QUOTIENT HEALTH

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Better Sleep. Better Health.

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Why Screening for Sleep Apnea Matters.

Many members wonder why their doctor spends precious minutes in a relatively short office visit asking about sleep. The reason for this is simple. Good quality sleep is critical for good health and longevity. Today, we will discuss one of the biggest disruptors of sleep: obstructive sleep apnea (OSA), the most common form of sleep apnea. This extremely common condition, affecting 83.7 million American adults, can have myriad consequences in a range of body systems, including cardiovascular, metabolic, and neurocognitive.

Many members have heard of the relationship between obstructive sleep apnea and snoring. Snoring is often associated with OSA, but OSA is not just snoring. The real health risk is the cycle of breathing pauses, low oxygen, and brief awakenings, all of which are often too short for the patient to recall. In cases of severe OSA, this cycle repeats hundreds of times a night and leads to a cumulative, systems wide effect.

What is happening in OSA?

Let's look at what is happening in OSA. Scientists believe that this disease results from the interaction of four key factors:

- Anatomical upper airway compromise
- Impaired responsiveness of upper airway dilator muscles
- Unstable ventilatory control
- Low arousal threshold

Members with OSA will all have some degree of anatomical upper airway compromise. This generally means that there is sagging, crowded tissue in the upper airway. This is what causes snoring. There are a variety of causes of this compromise, but simple aging and weight gain explain most cases.

When these anatomic changes occur, the body wants to restore balance by dilating the airways. Ideally, an airway constriction that results from sagging tissue would be compensated by airway dilator muscles serving to keep the flow of air at an even keel. It turns out that it is easier for your body to make this correction when you are awake and upright rather than when you are sleeping, and this imbalance is particularly at play with OSA. The airways are collapsing due to anatomic factors and there is not enough upper airway dilator muscle tone to counterbalance that constriction.

Unstable ventilatory control, also called "high loop gain," involves the patient's breathing becoming oversensitive to disruptions in sleep. This leads to a situation where the patient's breathing, unbeknownst to them, regularly oscillates between breathing too fast, hyperventilation, and breathing too slow, hypoventilation. This unstable control is often the result of the body trying to correct for the pauses in breathing occurring during sleep and completely overdoing the correction. A pause in breathing, for example, triggers a compensatory period of breathing too fast, which drops CO_2 levels and leads to yet another pause in breathing. And so the cycle continues.

Low arousal threshold means that the patient wakes up too easily from respiratory events. Again, the patient may have no memory of these awakenings. Early awakenings in the patient disrupt the airway dilator compensatory response previously discussed. The body is trying to correct for the diminished flow of air by an airway muscle response, but the awakenings interfere with this process.

Clinically, the patient with all this going on in the background will often have several recognizable symptoms, recognizable at least to their sleep partner who can't get any rest with all the racket going on. The racket most obviously involves loud snoring, but the OSA sufferer may also be gasping and/or choking. For his or her part, the patient may wake up with morning headaches, daytime fatigue, and brain fog.

What are the effects of OSA on longevity?

OSA has several systems-wide health effects that may have significant negative effects on a long, healthy life.

Cardiovascular

We saw before that the net effect of OSA is decreased oxygen to the tissues. A critical tissue that needs a whole lot of oxygen is the heart. In OSA, repeated oxygen drops stress the heart. When the person with OSA briefly stops breathing, has an apneic pause, the heart and blood vessels try to counter this imbalance by pumping harder and faster, against tighter blood vessels. Blood pressure goes up. Unfortunately, this increased work on the part of the heart and circulatory system to correct the low oxygen itself requires increased oxygen. So, at the very moment when the heart needs an increased oxygen supply to perform its best, there is no supply to be found. The net effect of all this is damage to the heart tissue itself as well as increased blood pressure, leading to increased risk of heart attack, stroke, and cardiac rhythm problems.

Neurologic

It is not hard to imagine that the lack of a proper flow of oxygen to the tissues of the brain at night might have some bad effects. Indeed, the frequent micro awakenings prevent the patient from entering deep sleep cycles properly, which is unfortunate because this is when our brain normally filters waste out. Additionally, the interruptions in the flow of oxygen affect the brain tissue itself and clinically are associated with memory decreases and higher risk of cognitive decline.

Endocrine

Another body system impacted by the lack of oxygen is the endocrine system, which controls our metabolism. The mechanism here is that interrupted oxygen supply to the fat cells in the gut stimulates the immune cells in this region of the body. These angry immune cells release chemical signals that contribute to a state of insulin resistance. The net effect is wider spikes in blood sugar and increased risk of diabetes over time. This can happen in all members, whether they are obese or not.

Quality of Life

The net effect of all of this is to dramatically affect the patient's quality of life. Members with untreated OSA will be exhausted, even if they swear up and down that they are "sleeping just fine." They are likely to experience mood changes as this tiredness builds and never seems to improve. The members may try to fix these issues by engaging in healthier living behaviors like exercise, but will find their exercise tolerance greatly reduced. When they go to work, they will be less productive and less able to focus. It is just harder for them to live well.

Treatment

As you can see, OSA is an awful condition. The good news, however, is that it is extremely treatable in several different ways. The gold standard treatment is CPAP, continuous positive airway pressure. CPAP supplies a constant stream of air and air pressure to splint those sagging airways open, so more oxygen comes through. This breaks the endless cycle of apnea leading to low oxygen leading to ineffective or counterproductive body responses like high blood pressure. For members who do not want or tolerate CPAP, there are other options like oral appliances, weight loss medications, or even surgery. No matter the exact medical treatment, it is always helpful to maximize other factors like exercise, weight loss, and sleep practices.

With treatment, the general trajectory is improvement. Blood pressure gets better, energy improves, brain fog lifts, stressed tissues like the heart recover and heal. Often, members forget what good sleep and daytime functioning even feel like because OSA is so chronic and insidious that this dysregulated state has become their new normal. It is only when they are treated that they realize what they were missing and they never want to go back.

Who should get checked for OSA?

Members with the following signs and symptoms should be checked:

- Loud snoring
- Witnessed pauses in breathing
- Difficult to treat blood pressure elevations
- Heart rhythm problems like atrial fibrillation
- Type 2 diabetes mellitus
- Excessive daytime sleepiness

Conclusion

OSA is all too common, yet many people with OSA are unaware they have the condition. It is easy to become used to the constant fatigue.

OSA is associated with many adverse health effects in multiple body systems, cardiovascular, neurologic, endocrine to name just a few.

Many effective treatments for OSA are available, including treatments for members who can't tolerate CPAP.

With treatment, sleep will improve and the body can get the properly oxygenated, restorative sleep it needs.

As you now know, great sleep is a key factor for good health and longevity and is eminently attainable. Evaluation and treatment of OSA is a standard part of the care that the Quotient Health Care Team provides. We're here to help you sleep and feel more energized so you can live better!

Thanks for the opportunity to be involved in your care.

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This month's Core5 focus: *Sleep Architecture*

Our Core5 Profile

Optimal health is visualized as a pentagon built from the Core5: sleep architecture, strength & lean mass, cardiopulmonary fitness, cardiovascular health, and metabolic rate. When all five are strong, the pentagon is complete. When one falls short, the shape reveals where your health needs attention.