

When snoring meets diabetes



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Sam snored so loudly his wife couldn't hear the news when he fell asleep in front of the TV. She was unable to sleep with him at night because of the chainsaw noise in her ear.

Occasionally he would stop breathing, and, after what seemed an eternity, would gasp and start snoring again. In the morning he was exhausted.

Sam had been a front-row forward, fit and full of energy. He played 'golden oldies rugby' until he was 40, but that was 10 years ago. Work and family had taken over. He put on weight, and worked long hours.

Snoring, which previously occurred only after alcoholic celebration following a win on Saturday afternoon, became a regular feature. At night he fell asleep rapidly, but his wife was unable to sleep. Her only remedy was to sleep in the spare room.

Sam slept well and was sure he didn't snore. But he knew he was getting increasingly sleepy in the daytime, especially after lunch, and attributed this to long hours of work, increasing family commitments, and age.

He was persuaded to visit his GP. Not only was his blood pressure raised, but blood tests also revealed a raised fasting blood sugar suggesting insulin resistance, the early stage of Type 2 diabetes. Fortunately the GP asked about his sleep, and his wife revealed the awful truth about his snoring.

Snoring associated with daytime sleepiness requires further investigation. Add to this raised blood pressure, insulin resistance, increasing weight, a growing need to

get up to the toilet at night, and a test to exclude sleep apnoea is essential.

When someone goes to sleep, all their muscles relax, including muscles that hold the airway open at the back of the throat. If the airway is narrow enough, the rapid flow of air causes the airway to vibrate, which causes the snoring noise.

In some people the vibration results in the airway being sucked shut. Despite struggling to breathe, they usually continue to sleep. Finally, they come out of deep sleep, the muscle tone in their throat returns, and the airway pops open, often with a loud gasp. This can happen hundreds of times a night, and is called **obstructive sleep apnoea (OSA)**.

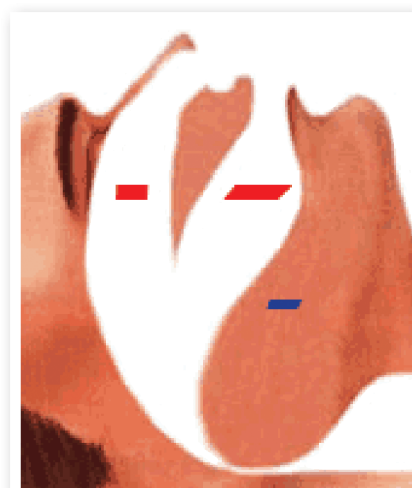
As a result of these frequent obstructions, the body is constantly in panic mode, sending frequent bursts of adrenaline to open the airway. The snorer with apnoea becomes more stressed at night than during the day. Stress does not help insulin control.

As well as being associated with diabetes, independent of obesity, family history or age, sleep apnoea is also independently associated with raised blood pressure. Chronic sleepiness arising from disturbed sleep can stimulate appetite, and reduce motivation to exercise. Further weight gain aggravates snoring.

Testing for a history of any snoring is essential. Daytime sleepiness, particularly in the afternoon, is often found. Falling asleep rapidly and waking unrefreshed suggests something is interfering with sleep quality.



Normal breathing
– Airway is open
– Air flows freely to lungs



Obstructive Sleep Apnoea
– Airway collapses
– Blocked air flow to lungs

Examination will often reveal obesity, although about 20% of those who suffer from OSA are not obese. Neck size seems more predictive of OSA than abdominal girth. In slimmer people it is often a small jaw with a large tongue that may indicate presence of OSA. Enlarged tonsils may also result in obstructions at the back of the throat, and consequent OSA.

Objective sleep studies can be performed, including an overnight test in hospital to measure many changes that occur in sleep. This is the 'gold standard' for diagnosing OSA, but is expensive and not always available.

An equally effective method of screening for OSA is an overnight pulse oximetry test in your own home. This measures the number of times oxygen levels drop, and gives a good indication of the severity of the OSA.

There are three main factors that contributed to Sam's OSA – increasing weight, especially large neck size, and age. After about 50 the likelihood of OSA increases.

Following an overnight sleep test, Sam was found to have moderately severe OSA. Treatment of this falls into four categories:-

- 1) Lifestyle – reducing alcohol intake, and losing weight. Any smoking should be stopped.
- 2) Surgery – there are methods of surgically keeping the tongue forward to prevent it falling back and causing obstruction, but best results come from

removing large tonsils. Nasal surgery may help breathing during the day, but does little to relieve obstruction at the back of the throat.

- 3) A minor surgical procedure called Snore Op shortens and stiffens the vibrating soft palate using radiofrequency scarring of the soft palate. This is great for those who snore without sleep apnoea, but does not prevent OSA.
- 4) A Mandibular Advancement Splint (MAS) is a mouth guard that fits over both sets of teeth, to hold the jaw, and therefore the tongue, forward. This is effective for mild and moderate OSA, but having all your own teeth is certainly a help.

The 'gold standard' treatment for OSA is the continuous positive air pressure (CPAP) mask, comprising a small, quiet compressor that drives gentle air pressure through a tube to a small mask that fits over the nose. Air then passes through the nose into the upper airway to 'splint' open the throat, to prevent the vibration (snoring), and therefore the collapse of the airway (OSA).

Treatment of Sam's OSA is likely to significantly improve his daytime sleepiness. Blood pressure is likely to settle, and insulin resistance will either resolve, or at least be easier to control. Finally, he will feel more energetic, increase his exercise, and find it easier to lose weight. •

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