

You can predict the success of an oral appliance by asking the patient to snore while in a supine position. In the middle of this “snore” have them advance their mandible. If they cannot snore with the mandible forward, you can predict success. If advancement alone does not completely stop snoring, have them open and move forward at the same time. If this maneuver stops snoring, this will show the amount of vertical opening needed for that particular patient.

**PATIENT TREATMENT** - The speed with which mandibular advancement is achieved by placing shorter or firmer straps on the EMA® Custom appliance depends entirely on the patient. Pain (or lack thereof) can dictate the forward titration of the mandible. If mandibular advancement is not achieving treatment goals, add vertical displacement to the mandible. This can be easily accomplished by adding orthodontic acrylic to the bite pads after roughening with a bur.

**RELATIONSHIPS WITH SLEEP DOCS** - Patients deserve the very best treatment available which I believe is achieved via a team approach including a sleep specialist and a dentist. My expertise and interest lies in the oral cavity and not in the intricacies of scoring polysomnograms.

The EMA® appliance was initially created to treat one patient. Over the years it has grown in popularity and we have turned over worldwide distribution to Myerson, the tooth company. Should you be interested in additional information, their website is [myersonstooth.com/sleepbetter](http://myersonstooth.com/sleepbetter). As always, feel free to contact me through our website at [openairway.com](http://openairway.com). My wife still kicks me at night, but we have ruled out breathing cessation as the motivating factor . . . EMA® Custom appliance.

EMA® Custom appliance straps. Showing one length of strap in each of four firmnesses (*durometers*). Available in five lengths, too.



# Protocol For Snoring Problems Male Age 18

An invaluable addition to appliances and treatment for sleep disordered patients.

By Brock Rondeau, D.D.S., I.B.O., D.A.B.C.P.

When an 18 year old male comes to your office as a new patient, what is your protocol? Are you concerned about his weight, the size of his neck, or the size of his airway? When we went to dental school, we learned to take a complete medical history including previous diseases, operations, etc. We also learned how to do a periodontal examination to check for periodontal disease, as well as an examination of the hard tissues for the presence of dental caries. We identified missing teeth and considered the best alternatives to replace them.

Most dental schools worldwide do not educate dentists on how to identify patients who snore and have obstructive sleep apnea. This seems to be a serious deficiency in our education when you realize the comorbid factors of untreated obstructive sleep apnea, i.e. cardiovascular disease including high blood pressure, heart attacks, hypercapnia, cardiac arrhythmias, and strokes. Other health complications include type 2 diabetes and gastroesophageal reflux (GERD). The medical profession, in my opinion, is also not adequately educating medical doctors to play a greater role in the diagnosis and treatment of these patients.

Dr. Wayne Halstrom, one of the pioneers of obstructive sleep apnea (OSA), had to have a serious motor vehicle accident due to excessive daytime sleepiness, before he was sent for a sleep study, where he was subsequently diagnosed with obstructive sleep apnea.

There are three recommended treatments for patients who snore and have obstructive sleep apnea. The first

treatment recommended by the medical profession is the CPAP device. I do recommend this form of treatment for patients who are diagnosed with the polysomnogram and have severe OSA. The problem is that while the CPAP is successful in the majority of obese patients with severe OSA, the compliance rate with mild to moderate OSA patients is extremely poor. The American Academy of Sleep Medicine in the January 2006 issue of Sleep made the statement that for mild to moderate OSA, the oral appliance is the first treatment option. Certainly, patient compliance is much higher with the oral appliance which is extremely comfortable. The key to success is to eliminate any airway obstructions in the nasal, oral or throat areas prior to the fabrication of the oral appliance. I believe that the compliance rate in our office is over 95% with the oral appliance.

The third treatment option is the surgical approach. Most patients would prefer the oral appliance rather than the CPAP or surgery. However, some patients with enlarged tonsils or adenoids, deviated septums, enlarged turbinates, polyps, tumors in the nasal area, enlarged uvula, or low soft tissue palatal drape do require surgery for resolution of these problems.

With regard to the age 18, overweight, male patient who comes to your office, what would your treatment protocol be for this patient? Would you give him an Epworth Sleepiness Scale? Would you measure his neck? Would you be suspicious of snoring or obstructive sleep apnea? An early diagnosis of our younger patient could

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# Protocol For Snoring Problems Male Age 18

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save his life with appropriate treatment!

Justin is this 18 year old patient who came to my office. He weighed 230 pounds and his neck measured 20 inches. Clinically, I have found that any male with a neck circumference greater than 17 inches is susceptible to OSA. I recommend that these patients be scheduled for a consultation appointment with your dental assistant who is knowledgeable in sleep disorder dentistry.

You must train someone on your staff to educate these patients regarding the serious health consequences of failure to treat OSA.

Our protocol is as follows:

1. TMJ Health Questionnaire
2. Epworth Sleepiness Scale
3. Rhinometer to check for nasal obstructions
4. Pharyngometer to check for the collapsibility of the pharyngeal airway when the patient exhales.
5. Sample Oral Appliances

The patient is shown samples of two possible oral appliances that are titratable antero-posteriorly as well as vertically. Do not confuse the patient by showing them too many oral appliances.

The sleep assistant will educate the patient as to the importance of diagnosing and treating these problems. This appointment lasts approximately thirty minutes, and then I arrive and meet the new patient. In Justin's case, I reviewed the data collected by the assistant and explained it to him:

## 1. TMJ Health Questionnaire

This form revealed that he snored at night but he never had a sleep study done at a sleep clinic (hospital), and he was never diagnosed with sleep apnea.

## 2. Epworth Sleepiness Scale Total 15

This indicates a serious problem with daytime sleepiness which is one of the main symptoms of OSA.

## 3. Rhinometer Test

This revealed that there were no nasal obstructions.

## 4. Pharyngometer Test

This revealed that his airway collapsed to .76 cm2

when he exhaled (normal airway is 2.0 cm2).

Based on his Epworth Sleepiness Scale of 15, the collapsed airway and severe snoring problem, I recommended an appointment for a complete set of records including an evaluation of his nasal, oral and pharyngeal airway.

The records appointment involves the following:

## 1. Sleep Screening Questionnaire

This form will identify all the problem areas with a history of the signs of OSA including frequent heavy snoring which affects the sleep of others. The patient had been told that he stops breathing when sleeping, gasps for air when waking up and had nighttime choking spells. These forms may be obtained from Nierman Practice Management (800) 879-6468.

These forms further revealed that Justin had a history of asthma, chronic sinus problem, heartburn or sour taste in his mouth at night, insomnia, nighttime sweating, memory loss, and inability to concentrate. This Sleep Screening Questionnaire also revealed that his father had been treated for a sleep disorder and had a history of heart disease, high blood pressure and diabetes. Obviously, Justin who has a BMI of 36 (normal male BMI is 30) is predisposed to cardiovascular disease, type 2 diabetes and already has gastroesophageal reflux (GERD).

## 2. Pharyngometer Test

The sleep assistant will attempt to find a position where the collapsed airway increases in size when the jaw is put in different positions. Different wax bite registrations are taken in order to find the best position to fabricate the oral appliance. The best registered reading was when the mandible was advanced 4 mm. and the vertical was increased 6 mm. (.69 cm2). This was less than the original reading of .76 cm2. If the airway does not increase in size with the pharyngometer test when the mandible is moved forward, then this usually indicates that the oral appliance may not be successful unless the cause of the airway obstruction is resolved.

## 3. Oral Examination

This revealed enlarged grade 4 tonsils and an enlarged uvula obstructing the airway.

## 4. Overnight Sleep Study

We use the Embletta 100 home sleep study as an initial screening device, and also to help titrate the oral appliance before referring them back to the sleep clinic for confirmation that the oral appliance helped reduce the snoring and sleep apnea. The patient is able to sleep in their own bed and the results are available the next day. Justin's results were:

RDI	45	Severe OSA
AHI	42	Severe OSA

## 5. Polysomnogram

The patient is referred to a sleep clinic for a polysomnogram test. The diagnosis of OSA must be made by a sleep specialist. Justin's test result was:

AHI 42 Severe OSA

The diagnosis by the sleep specialist was severe OSA. The sleep specialist recommended another sleep study with the CPAP device. Justin is age 18 and he did not want to wear the CPAP. I had informed him previously that if he had snoring and mild to moderate OSA, I would be willing to fabricate an oral appliance. I recommended the surgical removal of his enlarged tonsils and uvula. Once the severe airway obstructions were eliminated, another sleep study would be done to evaluate the severity of the OSA.

## 6. E.N.T. Specialist

The patient is referred to an E.N.T. specialist for the removal of his enlarged tonsils and enlarged uvula.

## 7. Overnight Sleep Study (post surgical)

After Justin's tonsils and uvula were removed, the result was:

RDI 12 Mild OSA

## 8. Consultation with Parent

Due to the fact that Justin now had mild OSA, still snored slightly, had acid reflux and a family history of heart attacks and diabetes, it was decided to proceed with the oral appliance.

## 9. Overnight Sleep Study with Oral Appliance

The result with the sleep study wearing an oral appliance was:

RDI 6 Normal

We were able to lower the RDI from 42 (polysomnogram) to an RDI of 6 by the surgical removal of the enlarged tonsils and uvula, and the oral appliance which moved his lower jaw slightly forward and protected his airway by preventing the mandible from collapsing his airway at night when he slept on his back.

If you follow the protocol as I have discussed above, I think you will achieve a high level of success with your oral appliances. I must stress the fact that you need to work closely with your medical colleagues in your area. You need the sleep specialist to do the polysomnogram to diagnose obstructive sleep apnea. If there is an obstruction in the nasal pharyngeal or oropharyngeal airway, you need the cooperation of an E.N.T. specialist to surgically correct the problem.

This case was successful because I worked closely with two of my medical colleagues to help my young 18 year old patient. I feel that I prolonged his life expectancy not to mention the fact that by relieving his serious snoring problem (70 decibels), I am certain that will help improve his overall health as well as his love life.