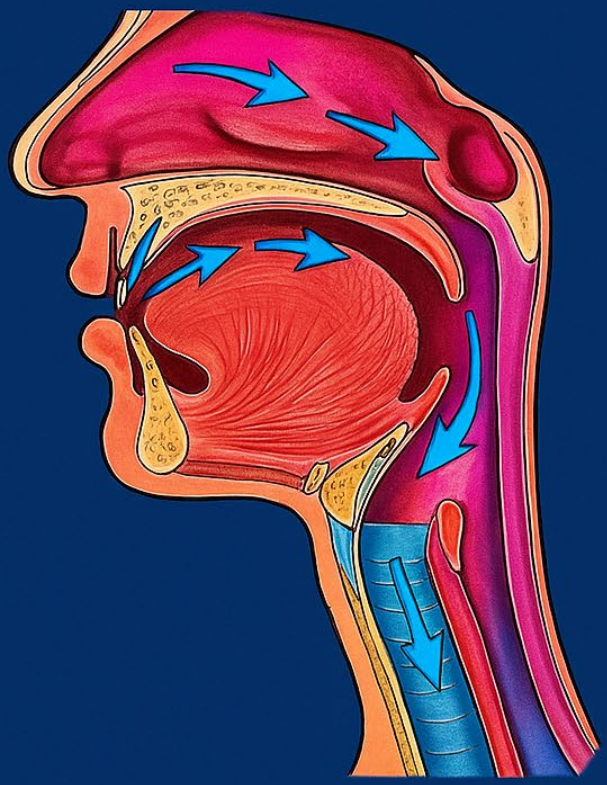
THE OXYGEN CONNECTION

Why Breathing Right at Night Could Save Your Life



HANS SCHLEICHER, DDS, D.IAOS

The patient stories are composite narratives drawn from common patient experiences. Names are fictional but the patient experiences are real. They are intended to illustrate the real human impact of untreated obstructive sleep apnea.

Prologue: A Crisis in the Dark

You don't remember the moment it started.

Maybe it was a few years ago—when you began waking up tired even after eight hours of sleep. Or when your spouse started nudging you at night, telling you that you were snoring louder than ever. Maybe you just chalked it up to age, stress, or working too hard. You got used to the fog, the fatigue, the afternoon crashes. Life moved on. You adapted.

But what if I told you that while you were asleep, your brain was suffocating?

That's not a metaphor. It's a medical reality for millions of people who suffer from obstructive sleep apnea (OSA) — and don't even know it. Night after night, their bodies slip into a cycle of breath-holding, oxygen drops, stress surges, and jolts out of sleep, all without full awareness. The brain never gets the fuel it needs. The heart never gets the rest it deserves. The body starts to break down. Slowly. Quietly. In the dark.

This book is about that crisis. But it's also about the current treatments old and new that can bring new life and hope to our patients..

The Truth We're Not Talking About

Sleep Apnea is one of the most underdiagnosed health conditions in the world. It affects more people than diabetes. It's linked to heart disease, memory loss, depression, weight gain, and even cancer. And yet, most people have never been screened for it. Most doctors don't ask about it. And most sufferers assume they just need more coffee or fewer carbs.

The result? A generation of people living at half-power.

Not because they're lazy or unmotivated, but because their brains are starved of oxygen every single night.

Why I Wrote This Book

As a dentist specializing in sleep medicine, I've seen firsthand what happens when people finally get the oxygen they've been missing. I've seen marriages healed, careers revitalized, moods stabilized, and lives saved — all because someone decided to take their sleep seriously.

But I've also seen the damage done when this condition goes ignored: strokes in middle-aged adults with no warning signs. Depression misdiagnosed for years. Kids mislabeled as having ADHD when the real issue was fragmented sleep. It's time we started telling this story — and giving people the tools to reclaim their lives.

This Book Is for You If...

- You snore or sleep next to someone who does.
- You wake up tired, foggy, or in a bad mood.
- You're gaining weight despite eating right.
- You feel like your mental sharpness is fading.
- You've been told "everything looks fine" — but you know something isn't.

This book is also for the silent sufferers. The ones who think feeling exhausted all the time is just part of life.

It is not.

And I'm here to show you why. This isn't just a medical guide. It's a wake-up call — one that could change your energy, your health, and your future.

Because the most powerful healing tool you've been missing... might just be air you are not breathing.

About the Author

Hans Schleicher, DDS, D.IAOS, is the founder of SleepHouston.com and a nationally recognized advocate for airway health and sleep medicine. Over the course of his career, Dr. Schleicher has treated hundreds of patients suffering from Obstructive Sleep Apnea and related conditions — witnessing firsthand the profound toll that disrupted sleep takes on the human body, and the equally profound transformation that comes with treating it.

His clinical approach centers on oral appliance therapy, a field in which he has developed deep expertise and a reputation for results. Yet Dr. Schleicher has always believed that the work doesn't end in the treatment chair. True change, he knows, begins with awareness — and that conviction, more than anything else, is what compelled him to write this book.

Preface

Oxygen is the fuel of life, yet many of us spend a third of our lives—our sleeping hours—starving for it without knowing.

According to most scientific studies, a person can live about 4-6 weeks without food if water is available. A person can live 3-4 days without water. A person can live only 3-4 minutes without oxygen (air)

- **3 weeks without food**: Typical survival limit.
- **3 days without water**: Typical survival limit.
- **3 minutes without oxygen**: Brain cells start to die, unconsciousness often occurs. Death occurs 4-6 minutes.

That third number is the one that matters in this book.

Every neural synapse that fires in your brain and every metabolic process in your body is dependent on the one critical component or molecule that your body cannot provide. It must be extracted from outside the body.

The molecule that sustains all life forces is **oxygen.**

It has to come from outside. Your body has no reserve. No backup supply. Every breath you take — waking or sleeping — is a lifeline your cells are counting on.

When that supply is interrupted during sleep, the damage doesn't announce itself. There's no alarm. No chest pain. No moment you remember. There's just a slow, silent erosion — of brain function, of heart health, of organ integrity — building over months and years while you believe you're getting rest.

Without an uninterrupted supply of oxygen during sleep, the consequences compound. Night after night. Year after year.

This book will show you what's happening while you sleep — and what you can do about it.

Oxygen is also known by the symbol **O2** in the periodic table. Without oxygen, all life processes quickly stop functioning, resulting in death of the organism. Humans are particularly susceptible due to the huge need for oxygen that our brains and organs require to function. Fish, reptiles, and other lower forms of life can last a little longer.

The need for oxygen during waking hours is obvious to us all. But what happens to our oxygen supply when we sleep is equally as important, as our brain and organs rest and regenerate during our sleep cycle.

Without an uninterrupted supply of oxygen during our sleeping hours, over time, severe negative health consequences may result.

This book will explore and explain how this affects everyone and what you can do to find out if this is a factor affecting you during your sleep.

The Airway:

The only way we can get oxygen into our body is through our breathing. Air must move from outside your body, via our mouth or nose into the trachea and then into your lungs, to enter the bloodstream to get to your brain, heart, and the rest of your organs and tissue.

The act of breathing —also called **pulmonary ventilation**—is the biological process of moving air into and out of the lungs so that oxygen (O_2) can enter the body and carbon dioxide (CO_2) can be expelled.

Once past the nose and back of the throat the air must pass through the middle airway just before the trachea. The trachea is held open with ringed cartilage and will not collapse or distort, it is very stable. The mid airway is different – it is made up of ten dilator muscles arranged in a circle to form a soft “tube” the air passes through to get to the trachea on the way to the lungs.

Humans are the only mammals with a collapsible airway.

In every other mammal the airway is a mostly non-collapsible cartilaginous structure that protects them from airway collapse. Humans traded that protection for something remarkable.

Many scientific studies suggest that when the human species evolved, the airway lengthened and became muscular, collapsable, and moveable. Humans developed vocal cords and the ability to speak and modulate their voice.

Our ability to sing — to soar through high notes and rumble through low ones — is one of humanity's most remarkable gifts. But it comes with a hidden cost: the very anatomy that makes it possible also laid the groundwork for airway collapse and obstructive sleep apnea.

While you are awake, your airway muscles remain firm and taut, holding the airway open with ease. But as you drift into the deeper stages of sleep, something fundamental shifts — your muscles become ***atonic***, a medical term meaning they lose most or all of their tone. This is not a flaw; it is by design. Just as the brain and vital organs undergo their nightly restoration during deep sleep, the muscles must also recover. Sustained tension restricts blood flow, so the body wisely relaxes them, allowing circulation to rush in and repair the tissue.

For most people, this process unfolds without consequence. But for many others, it doesn't.

When the muscles supporting the airway go slack, the airway can collapse — or narrow so severely — that airflow into the trachea and lungs becomes restricted or stops altogether. This is called Obstructive Sleep Apnea (sleep without air) or **OSA**.

This book is a journey into the hidden epidemic of nighttime oxygen deprivation, particularly caused by Obstructive Sleep Apnea (OSA), and how it silently erodes our brain, heart, and organ health. As a practicing dentist specializing in sleep medicine, I have seen firsthand how restoring oxygen at night transforms lives. This book is designed to be both accessible and deeply informative, using relatable metaphors and patient stories to bring the science to life.

Welcome to The Oxygen Connection.

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Chapter 1: Breathing While Sleeping—Why It's Not as Simple as It Seems

Most of us never think about breathing. It happens without effort, without awareness, without a second thought.

Until, one night, it doesn't.

During the day, your brain quietly conducts a symphony of signals to your respiratory muscles, regulating every breath with precision you never notice. At night, that symphony faces its greatest test. As your body surrenders to sleep, the muscles throughout your body begin to relax — including those lining your throat. The tongue softens. The soft palate loosens. The tissues of the pharynx go slack. For millions of people, this natural process tips into something dangerous: the airway collapses. This is Obstructive Sleep Apnea — OSA.

Unlike holding your breath underwater, these pauses are not chosen. They are invisible, involuntary, and relentless. A person with OSA may stop breathing dozens — sometimes hundreds — of times a night without ever fully waking up. Each episode typically lasts between ten and thirty seconds, though some stretch to a minute or more. With every pause, oxygen levels in the blood begin to fall.

Then the brain intervenes.

A neural alarm fires — breathe — and the body responds just enough. A gasp. A snort. A subtle shift in position that cracks the airway open and lets oxygen flood back through. The person never fully wakes. They have no memory of the struggle.

It's not just the lack of oxygen that's harmful, it's the fragmentation of sleep architecture. Deep sleep, particularly stages 3 and REM (which are essential for physical and mental restoration), gets consistently interrupted. Over time, this leaves the brain depleted, the heart overworked, and the body inflamed.

Think of the airway as a tunnel. In people with normal nighttime breathing, that tunnel stays open. In those with OSA, it's like a subway that's partially caved in. The train (oxygen) can't get through. The debris (collapsed tissues) has to be cleared repeatedly through arousal signals—only for the same collapse to happen again and again.

Contributing factors to OSA include obesity, nasal obstruction, large tonsils, alcohol consumption, sedative use, and genetics. Men are more commonly diagnosed, but women—especially postmenopausal—are also at high risk and often misdiagnosed.

What's shocking is that many people with OSA don't even know they have it.

They may snore, wake up tired, or feel foggy during the day, but they chalk it up to stress or aging. A bed partner may be the first to notice gasping or choking at night.

And yet, even then, most people still don't act. That's the insidious nature of this disease. It hides in plain sight, mimicking the ordinary wear of a busy life. But here's the truth: the only way to know for certain whether OSA is robbing you of oxygen while you

sleep is to get tested. Suspicion is not enough.

Diagnosis requires a sleep study—either in-lab polysomnography (PSG) or a home sleep apnea test (HST). The sleep test identifies the Apnea-Hypopnea Index, or AHI — the number of breathing disturbances per hour, used to classify the severity of OSA:

AHI Score	Severity
AHI 5–15	Mild OSA
AHI 15–30	Moderate OSA
AHI over 30	Severe OSA

Untreated OSA is linked to hypertension, heart disease, stroke, diabetes, cognitive decline, and even shortened lifespan. It's not just a sleep problem—it's a systemic health crisis hiding in plain sight.

Chapter 2 : The Silent Saboteur – Why sleep apnea is so easy to miss.

"Obstructive Sleep Apnea" is one of the most widespread and underdiagnosed conditions in modern medicine. And yet most people who have it have no idea.

It doesn't arrive with fanfare. There is no sudden collapse, no obvious warning sign, no moment that sends you rushing to a doctor. Instead, it creeps in quietly — night after night — stealing your energy, eroding your clarity, and silently dismantling your health while you sleep.

This is why OSA has earned a fitting reputation as the "Silent Saboteur".

The cruelest part of this disease is its disguise. People suffer for years — sometimes decades — without ever suspecting the cause. They chalk up their exhaustion to stress, aging, or a demanding schedule. They laugh off their snoring. They accept the morning headaches and the brain fog as simply the price of modern life. Even when they doze off at red lights or drag themselves through afternoons in a fog, the thought rarely surfaces: my airway is collapsing while I sleep.

What makes this even more complicated is that OSA doesn't look the same in everyone.

In men, the classic signs are hard to miss — the thunderous snoring, the gasping, the restless nights that leave bed partners wide awake. But in women, the picture is far more subtle. Insomnia. Anxiety. Depression. A persistent exhaustion that no amount of sleep seems to fix. Countless women have been handed diagnoses of chronic fatigue, fibromyalgia, or hormonal imbalance when the true culprit was quietly suffocating them every night.

Children are not spared either. A child struggling in school, acting out in class, or carrying a diagnosis of ADHD may simply be a child whose airway is too narrow, whose tonsils are too large, whose jaw hasn't developed enough room to breathe. Pediatric OSA is startlingly common — and startlingly overlooked.

And the consequences of missing it are not minor.

Untreated sleep apnea doesn't just leave you tired. It raises your risk of heart attack and stroke. It fuels chronic inflammation, impairs your immune system, and accelerates cognitive decline. It feeds anxiety and depression. It puts you — and everyone around you — at risk every time you get behind the wheel. The cumulative toll of years of oxygen deprivation is not just a reduced quality of life.

It is a shorter one.

The path forward begins with awareness — and awareness begins with asking the right questions. Healthcare providers must make sleep a routine part of every patient conversation. Patients must learn to recognize the signs and push for answers when fatigue and unexplained symptoms linger. And bed partners — often the first to witness the gasping, the snorting, the eerie silences between breaths — have a role to play too.

Diagnosis has never been more accessible.

While in-lab sleep studies remain the gold standard, home sleep testing is now accurate, affordable, and available to nearly anyone who needs it. One night of testing can uncover what years of misdiagnosis could not.

And once identified, OSA is treatable.

CPAP therapy, oral appliance therapy, surgical options, positional strategies, weight management — no single solution works for everyone, but every solution beats the alternative. Because doing nothing is not a neutral choice. Doing nothing guarantees that the damage will continue.

OSA does not shout. It whispers. But it robs with ruthless consistently, and without mercy — until someone finally decides to take action.

Chapter 3: The Brain on Empty—How Oxygen Affects Memory, Mood, and Mental Sharpness

Imagine starting each day with a mental fog you just can't shake. You misplace keys, forget names, lose track of tasks. Over time, it becomes more than just annoying.

It becomes frightening.

For many people with obstructive sleep apnea (OSA), this is daily life. But the problem isn't memory loss—it's oxygen loss that is causing the memory loss.

The brain is the body's most oxygen-hungry organ, using **20%** of your oxygen supply despite making up only **2%** of your body weight. During sleep, especially in REM (Rapid Eye Movement) and slow-wave stages, the brain goes into maintenance mode—sorting memories, balancing mood-related chemicals, and flushing out toxins. When apneas repeatedly reduce oxygen levels, the brain is blocked out of these crucial phases, sometimes hundreds of times a night.

The result? Impaired memory consolidation, poor attention span, irritability, and a creeping sense of "losing your edge."

In clinical terms, these are called neurocognitive deficits, and they affect everything from decision-making and executive function to learning and emotional regulation.

When the brain is deprived of oxygen, it can cause a condition called hypoxia. Hypoxia is characterized by reduced oxygen supply to the tissues, which can result in cell damage or death. The brain, being one of the most oxygen-dependent organs in the body, is particularly vulnerable to the effects of hypoxia.

Impact on Cognitive Function: The brain requires a constant supply of oxygen to function optimally. When oxygen levels are reduced due to sleep apnea, it can negatively impact cognitive function such as memory, and decision-making.

Multiple studies found a clear link between sleep apnea and cognitive impairment. One study published found individuals with severe sleep apnea had lower scores on tests of attention and executive function compared to those without sleep apnea.

Another study published in the American Ambulatory and Critical Care Medicine showed that individuals with untreated sleep apnea had a higher risk developing mild cognitive impairment and dementia later in life. The researchers suggested that the chronic oxygen deprivation caused by sleep apnea could contribute to the development of these cognitive disorders.

Structural Changes in the Brain: In addition to cognitive impairment, sleep apnea can also lead to structural changes in the brain. Magnetic resonance studies have shown

that individuals with sleep apnea often have reduced gray matter volume in certain regions of the brain.

What's happening inside?

Let's break it down: intermittent hypoxia (oxygen drops) during apneas creates oxidative stress in neurons (brain cells). Think of it like mini-strokes—each episode is a hit to brain tissue.

Simply put, your brain cells are dying.

Over time, this contributes to inflammation, plaque buildup, and neurological degeneration. Studies have found a direct link between untreated OSA and structural brain changes — specifically in the hippocampus (memory) and prefrontal cortex (judgment and behavior). MRI imaging shows reduced gray matter volume in people with chronic OSA.

Depression and anxiety are also common in OSA patients — not just because of poor sleep, but because of what the disease does to the brain's chemistry. When oxygen dips and sleep fragments, serotonin, dopamine, and GABA — critical mood-regulating neurotransmitters — become unbalanced. Patients often report emotional numbness, mood swings, and a short temper that improves dramatically once treatment begins.

The Dementia Connection

Perhaps the most alarming connection is between sleep apnea and dementia. Research has shown that untreated OSA may accelerate the accumulation of beta-amyloid plaques, a hallmark of Alzheimer's disease. This happens because the glymphatic system—a waste-clearing network in the brain—only works efficiently during deep sleep. When sleep is constantly interrupted, the cleanup crew never finishes its job. The net result over time is that this buildup of beta-amyloid plaque continues to build leading to premature dementia and Alzheimer's disease.

One large longitudinal study (Yaffe et al., 2011) showed that women with untreated OSA were twice as likely to develop mild cognitive impairment or dementia over a 5-year period. Similar results have been seen in men and across diverse populations.

The buildup continues. Night after night.

The good news? Treating sleep apnea often reverses many of these effects. Patients report sharper thinking, improved mood, and a return of energy and emotional resilience. CPAP, oral appliance therapy, and positional treatments all help keep oxygen levels stable during sleep—restoring the brain's ability to heal and function.

So, if your mind feels like it's in a fog, don't just blame age or stress. It might be your brain crying out for air.

Chapter 4: The Heart in Hypoxia—Cardiovascular Risks of Sleep Apnea

Every night, your heart has the chance for recovery and regeneration from the hours of pumping blood during the wakeful period. Sleep is supposed to be a time of rest for the cardiovascular system—when heart rate slows, blood pressure dips, and the entire system gets a break. But in people with obstructive sleep apnea (OSA), sleep becomes a battlefield.

Each apnea event is like a punch to the heart.

When oxygen levels drop during an apnea, the brain initiates a "fight or flight" response. Heart rate spikes, blood vessels constrict, and blood pressure surges. This repeated stress happens dozens or even hundreds of times per night. The result? Hypertension that doesn't go away during the day—what physicians call "non-dipping" blood pressure. This form of hypertension is a major risk factor for stroke, heart attack, and aneurysm.

The damage doesn't stop there. The constant rollercoaster of oxygen deprivation and reoxygenation causes oxidative stress, inflammation, and endothelial dysfunction (damage to the inner lining of blood vessels). Over time, this accelerates atherosclerosis—plaque buildup in the arteries that can lead to blockages and cardiac events.

OSA is also a known contributor to arrhythmias. Atrial fibrillation (AFib), the most common irregular heartbeat, is strongly associated with untreated sleep apnea. In fact, patients with OSA are four times more likely to develop AFib. Even more striking is that treating sleep apnea—especially with CPAP—significantly reduces recurrence of AFib after procedures like cardioversion or ablation.

Another concern is heart failure. The heart is a muscle that relies on oxygen to function. Repeated nighttime stress can weaken the heart's ability to pump effectively, leading to congestive heart failure.

What's especially dangerous is how silent this process is. People may have no obvious symptoms other than snoring or daytime fatigue, yet their cardiovascular system is under nightly siege. Even young, otherwise healthy individuals can develop serious problems if their sleep apnea goes untreated.

Thankfully, the cardiovascular system is remarkably resilient. When sleep apnea is diagnosed and properly treated, blood pressure often drops, heart rhythm stabilizes, and inflammation markers decrease. It's not an instantaneous fix, but in just a few weeks of OSA treatment, it is one of the most powerful tools for cardiac prevention that most people (and even doctors) overlook.

If you or someone you love has high blood pressure, irregular heartbeat, or unexplained fatigue, sleep apnea should be on the list of possible culprits. Catching it early may not only improve quality of life, but it could also save it.

Chapter 5: Organs Under Siege—How Poor Sleep Oxygen Starves the Body

When oxygen slips away in the night, the damage doesn't stop at the brain or heart. Every organ system in your body depends on oxygen.

It's the currency of cellular life.

And when the supply is short-changed—even temporarily—systems start to falter. This is the hidden consequence of untreated sleep apnea: a slow, multi-organ assault that many never trace back to the real cause.

METABOLISM AND WEIGHT

Sleep apnea increases insulin resistance, making it harder for the body to regulate blood sugar. This is why people with OSA are more likely to develop type 2 diabetes. Nighttime oxygen drops also alter hormone release — especially cortisol and ghrelin, which govern stress and hunger. That's why patients with untreated OSA report intense cravings and weight gain despite low energy and good intentions.

THE KIDNEYS

The kidneys are delicate organs. They filter blood, regulate blood pressure, and are particularly vulnerable to oxygen deprivation. Intermittent hypoxia and elevated nighttime blood pressure place extra strain on these filters, raising the risk for chronic kidney disease. The damage accumulates slowly. But over time, it can be irreversible.

THE LIVER

At night, the liver shifts into overdrive — detoxifying blood, processing fats, supporting digestion. Poor sleep and low oxygen levels contribute to fatty liver disease and inflammation. Studies show a correlation between OSA severity and elevated liver enzymes — an early warning sign of hepatic stress.

DIGESTION

Nighttime apneas disrupt the parasympathetic nervous system, which governs rest-and-digest functions. This dysregulation contributes to irritable bowel syndrome, delayed gastric emptying, and poor nutrient absorption. Patients with untreated apnea often report bloating, reflux, and unpredictable bowel patterns.

HORMONES

Sleep apnea's effect on hormones is especially significant. Interrupted sleep alters the balance of estrogen, progesterone, and thyroid hormones in women — worsening PMS, menopause symptoms, and fertility issues. In men, it reduces testosterone levels, impacting energy, mood, and sexual function.

THE IMMUNE SYSTEM

Sleep is when immune memory is built. Antibodies are refined. Inflammatory markers are suppressed. Disrupted sleep with oxygen loss leads to chronic inflammation and a

weakened defense against infection. It also reduces the effectiveness of vaccines and slows healing after injury.

When patients present with a “laundry list” of vague, chronic symptoms—fatigue, digestive issues, mood swings, high blood pressure, weight gain—it’s time to think systemically. Many are suffering from nighttime oxygen starvation. Identifying and treating OSA isn’t just about better sleep. It’s about restoring whole-body health.

Chapter 6: Sleep Apnea and GERD—The Reflux Connection

For many patients, the night doesn't end with snoring or fatigue—it ends with a burning sensation in the throat, a bitter taste in the mouth, or a cough that seems worse at bedtime. Gastroesophageal reflux disease (GERD) and obstructive sleep apnea (OSA) are often treated as separate problems.

The airway and the digestive tract are neighbors. When one suffers, the other often does too.

GERD occurs when stomach acid flows backward into the esophagus. While this can happen during the day, it's often more pronounced at night—when lying down and relaxing muscles make backflow easier. Sleep apnea, meanwhile, creates abrupt shifts in pressure inside the chest. During an apnea, the airway collapses and the diaphragm continues to contract, creating negative thoracic pressure. This vacuum-like effect pulls acid up from the stomach into the esophagus.

It's a mechanical relationship—but also a vicious cycle. GERD inflames the airway, making it more sensitive and reactive. This inflammation can narrow the upper airway and increase the likelihood of obstruction. In turn, apneas increase reflux events. The longer the reflux persists, the more the airway tissues swell—and the worse the apneas become.

Patients with both conditions often suffer quietly. They may report chronic throat clearing, coughing at night, hoarseness in the morning, or the feeling of "something stuck" in the throat. Some are misdiagnosed with asthma or allergies. The real cause may be a dual dysfunction: collapsing airways and a leaky esophageal sphincter.

Research backs this up. One study found that up to 60% of people with OSA also suffer from GERD. And treatment of one often improves the other. Continuous Positive Airway Pressure (CPAP) has been shown to reduce both apnea events and nighttime reflux by stabilizing airway pressures. Oral appliance therapy, by advancing the jaw and tightening the airway, may also reduce GERD symptoms by preventing airway collapse and improving upper esophageal tone.

For patients with both conditions, a multidisciplinary approach is key. Dentists, sleep physicians, and gastroenterologists often may coordinate care. A patient treated for OSA without addressing GERD may still suffer—and vice versa.

The connection between sleep apnea and reflux is a reminder that no system in the body operates in isolation. The airway and digestive tract are neighbors, and when one suffers, the other often does too.

Chapter 7: The Great Oxygen Robbery—How CPAP Non-Compliance Fuels a Health Crisis

When a condition as dangerous as sleep apnea has a proven treatment, you'd expect people to jump at the chance to use it.

But reality tells a different story.

While CPAP (Continuous Positive Airway Pressure) is considered the gold standard for treating moderate to severe obstructive sleep apnea (OSA), it's also one of the most rejected medical devices in use today.

Compliance rates hover between 30% and 60%, depending on the study. That means nearly half of all patients prescribed CPAP either don't use it at all or abandon it within the first year.

This non-compliance represents more than a personal struggle—it's a public health crisis.

CPAP works by delivering a continuous stream of pressurized air through a mask to keep the airway open during sleep. It's extremely effective—when used. But many patients describe it as uncomfortable, noisy, claustrophobic, and awkward. Some report dry mouth, nasal congestion, or skin irritation from the mask. Others feel emotionally affected, embarrassed by the machine or anxious about
becoming "tethered" to it every night.

For those who struggle, the consequences of not using CPAP are severe:

- Persistent oxygen deprivation during sleep
- Continued cardiovascular strain and inflammation
- Ongoing cognitive decline, mood disorders, and fatigue
- Increased risk of accidents, hospitalization, and early death

Worse still, some patients falsely believe that simply owning a CPAP machine—regardless of whether they use it—means their condition is being managed. This false sense of security keeps them from seeking alternative treatments.

Enter oral appliance therapy (OAT), This alternative is often suitable for most cases, and for many patients— they can offer substantial relief without the reliance on a CPAP machine.

But non-compliance isn't just a device issue. It's a system issue. Many patients are given a CPAP without proper education or support. They're handed a machine, sent home, and told to "get used to it." There's no coaching, no troubleshooting, no empathy. Predictably, many give up. Others never follow through on a sleep study in the first place.

Solving this crisis requires a cultural shift in how we approach OSA treatment. We must:

- Normalize conversations about sleep disorders and therapy
- Screen more proactively in primary care and dental settings
- Offer personalized treatment plans that include alternatives to CPAP
- Provide coaching, follow-up, and real-time feedback tools for patients trying to adjust
- Educate patients about the long-term consequences of untreated apnea

Every untreated case of sleep apnea is a life on the edge—of disease, of decline, of disaster. And every non-compliant CPAP patient is a reminder that medicine must meet people where they are, not where the data says they "should" be.

Sleep apnea prevalence has increased by **18%** over the past decade, with obesity and aging populations cited as major contributors.

Chapter 8: Oral Appliance Therapy—A Breath of Fresh Air

Not every patient with sleep apnea wants—or needs—a machine by their bedside. For many, a smaller, quieter, and more comfortable solution can provide life-changing results. Oral Appliance Therapy (OAT) has emerged as a powerful alternative to CPAP, offering relief to those who struggle with compliance or prefer a more discreet form of treatment.

Oral appliances are custom-fitted dental devices worn during sleep. They work by repositioning the lower jaw (mandible) slightly forward, which helps keep the tongue and soft tissues from collapsing into the airway. This mechanical shift prevents obstruction and allows for smoother airflow throughout the night.

The concept is simple, but the impact is profound. Clinical studies have shown that for patients with OSA, OAT can be just as effective as CPAP in reducing apnea events, improving oxygen saturation, and enhancing sleep quality.

Patients love the convenience. Oral appliances are:

- Small and portable—ideal for travel
- Silent—no hoses, motors, or masks
- Comfortable—with a lower profile and custom fit
- Non-electrical—no need for power or distilled water
- Easy to maintain—cleaned like a nightguard or retainer

But perhaps the greatest benefit is compliance.

Studies have consistently shown higher long-term adherence (98%) with oral appliances compared to CPAP (35%). Many patients who abandoned their CPAP machines due to discomfort, claustrophobia, or embarrassment find new hope with OAT.

The success of OAT hinges on proper selection and customization. Not every appliance is the same, and not every patient is a candidate. The best outcomes occur when OAT is prescribed and monitored by a dentist trained in dental sleep medicine—often working in collaboration with a sleep physician.

Follow-up care is essential. Patients should have their appliance titrated (adjusted) for optimal effectiveness, undergo periodic sleep studies to confirm results, and maintain good oral hygiene.

As awareness of OAT grows, so does support from professional organizations. The American Academy of Sleep Medicine (AASM) and the American Academy of Dental Sleep Medicine (AADSM) have both endorsed oral appliances as a first-line therapy for certain patients.

Oral Appliance Therapy isn't just a backup plan. For many, it's the frontline solution—a breath of fresh air that helps them sleep, breathe, and live again. The positive effects of

using an oral appliance can be immediate. Most patients immediately respond with a new feeling of energy, vitality, mental clarity, and the instant elimination of excessive daytime sleepiness and fatigue.

Chapter 9: The Future of Sleep Medicine

Sleep medicine is evolving faster than ever before. What was once a niche specialty confined to hospital sleep labs is now at the forefront of a revolution in healthcare—driven by digital technology, patient empowerment, and a deeper understanding of the critical role sleep plays in every dimension of health.

At the heart of this transformation is one word: access.

Home sleep testing has democratized diagnosis. No longer do patients have to spend a night hooked to wires in a sterile lab. Modern portable devices now deliver accurate assessments from the comfort of their own beds, increasing screening rates and reaching populations that previously went undiagnosed.

Wearable technology is adding another layer. Smartwatches, rings, and headbands now track everything from oxygen levels and respiratory rate to heart variability and sleep stages. These new tools are helping millions of users monitor patterns, flag concerns, and engage with their sleep health in ways never before possible.

On the treatment side, the landscape is expanding beyond CPAP. Oral appliances, upper airway stimulation (like Inspire therapy), positional therapy devices, nasal EPAP valves, and hybrid approaches are providing patients with options tailored to their unique anatomy and preferences. Even surgical techniques—once a last resort—have advanced in precision and effectiveness.

Artificial intelligence is being used to analyze sleep data at scale, identifying patterns and personalizing treatment plans. Machine learning algorithms help physicians predict which therapies are most likely to work for each patient—accelerating time-to-relief and improving adherence.

Telemedicine has opened doors for rural and underserved communities. Sleep consultations, therapy adjustments, and even device troubleshooting can now happen remotely, reducing barriers to care and expanding access.

But the future isn't just about gadgets—it's about awareness.

Public health campaigns are slowly bringing sleep apnea into the mainstream conversation, alongside heart disease and diabetes. Employers, insurers, and wellness programs are beginning to recognize the economic and human costs of untreated OSA and investing in solutions.

Research continues to uncover deeper connections. We now know that untreated sleep apnea accelerates dementia, worsens cancer outcomes, increases maternal-fetal complications, and undermines mental health. As these links become clearer, the urgency to act will only grow.

In the near future, you may walk into a dental office, a primary care clinic, or even a pharmacy and receive a full sleep screening. Personalized treatment will be delivered through a seamless combination of oral devices, smart sensors, and behavioral coaching.

Insurance will recognize sleep as a foundational pillar of health—just like blood pressure or cholesterol. The dream of better sleep for all is no longer just a vision. It’s becoming a reality.

A Final Word

You picked up this book for a reason.

Maybe you're exhausted and don't know why. Maybe someone you love snores through the night and wakes up drained. Maybe a doctor mentioned sleep apnea, and you wanted to understand what that really means. Whatever brought you here, the fact that you're reading these words matters — because awareness is where every transformation begins.

The science is clear. The stakes are real. And the solutions exist.

Oxygen is not a luxury. It is the foundation upon which every heartbeat, every memory, every moment of your life is built. What happens to your oxygen supply in the quiet hours of the night is not a small thing. It is, as this book has tried to show, one of the most consequential and most overlooked forces shaping your health.

You don't have to accept the fog. You don't have to normalize the exhaustion. You don't have to keep waking up feeling like you never slept at all.

Get tested. Get answers. Get treatment.

The night doesn't have to be your enemy. With the right care, it can become what it was always meant to be — the most healing hours of your day.

Breathe well. Sleep well. Live well. Live long.

Dr. Hans Schleicher, DDS, D.IAOS

ORAL APPLIANCE THERAPY (OAT) FOR OBSTRUCTIVE SLEEP APNEA

EXAMPLE OF APPOINTMENTS SEQUENCE

CPT Code **E0486** is the treatment code for OAT

Appointment #1 60-90 Minutes

Airway Evaluation + CT scan + Digital Scanning for appliance

Appointment #2 30 Minutes

Deliver Oral Appliance and set the advancement start position.

Appointments #3-4 15-20 minutes

Evaluate Appliance settings and TMJ adaptation usually 1-2 appointments are needed.

A letter will be sent to the referring doctor regarding patient progress and possible Home Sleep Test with the patient using the appliance for this test.

Our goal is to open the patient's airway to stop the Obstructive Sleep Apneas without going beyond the adaptive capacity of the Temporo Mandibular Joint (TMJ)

Follow-Up Appointments at 3/6 months and then once yearly as needed by the patient

QR Scan Codes – use cell photo camera to scan the codes below:

VIDEOS:

What Happens to your body and brain if you do not get proper sleep

https://youtu.be/Y-8b99rGpkM

Scan to view video

How an Oral Appliance works to Open the Airway:

Scan to view video

Glossary of Key Terms

Apnea - From the Greek word meaning "without breath." A complete pause in breathing lasting ten seconds or more. During an apnea event, airflow to the lungs stops entirely — and oxygen levels in the blood begin to fall.

Apnea-Hypopnea Index (AHI) - The primary measurement used to diagnose and classify OSA. The AHI reflects the total number of breathing disturbances — both full apneas and partial hypopneas — occurring per hour of sleep. An AHI of 5–15 indicates mild OSA; 15–30 is moderate; above 30 is severe.

Atonia / Atonic - The state of muscle relaxation that occurs naturally during deep sleep. When muscles become atonic, they lose most or all of their tone. In the airway, this relaxation can cause the soft tissues to collapse inward — the physiological trigger for obstructive sleep apnea.

Beta-Amyloid Plaques - Protein deposits in the brain that accumulate over time and are considered a hallmark of Alzheimer's disease. Research has shown that untreated OSA may accelerate the buildup of these plaques by disrupting the brain's nightly waste-clearing process.

CPAP (Continuous Positive Airway Pressure) - The most commonly prescribed treatment for moderate to severe OSA. A CPAP machine delivers a continuous stream of pressurized air through a mask worn during sleep, keeping the airway open and preventing collapse. Highly effective — when used consistently.

Endothelial Dysfunction- Damage to the inner lining of blood vessels caused by repeated cycles of oxygen deprivation and reoxygenation. A key mechanism through which untreated OSA accelerates cardiovascular disease.

GERD (Gastroesophageal Reflux Disease) - A digestive condition in which stomach acid flows backward into the esophagus, causing burning, irritation, and tissue damage. GERD and OSA are closely linked — each condition can worsen the other through shared mechanical and inflammatory pathways.

Glymphatic System - The brain's built-in waste-clearance network. Active almost exclusively during deep sleep, the glymphatic system flushes metabolic waste — including beta-amyloid — from brain tissue. When sleep is chronically disrupted by OSA, this critical cleanup process is compromised.

Hypopnea - A partial reduction in airflow during sleep — not a complete stop, but a significant restriction that still reduces oxygen levels and disrupts sleep architecture. Hypopneas are counted alongside apneas in the AHI score.

Hypoxia - A state of reduced oxygen supply to the body's tissues. In the context of OSA, intermittent hypoxia refers to the repeated oxygen drops that occur with each apnea event. Over time, chronic intermittent hypoxia causes oxidative stress, inflammation, and damage to the brain, heart, and organs.

Mandibular Advancement Device (MAD) - A type of oral appliance that repositions the lower jaw slightly forward during sleep, preventing the tongue and soft tissues from collapsing into the airway. One of the most effective and well-tolerated alternatives to CPAP for mild to moderate OSA.

Neurocognitive Deficit - A measurable decline in brain function — including memory, attention, decision-making, and emotional regulation — resulting from chronic oxygen deprivation and disrupted sleep architecture. A hallmark consequence of untreated OSA.

Non-Dipping Blood Pressure - A pattern in which blood pressure fails to decrease during sleep as it normally should. Associated with untreated OSA and a significant risk factor for heart attack, stroke, and aneurysm.

Obstructive Sleep Apnea (OSA) - A chronic condition in which the upper airway repeatedly collapses during sleep, causing partial or complete blockage of airflow. OSA results in fragmented sleep, oxygen deprivation, and a cascade of health consequences affecting the brain, heart, and every organ system in the body.

Oral Appliance Therapy (OAT) - A treatment approach in which a custom-fitted dental device is worn during sleep to maintain an open airway. OAT is endorsed by the American Academy of Sleep Medicine as a first-line therapy for mild to moderate OSA and as an alternative for patients who cannot tolerate CPAP.

Polysomnography (PSG) - A comprehensive, in-laboratory sleep study that monitors brain activity, eye movement, heart rate, breathing patterns, oxygen levels, and muscle activity simultaneously. Considered the gold standard for diagnosing sleep disorders.

REM Sleep (Rapid Eye Movement) - The deepest and most neurologically active stage of sleep — the phase in which dreaming occurs, emotional memory is processed, and critical neurological restoration takes place. OSA disproportionately disrupts REM sleep, compounding its cognitive and emotional consequences.

Sleep Architecture - The natural structure and sequence of sleep stages — including light sleep, deep slow-wave sleep, and REM — that the body cycles through each night. OSA fragments this architecture, preventing the body from completing the restorative work each stage provides.

Slow-Wave Sleep (SWS) - Also called Stage 3 or deep sleep. The phase during which physical restoration occurs — growth hormone is released, tissue is repaired, and the immune system is strengthened. Frequently disrupted by OSA.

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What if the key to protecting your brain, heart, and health was something as simple as breathing better while you sleep?

In *The Oxygen Connection*, Dr. Hans Schleicher, DDS, D.I-AOS, takes you inside the silent epidemic of sleep-disorder-breathing–an invisible health crisis that affects milliions and quietly sabotages our bodies every night.

Drawing from decades of experience in denttal sleep medi-cine, Dr. Schleicher reveals how low nighttime oxygen levels contribute to fatigue, memory loss, heart disease, and even dementia.

With clear explanations, engaging metaphors, and cutting-edge research, this book empowers readers to take back control of their health by treating the root cause-interrup-ted breathing during sleep. *The Oxygen Connection* is your guide to reclaiming vitality–
one breath at a time.

About the Author:

Hans Schleicher, DDS, D.IAOS, is the founder of *SleepHouston.com*, a nationally recognized expert in alrway-focused dentistry, and a leading advocate for the life-saving potential of oral appliance therapy. He's helped thousands of patients rediscoverr the healing power of deep, uninterrupted sleep.