Upper Airway Resistance Syndrome

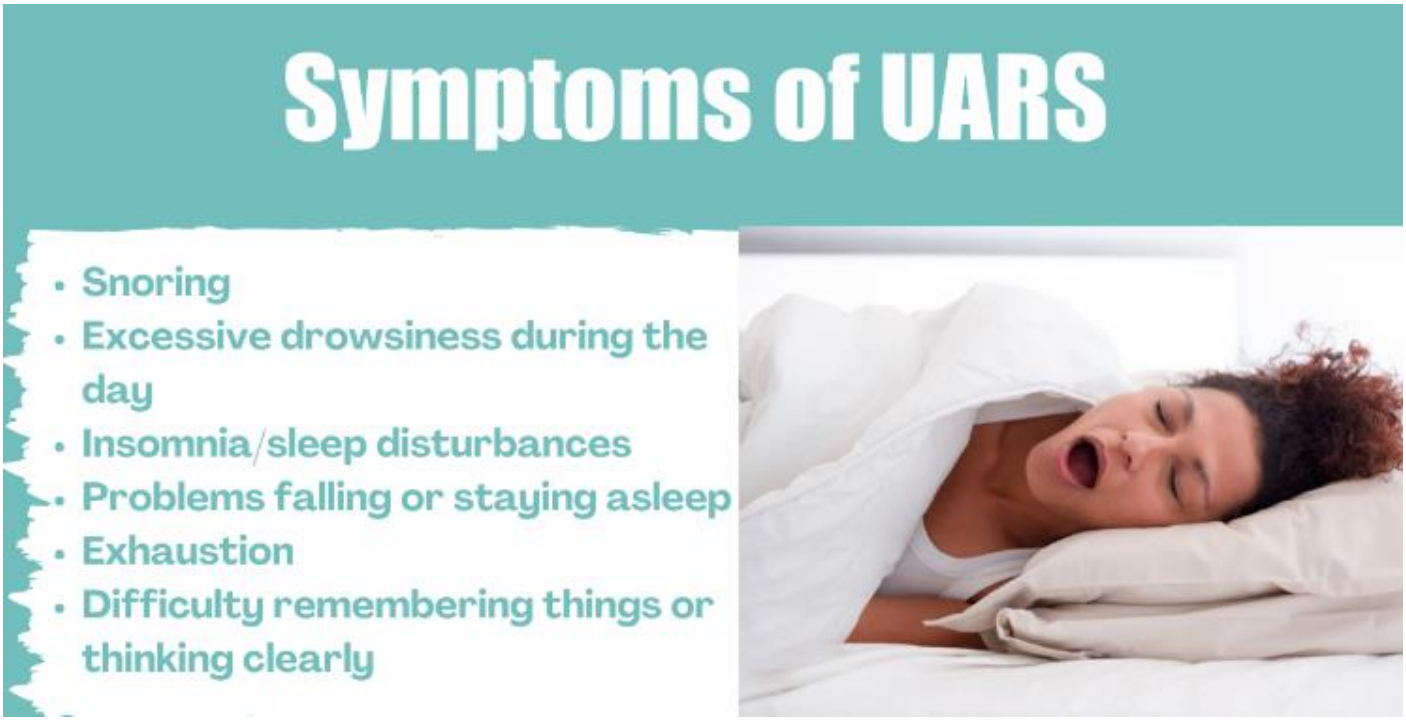
Upper Airway Resistance Syndrome (UARS) is a lesser-known form of sleep disordered breathing which causes significant daytime sleepiness and nocturnal bruxism. UARS sufferers usually report to their GP with excessive daytime sleepiness and/or to their dentist with bruxism and a sore jaw (temporomandibular disorder). UARS exists between normal sleep and mild-moderate sleep apnoea on the sleep disordered breathing spectrum. They are missed on normal sleep studies measuring AHI and RHI because they essentially wake up right before they would have had an apneic event during sleep. Left untreated, UARS patients present with a low quality of life and daytime symptoms ranging from fatigue, insomnia and depressive mood.

Snoring			Obstructive Sleep Apnoeas			
normal breathing	occasional snoring	regular snoring	upper airway resistance syndrome	mild sleep apnoea	moderate sleep apnoea	severe sleep apnoea

Snoring is often the first sign of SDB • 80% of patients are undiagnosed • Incidence high as 9% in women and 24% in men

UARS is characterized by the soft tissues of the throat relaxing during sleep which reduces the size of the airway and causes repetitive episodes of airflow resistance. The result is increased respiratory effort, micro-arousals and fragmented sleep causing daytime sleepiness. UARS also causes "brain-fog" and neurocognitive daytime impairment from increased cardon dioxide levels during prolonged inspiratory flow limitations. These symptoms are usually worse in a patient with UARS than sleep apnoea because UARS produces higher levels of carbon dioxide than eupneic breathing of sleep apnoea. *Maggard MD, Sankari A, Cascella M. Upper Airway Resistance Syndrome. [Updated 2022 Dec 11].*

Increased carbon dioxide levels mean the body is in a hypoxic state during sleep. These low oxygen levels stimulate nervous system activity putting the body in a flight or fight state during sleep. The body's natural response is to try to increase oxygen availability by moving the jaw around. In other words, it causes clenching and bruxing behaviours during sleep. Hypoxia can also cause cold extremities and dizziness amongst UARS sufferers. UARS usually affects younger people within healthy weight ranges and is often accompanied by chronic pain conditions like headaches and fibromyalgia. UARS sufferers can develop full blown sleep apnoeas as they age particularly with increased body weight or additional comorbidities with age.



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Treating UARS

How is UARS diagnosed?

UARS is tricker to diagnose than sleep apnoea and is often undiagnosed with standard nocturnal polysomnography because it requires nocturnal oesophageal manometry measuring inspiratory efforts as negative pressure. Sleep studies that do report UARS usually do so as RERAs or respiratory effort-related arousals. These can be linked to sensors that measure if you are grinding or clenching your teeth during these respiratory events.

Treating UARS with CPAP

UARS shares the same underlying physical cause as sleep apnoea – narrowing of the airway – and so is treated the same way. The two major options are CPAP and oral appliances. In CPAP therapy, a positive pressure mask is worn during sleep. CPAP is the gold standard for sleep apnoea patients. However, many patients cannot tolerate a mask during sleep making CPAP ineffective for these patients. This also tends to be the case for many UARS sufferers because of their super sensitive nervous systems responsible for their many nocturnal respiratory arousals. In contrast, many sleep apnoea patients tolerate CPAP well because they have a relatively diminished nervous system which allows them to stop breathing for long periods during sleep. Although UARS is recognised as a form of sleep disordered breathing, many insurance companies fail to recognise UARS for CPAP treatment purposes.

Treating UARS with oral sleep orthotics

Oral orthotics are custom fitted oral mouthpieces that bring the lower jaw forward and keep the airways open during sleep. They can be prescribed for snoring, UARS and sleep apnoea as they all share the common physical problem of the airway collapsing during sleep. Oral orthotics tend to be well tolerated by UARS patients and alleviate pain from chronic grinding and clenching during sleep while also protecting teeth from further grinding and clenching damage.

How do oral sleep orthotics work?

Sleep orthotics reposition the lower jaw forward. We Make Smiles uses nylon oral orthotics which are thin and comfortable to wear and will last many years if looked after well. Each orthotic has patented adjustable fin technology which moves the hyoid bone (located at the base of the tongue) forward, allowing the airway to remain open during sleep and keeps the teeth apart. Many UARS patients have poor muscle tonicity in the muscles that support the jaw and airways from their chronic nocturnal grinding and clenching. In these patients, it is important that the muscles are rehabilitated prior to fitting and wearing an oral sleep orthotic for the best treatment outcomes. Rehabilitation differs depending on the underlying muscle dysfunction and presenting pain pattern. These will be analysed as part of your examination before sleep orthotics are proposed as a suitable therapy.

What does the process for getting an oral sleep orthotic involve?

Sleep orthotics can be prescribed for people with snoring, UARS or sleep apnoea. Most insurance companies will provide a rebate irrespective of the form of sleep disordered breathing being treated; however some insurance companies will limit rebates to those with obstructive sleep apnoea. Because UARS usually involves significant oral parafunction, successful resolution of pain may require augmented therapy including laser, dry needling and oral myology to rehabilitate muscle tonicity and function. Your examination will include an assessment of your treatment needs before a sleep orthotic is proposed. Proper planning may require a 3D scan of your jaw and/or airways (CBCT). Once an orthotic is agreed upon as the best form of treatment, a 3D scan will be taken of your mouth for your orthotic to be custom 3D printed. We Make Smiles will fit your orthotic and track its use until UARS symptomology resolves and quality of life is improved.

How long do oral sleep orthotics work?

If looked after well, your oral orthotic can last for 20 years or more. However, if you need substantial dental work like teeth removed or crown and bridge work, they may need replacement. Additionally, UARS exists on a continuum of sleep disordered breathing. Changes in your lifestyle, weight and health can change the severity of your sleep disordered breathing (for better or for worse) and therefore the effectiveness of your orthotic. Oral orthotics must be worn every night. If you stop wearing your orthotic for long periods of time, your orthotic may no longer fit. Functional muscle tonicity and habits are required for ongoing successful management of UARS.p

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