

THE EPOCH TIMES

SLEEP

Hypoglossal Nerve Stimulation Could Relieve Sleep Apnea—Here's How

A small implanted device can help keep your airway open at night.

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9/21/2026|Updated: 10/1/2026

As many as six in 10 people prescribed a continuous positive airway pressure (CPAP) machine for sleep apnea can't stick with it. However, there may be a way to treat sleep apnea without a mask at all.

The treatment is called hypoglossal nerve stimulation. Instead of pushing air through a mask to hold your airway open, it works from the inside: a small device sends a mild electrical pulse to the nerve that controls your tongue, timed to each breath, gently nudging the tongue forward so it can't fall back and block your airway while you sleep.

"Hypoglossal nerve stimulation is often described as a pacemaker for the airway," Dr. Muhammad Usama, a sleep physician, told The Epoch Times. "The patient turns the device on before going to sleep and switches it off in the morning."

The Benefits of Hypoglossal Nerve Stimulation

Unlike CPAP, which uses air pressure to hold the airway open, hypoglossal nerve stimulation works by activating the muscles that control the tongue and involves implanting a small device under the skin of the chest or behind the chin.

Although it may sound like a new treatment, it's been available for more than a decade. The Food and Drug Administration first approved an upper-airway stimulation system in 2014 for people with moderate-to-severe obstructive sleep apnea who couldn't tolerate or didn't respond adequately to CPAP.

The benefits of hypoglossal nerve stimulation extend beyond simply keeping the airway open during sleep. The treatment has been shown to improve sleep-disordered breathing, sleep quality, and daytime functioning—and those gains hold up over time.

In a study published in May in the journal *Chest*, a group of people with sleep apnea underwent hypoglossal nerve stimulation. Their breathing during sleep improved substantially compared with the start of the study and remained stable over the three-year follow-up period. Episodes in which people stopped breathing were nearly eliminated, and periods of shallow breathing also decreased and remained lower through the end of the study.

Overall, breathing disruptions fell by almost 18 events per hour after three years. The benefits extended into the daytime, too. The proportion of participants with normal levels of daytime sleepiness increased from 40 percent at the start of the study to more than 70 percent after three years.

In a different study, researchers asked about bed partners' experiences. The proportion of bed partners who reported that their partner snored softly or not at all had increased from 17 percent before treatment to 80 percent three years afterward.

That durability shows up in how patients feel about the treatment, too. After three years, more than 80 percent of participants were satisfied or very satisfied, and 90 percent said they'd use it again.

Ideal Candidates

The best candidate for hypoglossal nerve stimulation, Usama said, is “someone with moderate to severe obstructive sleep apnea who has tried CPAP seriously but cannot use it consistently or does not receive enough benefit from it.”

One of the main reasons why people with obstructive sleep apnea may not get consistent clinical benefit from CPAP is poor adherence to treatment. Other problems include feelings of claustrophobia or suffocation, an inappropriate mask style or size, mask discomfort or facial pain, and inadequate humidification, which can cause nasal or mouth dryness and nasal obstruction.

However, eligibility isn't as simple as checking a number from a sleep study. Doctors also determine body weight, the shape of the airway, whether the apnea is obstructive or a different type, and exactly where the throat collapses during sleep.

To find that last detail, surgeons use a specific test: drug-induced sleep endoscopy, in which the patient is briefly sedated so the surgeon can watch how the airway behaves during simulated sleep.

"Certain patterns of collapse respond well to stimulation, while others do not," Usama said.

Before any of that, though, it's worth ruling out a simpler fix.

"In some cases you can avoid an implant if you fix your nasal blockage," Dr. Vik Veer, an ear, nose, and throat (ENT) surgeon and head of sleep surgery at the Royal National ENT Hospital in the UK, told The Epoch Times.

A blocked nose often forces mouth breathing; sleeping on your back then lets your jaw, and your tongue with it, slide backward, blocking the airway.

"The nose and the tongue are not connected by anatomy, but they're weirdly connected by the flow of air through our system," Veer said.

What Does the Surgery Look Like?

The implant procedure takes a little more than two hours. Most patients go home the same day or the next morning.

If hypoglossal nerve stimulation is appropriate and an examination during sleep shows certain patterns of airway blockage, and the person meets device-specific eligibility criteria, the device is implanted. About a month later, it is switched on, and the person is given a remote control. Over the next three months, they gradually increase the stimulation level as tolerated.

Early side effects can include soreness or swelling around the incision and temporary tongue weakness. Once the device is activated, some people notice tingling in the tongue from where it rubs against the teeth or dry mouth; these effects are usually manageable and often improve with time or a settings adjustment. Less common risks include infection and shifting of the implanted wire, which can require additional surgery.

Getting the implant is not the end of the treatment.

“It is an implanted treatment that must be activated, adjusted, and followed over time,” Usama said.

The first improvement is often noticed by the person sharing the bedroom. Snoring may become quieter, breathing pauses may decrease, and sleep may appear less restless. Patients will later notice fewer awakenings and better morning alertness, Usama said.

It’s Not a Stand-Alone Fix

An implant can be an important part of treatment, but it is not necessarily the whole answer. Dr. David McIntosh, an ENT specialist and associate professor at James Cook University, emphasized the importance of looking beyond the implant itself.

“The role of hypoglossal nerve stimulation is evolving, but the foundations still remain: Being able to breathe through your nose without resistance delivers marked health benefits on top of the better breathing side of things,” he told The Epoch Times.

A sleep study may tell you that you have sleep apnea, but it will not necessarily tell you why, McIntosh said. Each patient has his own pattern of contributing problems.

Weight is one piece of the puzzle. Losing weight is often recommended for people with obstructive sleep apnea, and Veer noted that sleep apnea itself may contribute to weight gain.

Sleep apnea wakes you up multiple times every hour, and we now know that the body interprets that physiological stress by setting off hormones that make you eat carbohydrates and hold on to fat. This sets up a vicious cycle.

There’s a newer wrinkle, too: Patients on rapid weight-loss drugs such as Mounjaro can lose muscle

from inside the throat along with body fat. If they later stop the medication and regain weight, the fat returns but the throat muscles may not, leaving some patients with worse sleep apnea than before they started.

“I am increasingly seeing people return with sleep apnea twice as bad, and when I watch them sleep, I see that the areas where fat accumulates are much worse than before they went on the drug,” Veer said.

He now recommends throat exercises to counter this, which research suggests can cut breathing disruptions by 39 percent with about 30 minutes of daily practice over three months.

Nasal breathing and tongue and throat muscle function can all play a role in sleep apnea, which is why there is no single solution that works for everyone.

“The most effective treatment for snoring and obstructive sleep apnea should be personalized and customized to the individual patient’s anatomy, physiology, lifestyle and preferences,” Ryan Chin Taw Cheong, a consultant ENT and subspecialist sleep surgeon who specializes in hypoglossal nerve implants and sleep apnea, told The Epoch Times.

Hypoglossal nerve stimulation can be genuinely effective for the right patient, but success depends heavily on being the right fit, Usama said. That means a real evaluation, not just a bad experience with CPAP, before considering surgery.

For some patients, the best approach may combine stimulation with weight management, positional therapy, nasal treatment, an oral appliance, and, occasionally, CPAP use alongside it.