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Obstructive Sleep Apnea Diagnosis

How Do I Know I Have OSA?

The gold standard for diagnosis is a Polysomnography (PSG), or, sleep study. This test is performed while the patient is asleep at a sleep laboratory, and monitors brain waves, blood oxygen levels, heart rate and breathing, as well as eye and leg movements. A home monitoring device may be a useful alternative for some patients under the guidance of a knowledgeable sleep professional.

However, the sleep test itself does not provide the location of the obstruction, so evaluation methods of the upper airway are necessary to identify potential sites of collapse that lead to OSA.

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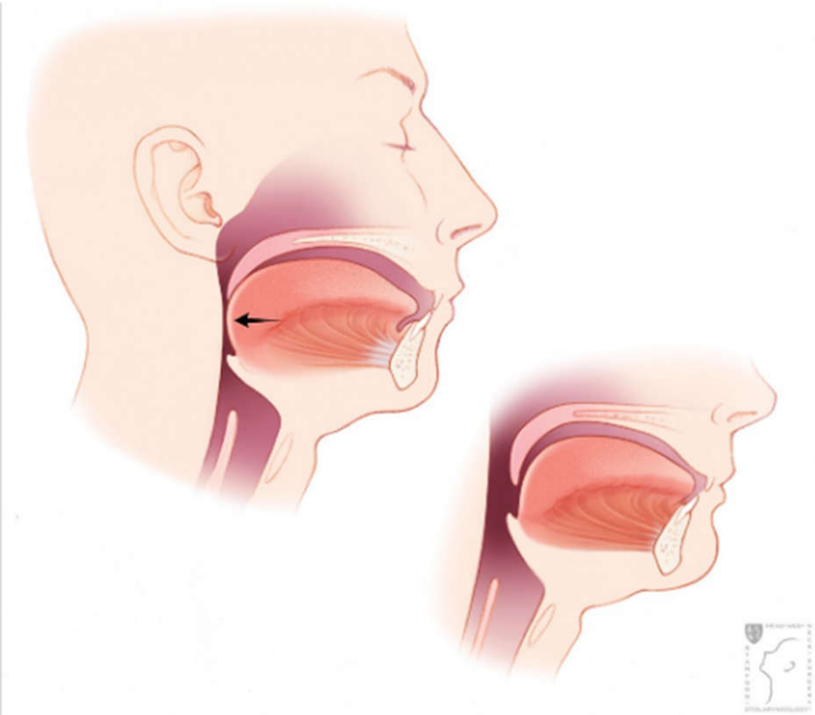
Nasopharyngoscopy is an office procedure in which a flexible fiberoptic endoscope is introduced through the nose and throat to observe anatomical structures that narrow the airway and compromise airflow and cause snoring.

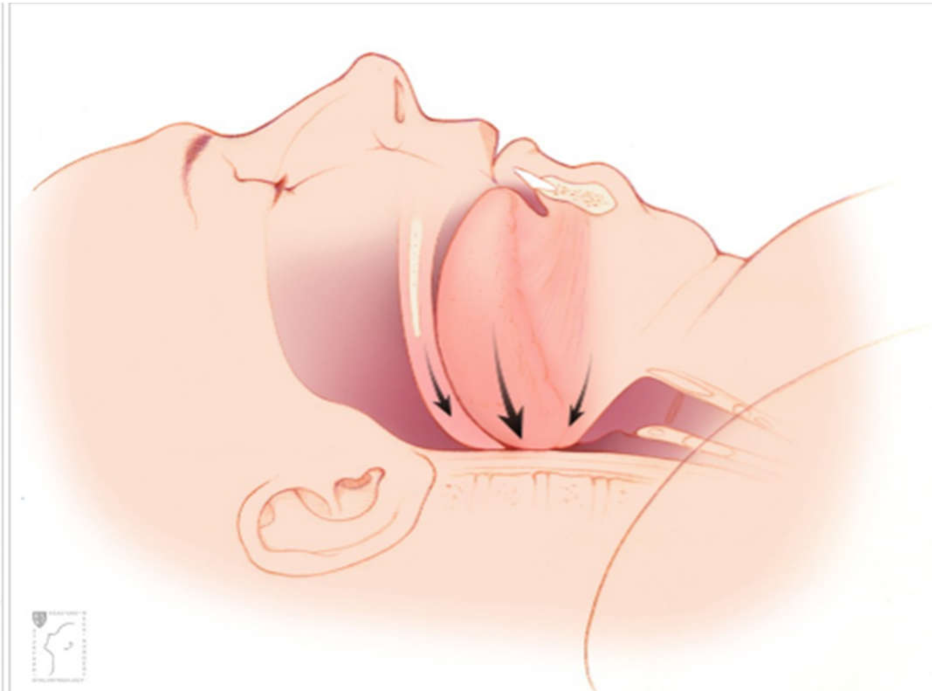
Sleep endoscopy is similar to Nasopharyngoscopy, however it is performed under mild sedation (with an hypnotic drug, such as propofol) and it is an outpatient procedure. The objective of this test is to reproduce what occurs to the patient's upper airway in a sleep state, and identify structures and areas causing the obstruction.

Still under our research protocols, imaging methods such as computerized tomography scans (CTs), awake and sleep magnetic resonance imaging (MRI) may provide useful information as well in select candidates. CTs are routinely used in the pre-operative evaluation of patients who undergo any surgery that involves the facial skeleton such as maxillomandibular advancement.

These tools should be used together to establish a diagnosis and guide the physician's decision-making towards the appropriate treatment for each patient.



Left: *Narrowed airway in OSA patient* | **Right:** *Airway on normal patient*



Airway blocked during sleep

Sleep Apnea.mp4

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Lower levels of dietary calcium and potassium predict recurrence of kidney stones

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Reviewed by Emily Henderson, B.Sc. Aug 1 2022

Kidney stones can cause not only excruciating pain but also are associated with chronic kidney disease, osteoporosis and cardiovascular disease. If you've experienced a kidney stone once, you have a 30% chance of having another kidney stone within five years.

Changes in diet are often prescribed to prevent recurrent symptomatic kidney stones. However, little research is available regarding dietary changes for those who have one incident of kidney stone formation versus those who have recurrent incidents.

Mayo Clinic researchers designed a prospective study to investigate the impact of dietary changes. Their findings show that enriching diets with foods high in calcium and potassium may prevent recurrent symptomatic kidney stones.

Dietary factors were based on a questionnaire administered to 411 patients who had experienced first-time symptomatic kidney stones and a control group of 384 people -; all of whom were seen at Mayo Clinic in Rochester and Mayo Clinic in Florida between 2009 and 2018. The findings, which were published in *Mayo Clinic Proceedings*, show that lower dietary calcium and potassium, as well as lower intake of fluids, caffeine and phytate, are associated with higher odds of experiencing a first-time symptomatic kidney stone.

Of the patients who had first-time stone formation, 73 experienced recurrent stones within a median of 4.1 years of follow-up. Further analysis found that lower levels of dietary calcium and potassium predicted recurrence.

Fluid intake of less than 3,400 milliliters per day, or about nine 12-ounce glasses, is associated with first-time stone formation, along with caffeine intake and phytate, the study finds. Daily fluid intake includes intake from foods such as fruits and vegetables.

Low fluid and caffeine intake can result in low urine volume and increased urine concentration, contributing to stone formation. Phytate is an antioxidant compound found in whole grains, nuts and other foods that can lead to increased calcium absorption and urinary calcium excretion.

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"Changing your diet to prevent kidney stones can be very difficult," says Dr. Rule. "Thus, knowing the dietary factors that are most important for preventing kidney stone recurrence can help patients and providers know what to prioritize."

Low dietary calcium and potassium was a more important predictor than fluid intake of recurrent kidney stone formation, says Api Chewcharat, M.D., the article's first author and a postdoctoral research fellow at Mayo Clinic at the time of the study. "This is not to say high fluid intake is not important. We just did not find benefits of increasing fluid intake among those patients with a history of kidney stone formation."

The study concludes that diets with daily intake of 1,200 milligrams of calcium may help prevent first-time and recurrent kidney stones. That daily intake is in line with the Department of Agriculture's daily recommended nutrition.

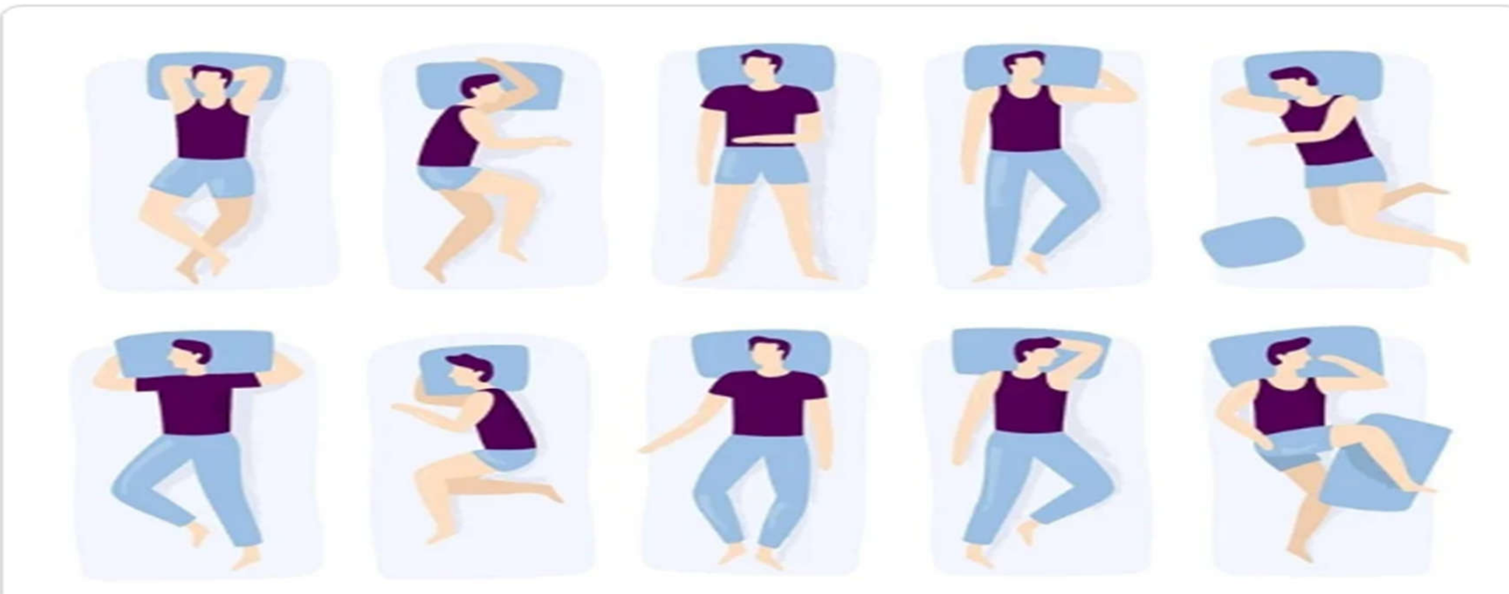
While higher potassium intake also is recommended, the USDA does not make a recommendation for daily potassium intake. The study also doesn't recommend an intake level.

Dr. Chewcharat says the takeaway is that patients should add more fruits and vegetables that are high in calcium and potassium to their diets. Fruits that are high in potassium include bananas, oranges, grapefruits, cantaloupes, honeydew melons and apricots. Vegetables include potatoes, mushrooms, peas, cucumbers and zucchini.

A Guide to Healthy Sleep Positions

By Akanksha Singh, BDS
Reviewed by Sophia Coveney

A good sleeping position along with a good quality of sleep throughout the night relaxes the spine and muscles. Sleep is needed not just for relaxation but also for mental and physical recovery.



Sleeping positions. Image Credit: Tartila/Shutterstock.com

We all have a favorite position while sleeping which we naturally fall into every night. But can one position be healthier than the other?

Researchers say that our sleeping positions matter and some sleeping positions are more beneficial than others. No one position fits all: the best position for an individual depends on particular health issues. Certain sleep positions are better than others for pregnant women or individuals suffering from sleep apnea, neck pain, back pain, and gastroesophageal reflux disease (GERD).

Who should sleep on their backs?

About 38% of people tend to sleep on their back, making it the second most common position to sleep in. It is also called a supine position. The spine stays elongated and in a natural healthy position while sleeping on the back.

Individuals with lumbar spinal pain and neck pain may find relief in this position with proper support. They may wake with less stiffness and alleviation of pain.

However, the supine position is contraindicated in people suffering from sleep apnoea. This position leads to airway collapse and tends to worsen the symptoms of obstructive sleep apnoea. It also exacerbates snoring.

While it is a much sought-after and natural position it is not advised for pregnant women and older adults. Sleeping on the back also worsens acidity.

Sleeping on the side

Sleeping on the side is the most common sleep position among adults. About 54% of adults sleep in this position. Its popularity might be because of the inflexibility of the spine as we age. Side sleeping is considered healthy for several reasons because it keeps the spine aligned and relatively neutral. It is even more comfortable for people with lower back pain and neck pain if they support their knees with a blanket in between or a pillow. This helps provide support to the hips and pelvis.

Some individuals find sleeping on their backs uncomfortable and may find relief sleeping on their side. However, they should make sure that the thickness of their pillow is such that it helps keep their neck and spine at the same level.

This position helps individuals with obstructive sleep apnoea as the airways are not as collapsed as when sleeping on the back. People who tend to snore while sleeping may also find relief while sleeping on their side.

Sleeping on the side is also the best position for those suffering from acidity or GERD, especially on the left side. Turning to the left from the back position can instantly provide some relief. Side

Sleeping on the side is also the best position for those suffering from acidity or GERD, especially on the left side. Turning to the left from the back position can instantly provide some relief. Side sleeping on the left is also recommended for pregnant women as the belly puts less pressure on the heart and eases blood flow.

- Age-related increases in brain inflammation may link Alzheimer's disease risk with sleep disturbance
- Light exposure at night linked to obesity, hypertension and diabetes among older adults

However, the most preferable sleep position might not be the best for individuals suffering from shoulder pain. While sleeping on the side, it should be taken care that the spine is not bent and the fetal position should be avoided. The fetal position is considered to be an unhealthy position as the spine is curved and it may cause undue pain or strain on waking. The fetal position also makes breathing more difficult and puts pressure on the diaphragm.

Sleeping on the stomach (the prone position)

Only about 7% of the adult population sleep on their stomachs. This position is also called the prone position. It is the unhealthiest position to sleep in. While it helps with snoring it is not advised by professionals.

The spine is the least supported while sleeping on the stomach. Additionally, sleeping in a prone position increases the pressure on the spinal tissues which could lead to pain upon waking. It is also the worst position to sleep in for individuals who have a history of spinal injury as it delays recovery.

The continued strain on the spine while sleeping on the stomach can lead to structural spinal changes so this position should be avoided as much as possible.

Conclusion

Sleep position is a risk factor in a lot of conditions that can be easily eliminated by adjusting it while we sleep. Sleeping on the back has several benefits and can relieve back pain but is contraindicated in pregnant women and people with acidity. Sleeping on the left side is advised for people with GERD and pregnant women. This position also helps individuals with obstructive sleep apnoea as the airway is less collapsed compared to sleeping on the back. Sleeping on the stomach is the unhealthiest position for most.

What does the future look like for TB care?

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Interview conducted by Emily Henderson, B.Sc. Aug 5 2022

Thought Leaders
Charles Wells
Head of Therapeutics Development
Bill & Melinda Gates Medical Research Institute

In this interview, we speak to Charles Wells, Head of Therapeutics Development at the Bill & Melinda Gates Medical Research Institute, about their current research into tuberculosis (TB) as well as the recent updated guidelines for TB care.

TB is the second leading infectious killer after COVID-19, killing 1.5 million people in 2020 alone. Why is TB so prevalent worldwide, and what current treatment options are available?

Up to a quarter of the world's population is thought to be latently infected with TB. In 2020 alone, an estimated 10 million people developed active TB— including 1.1 million children — and 1.5 million people died from TB, including an estimated 214,000 people living with HIV. The disease burden remains greatest in LMICs, which account for 98% of reported TB cases.

Prior to the advent of the COVID-19 pandemic, TB was the leading cause of death from a single infectious agent. The COVID-19 pandemic and the resulting strain on health service delivery has accentuated the TB burden, with access to care and case notifications decreasing sharply in 2020 and the number of TB deaths increasing.

Currently, bacille Calmette-Guérin, known as BCG, is the only licensed TB vaccine. However, it has limited impact on preventing Mtb infection and TB disease in adults. Treatment of TB disease is curative but lengthy, and compliance is often incomplete. The global prevalence of drug-resistant TB is substantial. Improved prevention tools and effective vaccines to prevent the development of TB disease are urgently needed to accelerate progress toward ending the TB epidemic. However, since the introduction of the BCG vaccine in 1921, very few novel vaccine candidates have advanced into clinical efficacy trials.

As well as your current research into potential TB vaccines, Gates MRI is currently involved in revaccination efforts in low-and-middle-income countries. Please can you tell us more about these efforts and the importance of revaccination, especially in low-income countries?

Another of the institute's current TB research programs, the BCG revaccination clinical trial, is underway in South Africa.

BCG vaccination is commonly given to babies in the first week of life, protecting children from TB for at least ten years, but protection against TB in adolescents and adults is limited. The study has enrolled children and adolescents to assess whether a second dose of BCG vaccine at 10 to 18 years of age helps protect against *Mtb*. The study follows participants over four years, testing for *Mtb* infection every six months. If results are favorable, the goal is to implement policy change in countries with a high burden of TB. The study will also examine the immune response to *Mtb* infection and may help us understand mechanisms of protection and develop new TB vaccines.

Emphysema severity associated with higher lung cancer risk

Date: May 3, 2022

Source: Radiological Society of North America

CT-detected emphysema is linked to a higher risk of lung cancer, a risk that increases with emphysema severity, according to a new study published in the journal *Radiology*.

Lung cancer is the primary cause of cancer-related death world-wide, with more than 1 million deaths each year since 2000. However, lung cancer risk can be reduced by identifying treatable risk factors, such as chronic lung inflammation, together with smoking, genetics, diet, and occupational exposure.

Emphysema is a chronic respiratory disease characterized by damage to the alveoli, the tiny air sacs inside the lungs. Symptoms include shortness of breath, coughing with mucus, wheezing and chest tightness. There is no cure, but many treatments are available to help manage symptoms.

Emphysema shares many common risk factors with lung cancer, the leading cause of cancer-related deaths worldwide.

Cigarette smoking is one of the important shared risk factors of emphysema and lung cancer, as it enhances inflammation, DNA damage and accelerated aging. However, people with emphysema who've never smoked also have an increased risk of lung cancer, according to study co-author Marleen Vonder, Ph.D., from the Department of Epidemiology at University Medical Center Groningen in Groningen, the Netherlands.

"Other underlying mechanisms like genetic susceptibility, chronic inflammation or DNA damage and abnormal repair mechanisms, or a combination thereof, have been proposed to link emphysema and lung cancer," she said.

For the new study, Dr. Vonder and colleagues identified studies from three large databases on the association between emphysema and lung cancer. Analysis of 21 studies involving more than 107,000 patients found a connection between visual and quantitative, or measurable, CT assessments of emphysema and lung cancer.

"Our meta-analysis showed that not only visually assessed but also quantitatively assessed emphysema on CT is associated with lung cancer and that this risk increases for more severe emphysema," Dr. Vonder said.

While the findings support a link between the two devastating diseases, more research is needed before any changes are made to clinical care, Dr. Vonder said.

"It is too early to conclude whether the presence of CT-defined emphysema leads to incremental and independent prognostic value over that of already known shared risk factors of emphysema and lung cancer," she said.

The associations between CT emphysema and lung cancer were higher for categories of visual assessment compared to quantitative assessment. Despite this finding, Dr. Vonder said that quantitative assessment may ultimately gain favor over visual assessment, as it can be fully automated. She and her colleagues are researching this approach and validating its use in specified populations.

"Potentially, emphysema detected on a baseline CT scan could be used to select high-risk participants who would require more frequent follow-up lung cancer screening," Dr. Vonder said.