (involving the upper and/or lower body) or more subtle movements (like little jerks, kicks, etc.). Sometimes the only indication of restlessness during sleep is finding the bed in disarray in the morning. Moving occasionally during sleep is normal but excessive movements can cause poor sleep quality resulting in non-restorative sleep and daytime symptoms (like chronic fatigue, sleepiness, hyperactivity, behavioral and learning problems).

What is the differential diagnosis of restless sleep?

RSD (restless sleep disorder), PLMS (periodic limb movements in sleep) and PLMD (periodic limb movement disorder) are frequent causes of restlessness during sleep. Excessive body movements can be secondary to a sleep disorder like OSA (obstructive sleep apnea). The differential diagnosis may also include sleep related seizures, RLS (restless leg syndrome), which manifests as the urge of moving the legs while sitting or resting during wakefulness, can also be associated with PLMD.

How is restless sleep diagnosed?

An overnight polysomnogram (PSG) or sleep study is the best test to investigate the conditions listed above, including OSA and nocturnal seizures.

Interpreting the PSG results:

*RSD: 5 or more large muscle movements/hour plus daytime symptoms suggestive of poor sleep quality.

*PLMS: 5 or more periodic leg movements/hour.

*PLMD: 5 or more periodic leg movements/hour plus daytime symptoms suggestive of poor sleep quality

*RLS diagnosis is based on clinical symptoms.

What causes restless sleep?

OSA can cause restless sleep and improves or resolves with treatment. Repeating a sleep study after OSA treatment is important for reassessment.

RSD, PLMS and PLMD can be due to low body iron stores, confirmed by a ferritin level <50 ng/ml. Children are at risk for iron deficiency when very young and during puberty due to the rapid growth and insufficient dietary iron intake. Anemia can develop if the iron deficiency has been present for extended times.

The ferritin level may be normal. This may be more common when there is a family history.

How is restless sleep treated?

A low ferritin level should be treated with oral iron 3-6 mg/kg/day of elemental iron for 3-4 months, followed by a repeat ferritin level. We tend to recommend ferrous sulfate. The target level is 50-100 ng/ml, and our typical goal is 75-80 ng/ml. We also try to increase the dietary iron intake via nutritional education.

We recommend an IV iron infusion if oral replacement is not an option, as many patients experience unpleasant GI side effects or do not like the taste or PO iron.

If iron deficiency is not present, we can use medications to treat RSD, PLMD, PLMS (Gabapentin, Clonidine, dopaminergic agents and others).

8. Patient Resource Materials

*Adult sleep apnea patient education link

<https://www.thoracic.org/patients/patient-resources/resources/obstructive-sleep-apnea-in-adults.pdf>

*Pediatric sleep apnea patient educational link

<https://www.thoracic.org/patients/patient-resources/resources/osa-in-children.pdf>

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