

RESMED

**SLEEP
APNEA
AND
TYPE 2
DIABETES**

CLINICAL INFORMATION 2009

KEY FACTS:

TYPE 2 DIABETES AND OBSTRUCTIVE SLEEP APNEA (OSA)

FINDINGS ANNOUNCED BY THE INTERNATIONAL DIABETES FEDERATION (IDF)¹

THE CONNECTION BETWEEN OSA AND DIABETES

WHY THIS MATTERS:

Sleep apnea and type 2 diabetes are both associated with serious health problems, including high blood pressure, heart disease and stroke. A June 2008 consensus statement issued by the IDF urges the medical community to take immediate action in establishing treatment guidelines for people with type 2 diabetes and OSA. The IDF is a global advocacy organization dedicated to helping people living with diabetes.

Their statement emphasises the need for:

1. increased education for health professionals and greater awareness within the diabetes and sleep communities regarding the public health implications of both these conditions
2. adoption of clinical practices to ensure that an individual presenting with one condition is also screened for the other
3. pivotal research to better understand the correlation between type 2 diabetes and OSA.

OBSTRUCTIVE SLEEP APNEA (OSA)

OSA is a common sleep disorder affecting about 5–7% of the total population². It is characterized by recurrent episodes of partial or complete upper airway obstruction during sleep. This manifests as a reduction (hypopnea) in or complete cessation (apnea) of airflow despite ongoing inspiratory efforts. The lack of adequate alveolar ventilation usually results in oxygen desaturation and in cases of prolonged events, a gradual increase in arterial carbon dioxide (PaCO₂). The events are often terminated by arousals.

OSA can be life-threatening. People with OSA have significantly increased health risks. OSA is associated with a number of co-morbidities including hypertension, cardiovascular disease, obesity and type 2 diabetes. The reasons for these increased risks are not fully understood, but it is known that OSA is associated with hypoxic stress, sympathetic hyperactivity and a pro-inflammatory state — all of which are understood to contribute to such co-morbidities.

LINKS TO TYPE 2 DIABETES

- 50% of men living with diabetes have OSA³.
- People who regularly snore (a symptom of OSA) are twice as likely to develop type 2 diabetes (independent of body mass index) as those who never or rarely snore⁴.
- 50% of OSA patients presenting to a sleep clinic have impaired glucose intolerance, a key indicator for type 2 diabetes⁵.
- OSA has been found to be associated with insulin resistance independent of obesity⁶.
- Studies of young, healthy male subjects demonstrate that sleep deprivation over as few as two nights results in decreased glucose tolerance and increased appetite for carbohydrate-rich foods. The latter effect can be attributed to a greater than 70% increase in the ratio of ghrelin to leptin, hormones that stimulate and suppress appetite respectively. The observed increase in hunger, if translated into actual ingestion of the desired foods, would correlate to an excess of 350–500 kcal/day⁷.

SYMPTOMS OF OSA

- SNORING • DEPRESSION • HIGH BLOOD PRESSURE
- WEIGHT GAIN OR LOSS • DAYTIME SLEEPINESS • LACK OF ENERGY

TREATMENT OF OSA

Although there are a number of treatments for OSA, including surgery and dental appliances, the gold standard of treatment is continuous positive airway pressure (CPAP). In this non-invasive treatment, room air is pressurized by a small device and gently delivered to the airway through a mask that fits on/over the nose or nose and mouth. The pressurized air keeps the upper airway open, allowing the person an uninterrupted, restful night's sleep.

Treatment of OSA with CPAP has been shown to significantly improve glycemic control (Figure 1) as well as decrease both fatal and non-fatal cardiovascular events (Figure 2).



EFFECT OF CPAP THERAPY ON GLYCEMIC CONTROL

Figure 1

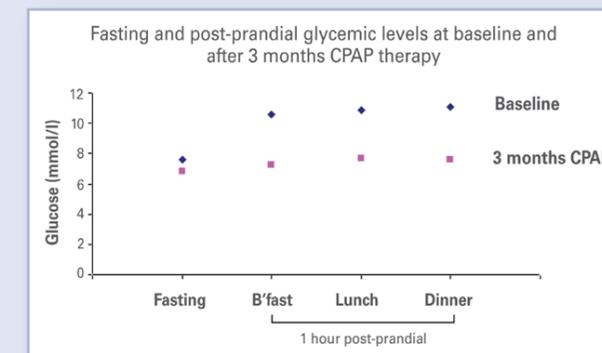


FIGURE 1: Fasting and one hour post-prandial plasma glucose levels in diabetic patients with OSA at baseline (n=25) and after 3 months CPAP therapy (n=25)⁹

FIGURE 2: Long-term cardiovascular outcomes, fatal (A) and non-fatal (B) in healthy subjects (controls) (n=264); simple snorers (n=377); mild-moderate OSA (n=403); severe OSA (n=235) and severe OSA and CPAP treated (n=372)⁹

LONG TERM CARDIOVASCULAR OUTCOMES

Figure 2 - A

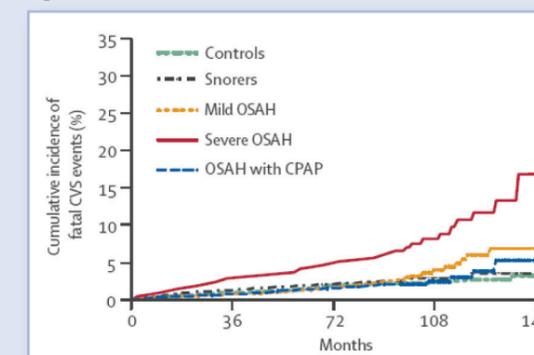
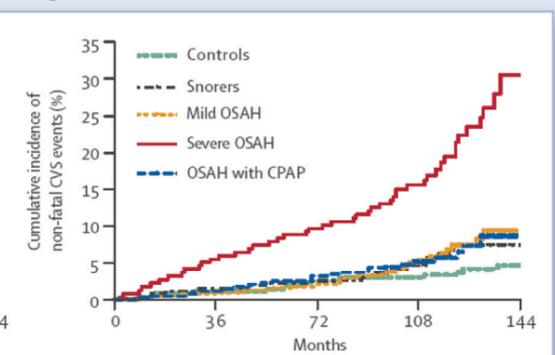


Figure 2 - B





If you suspect your patient is at risk of sleep apnea use the simple YAWN test, by asking these questions:

Y

Your BMI is > 25?

A

Are you aware that you have been snoring or have pauses in your breathing when you sleep?

W

Waking unrefreshed most mornings?

N

Nodding off easily during the day?

If your patient answers YES to three or more of the above questions, they are at high risk of having OSA¹⁰.

The YAWN test is an important tool for all patients diagnosed with type 2 diabetes and should be considered as part of their routine health check. Intervention and treatment can lead to substantial health improvements and minimize the risk of many of the associated co-morbidities.

MORE INFORMATION

For comprehensive, current health specialist and consumer information on the link between type 2 diabetes and obstructive sleep apnea, visit www.healthysleepanddiabetes.com or International Diabetes Federation www.idf.org

www.healthysleepanddiabetes.com

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