

## Key Interest Points

- Estimates of 80 – 90% of patients meeting the criteria of at least moderate to severe obstructive sleep apnea (OSA) remain undiagnosed.
- OSA is not limited to the overweight male with a large neck. While these are the most obvious candidates, menopausal women are also at risk and young children may also experience sleep disordered breathing.
- Breathing disorders are not just a nighttime occurrence. It continues during the day. The tongue is still the same size as are the surrounding tissues. At night the patient is unaware of the problem for the most part and will only be awakened if he or she begins to choke. Otherwise episodes of non-breathing can go unnoticed except by the bed partner.
- We must redefine the problem as chronic disordered breathing.

- Snoring is a social issue and separates bed partners.

- Daytime sleepiness is also a cause for motor vehicle accidents, worker accidents and fatalities.

- Poor work performance

### Physical effects of chronic disordered breathing:

- Congestive heart failure
- Heart attack
- High blood pressure
- Stroke
- Fibromyalgia
- Chronic fatigue syndrome

- Depression, mood swings, schizophrenia, manic depressive illness, irritability

- Diabetes
- Headaches at temples, back of neck and behind eyes

- In children, snoring, excessive daytime sleepiness and problems with poor attention in school.

- Signs of a problem
- Large tongue
- Scalloped tongue
- Smaller, retruded lower jaw
- Bulky crowns, dentures or partial dentures
- Excessively narrow mouth
- Excessively broad mouth
- Crowded teeth
- Missing teeth
- Clenching and/or grinding teeth

- Enlarged tonsils, adenoids
- Bony outgrowths on the lower and sometimes upper arches
  - Forward head posture
  - Restless leg syndrome
  - Sudden awakening due to choking

Forward head posture is a compensatory mechanism forced by the brain in order to get more oxygen into the system. It affects the entire spinal alignment as well as muscles needed to support the head. This constricts muscles in the back, neck and chest and makes breathing more difficult.

When the tongue blocks the airway, the brain sends out a signal by releasing adrenalin. It is the key neurochemical hormone for our survival. It is our "fight or flight" response, a primitive and essential evolutionary mechanism. It acts almost instantly throughout the body.

If there is a sustained release of adrenalin, the body is thrown into chronic imbalance and there are chemical changes that take place in every cell of the body. (there is shunting of magnesium and calcium in and out of the individual cells).

The feeling of "stress" is actually a feeling of adrenalin.

It is the goal of medicine to improve the oxygen saturation levels to the brain to reduce harmful effects of anoxia.

This can be accomplished with CPAP, surgery or oral appliances.

CPAP is recognized as the gold standard in the treatment of severe obstructive sleep apnea. It is sometimes difficult to tolerate. It is not a romantic solution. The fit of the mask is critical. It is noisy, can dry the mouth and nasal passages and can make movement during sleep difficult, especially for those who shift from side to side.

Surgical intervention is irreversible. It has a higher failure rate than either CPAP or appliances and there are increased anesthesia risks in this particular population of patients. Time out of work also an issue.

Oral appliances act to move the lower jaw forward to open the airway. Generally, the greater the advancement, the better the result, but too much can be counterproductive.

There are well over 100 different types of oral appliances. Most are difficult to wear, others ineffective. Understanding the goals along with the careful selection, adjustment and follow-up are essential to success.

Initial use of oral appliances may cause tenderness in teeth and jaws, gum irritation, excessive salivation, or dry mouth. These are generally mild occurrences and usually normalize with continued use.

Long term use of oral appliances can result in permanent alterations in a patient's bite.

Corrective dental procedures should be accomplished prior to the fabrication of the appliances.

Patients with advanced periodontal disease or rampant tooth decay are not candidates for appliance therapy.

Patients who have lost all their teeth can be treated, usually with a full upper denture and a lower implant retained overdenture.

The physiological and neurobehavioral outcomes are not substantially different between CPAP therapy and mandibular repositioning oral appliances. Studies have concluded that oral appliance therapy was not inferior to CPAP for the treatment of obstructive sleep apnea, but was better applied to those patients with mild to moderate disease.

Both patient populations were found to improve substantially in terms of improved driving alertness with either CPAP or oral appliance therapies.

While CPAP is the preferred method, it should not be considered the ideal treatment for all OSA patients.

Mandibular repositioning appliances (MRA) may also be used to predict the success of mandibular advancement surgery. Patients that exhibit a significant reduction in the apnea-hypopnea index using MRA therapy appear to be candidates for surgery and show a very high success outcome following surgery.

When compared to soft tissue surgery, uvulopharyngealpalatoplasty (UPPP), one year follow-up suggests that mandibular repositioning appliances should be preferred in the treatment of mild to moderate OSA.

Treatment in our office includes objective monitoring utilizing a heart rate variability monitor and electrocardiograph. It measures the overall health of the individual by detecting the level of sympathetic and parasympathetic function, the two components of our autonomic nervous system. In this way we can see how well the patient is doing when they themselves may not be able to discern these changes. However, subjective feedback from the patient is carefully monitored also.

**A new treatment philosophy has recently been developed. It is called Oral Systemic Balance. It recognizes the need for both day and nighttime treatment. These special appliances work by stimulating tongue reflexes to advance the tongue during the day when mandibular advancement appliances can be obtrusive. These appliances are very thin and unobtrusive. They reduce adrenalin output and continue to resolve those "stress" feelings that are characterized as "on edge" feelings. They act to reduce an inappropriate flight or flight response brought on by oxygen desaturation by improving breathing. They also improve head position, as well as spinal alignment and help to relieve chronic pain brought on by impingement of spinal nerves and while reducing muscle related pain that result from head and spinal misalignment. When used with the nighttime appliance for more severe OSA, it is an around the clock treatment for chronic disordered breathing and gives the body it's best chance to resolve it's dis-ease. Oral Systemic Balance appliances can only be provided by certified OSB doctors.**