

Non-Surgical Treatment of Obstructive Sleep Apnea

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Northwest Hospital Grand Rounds

Obstructive Sleep Apnea Syndrome (OSAS)

- Obstructive Apnea:
 - Complete or partial cessation of breathing lasting at least 10 seconds and associated with oxyhemoglobin desaturation
- OSA Syndrome
 - 15 or more apneas per hour OR
 - 5 or more apneas per hour with associated fatigue/somnolence, GERD, depression, anxiety, etc.

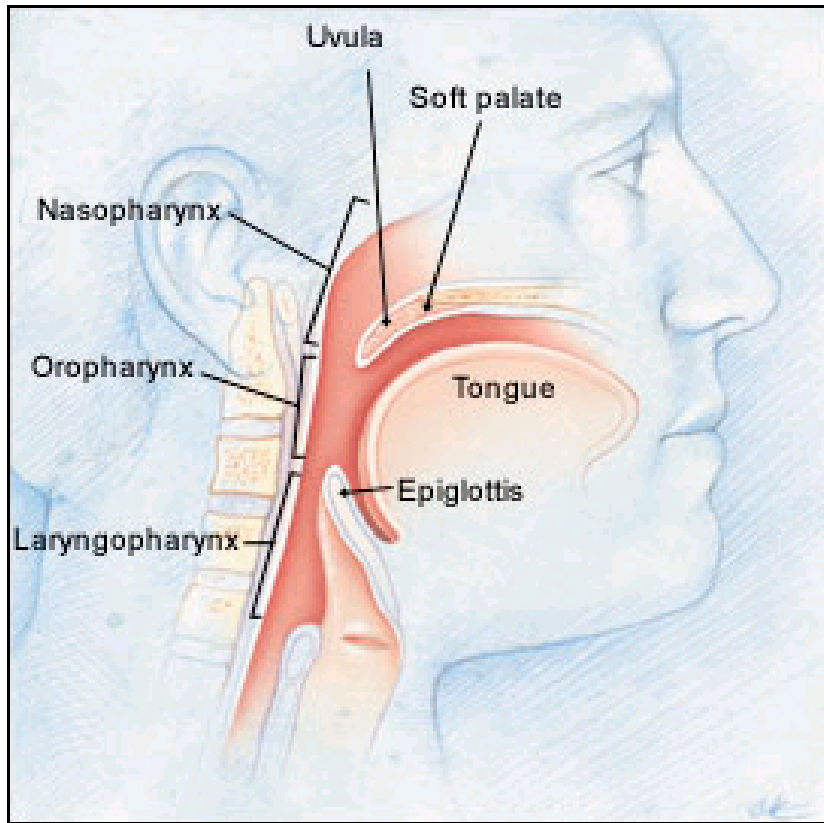


Illustration © 1999 Christy Krames

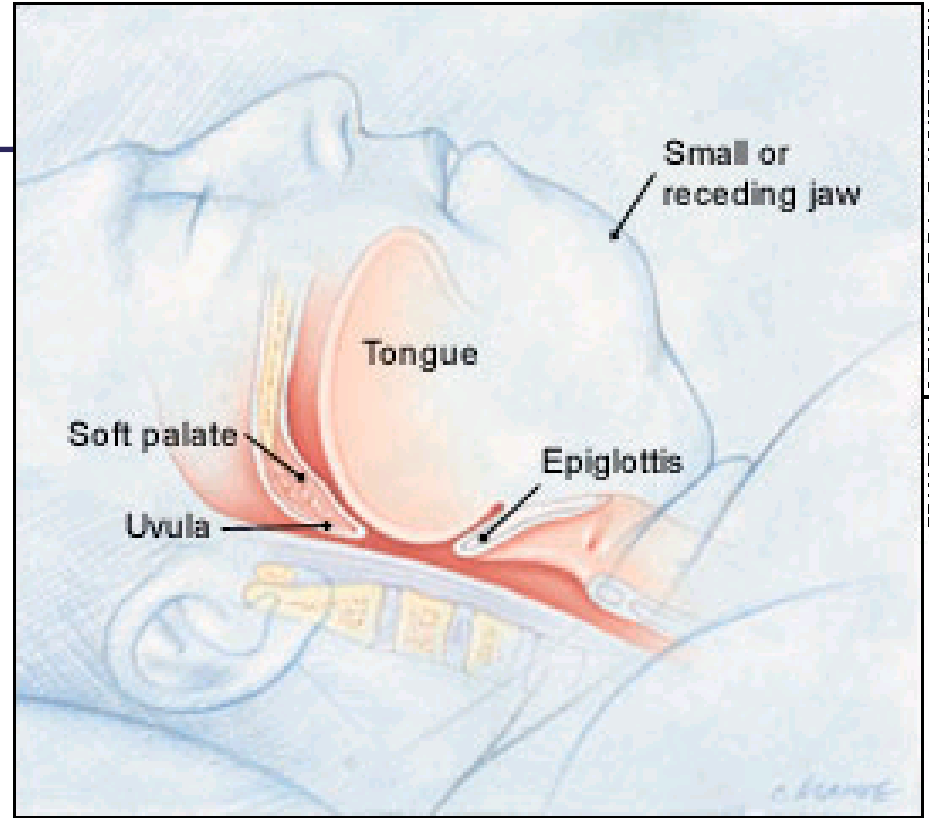
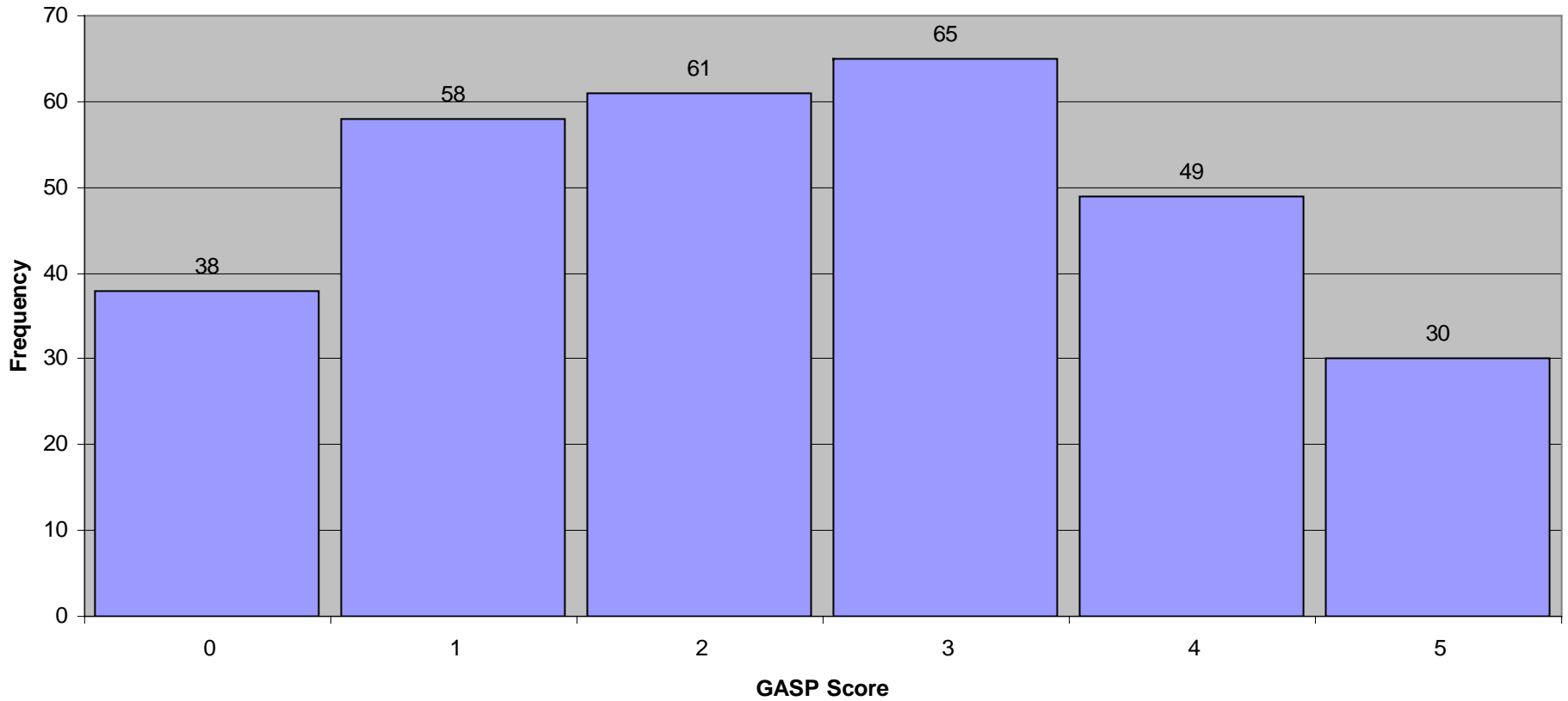


Illustration © 1999 Christy Krames

OSAS is Common

- 40 – 50% of the primary care population have some degree of OSAS
- About 25% of the primary care population have symptomatic OSAS
 - Bothersome snoring
 - Fatigue/somnolence
 - GERD

GASP Questionnaire in 301 successive primary care patients



OSAS is a Cardiovascular Risk Factor

- Sleep Heart Health Study
 - 6400 healthy volunteers underwent sleep monitoring and were followed for 5 years
 - OSAS associated with increased risk for HTN, stroke, MI, CHF even after controlling for obesity, HTN, smoking, diabetes

OSAS Results in Decreased Quality of Life

- Patients are often too fatigued to have a meaningful social life, often give up on being physically active
- Patients often experience decreased work efficiency, poor morale, difficulties at with family members

OSAS is Easily Diagnosed

- All patients should be screened for sx of OSAS
 - Snoring
 - Witnessed apnea or cyclical breathing
 - Fatigue/somnolence
 - Hx of HTN or GERD
 - BMI > 26
 - Family history of OSAS or loud snoring

Screening Questionnaires

Enhance the Pickup Rate for OSAS

Pt's name _____

Home phone _____ Work phone _____

Referred by _____

Date _____

Your height _____ Your weight _____

Yes	No	Not Sure	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have you ever been diagnosed with obstructive sleep apnea?
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are you currently being treated for obstructive sleep apnea?

	Yes	No	Not Sure	
1.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have you been told (or noticed on your own) that you snore on most nights?
2.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Have you been told (or noticed on your own) that you stop breathing or struggle to breathe in your sleep?
3.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are you tired, fatigued or sleepy on most days?
4.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Do you have acid indigestion or high blood pressure (OR use medication to control either of these conditions)?
5.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Are you overweight?

+ = 0 1 2 3 4 5

OSAS Workup

- All high risk patients should have overnight sleep study to establish dx of sleep apnea
- Concurrent surgical referral in cases of anatomical airway obstruction
 - Tonsillar hypertrophy
 - Progressive stridor or dysphagia

OSAS: Conservative Treatments

- Weight Loss
 - Bariatric surgery?
- Positional Therapies
- Management of Nasal Congestion
 - Antihistamines
 - Nasal steroid sprays
 - “Breathe Right” strips

OSAS: Pharmacological Therapies

- Reduction of stage REM
 - SSRI's, TCA's, MAOI's, clonazepam
- Increase in slow wave sleep
 - Xyrem, Gabitril, Neurontin
- Increase in upper airway motor tone
 - Protryptiline
- Increase in respiratory effort
 - Progesterone

CPAP

- Mechanism

- Externally applied pressure inflates and splints the respiratory tree, preventing collapse of the upper airway
- Typical pressures range from 5 – 15 cm H₂O
 - About 10 – 20% of normal adult NIF

CPAP: Beginnings

- Developed in Canada in 1979 by Colin Sullivan
- Prototype used vacuum cleaner motor, later models used spa air pumps

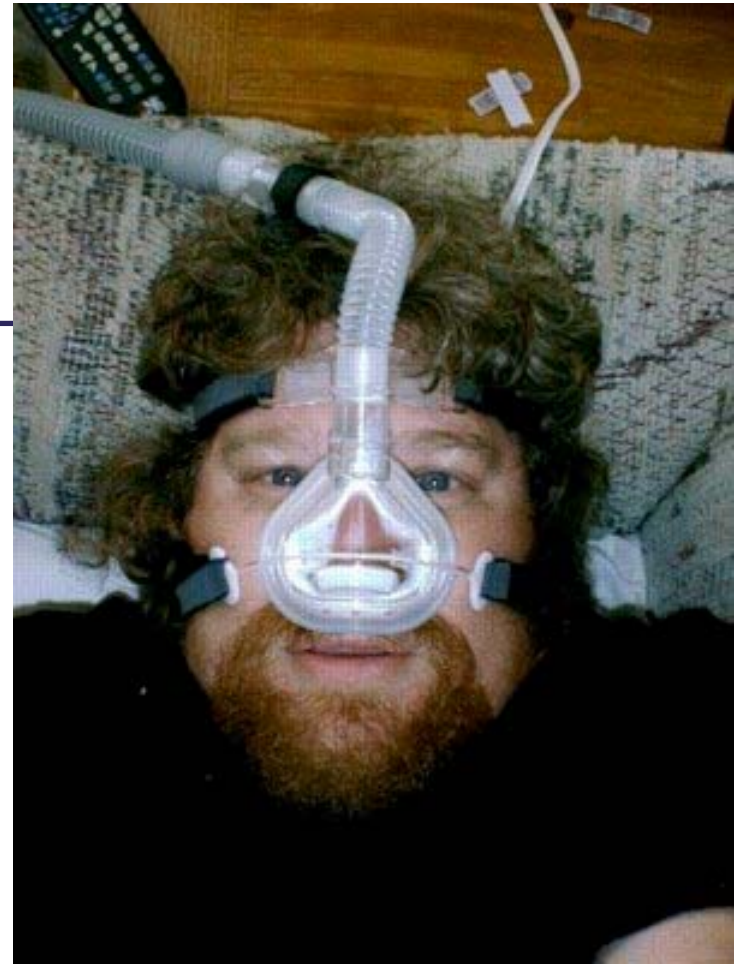


CPAP: Then

- First commercial CPAP flow generator weighed 35 lb
- First masks were custom fitted and applied with collodion cement
- Initial use primarily in critically ill patients
- Poorly tolerated

CPAP Evolution

- 1990's saw rapid development of mask models incorporating new technologies and materials.
- Flow generators decreased in weight to 5 – 6 lb range.



CPAP: Now

- Flow generators much quieter, weigh 2 ½ - 3 ½ lbs.
- Some flow generators have a built-in “softening” on expiration, improving comfort (C-Flex)
- Possibly 50 different mask styles, many of which come in a range of sizes
- Heated humidification frequently used



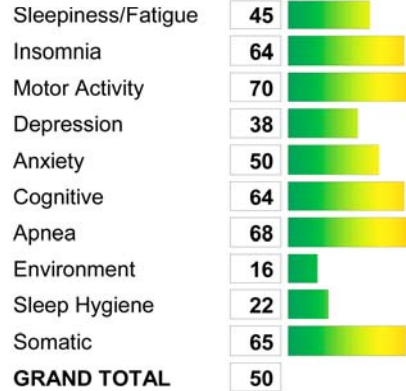
CPAP is Effective Therapy for OSAS

DOB: 08/07/1942

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 3/1/2004

TREATMENT:
Pre-treatment



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
Rhinorrhea

Frequently (1 - 3 x per week):

Night Sweats, AM Dehydration, Dry Mouth, Sinus Congestion, Coughing, Shortness of Breath, Edema, GERSx, Abdominal Pain, Diarrhea, Bloating, Nocturia, Morning Headache, Daytime/Evening Headache

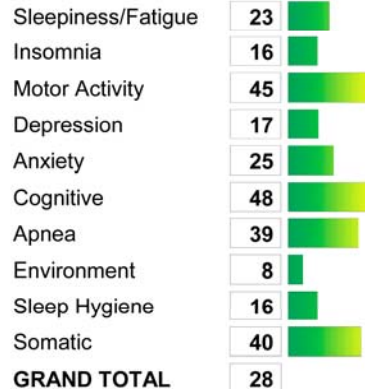
Occasionally (1 - 3 x per month):

Decreased Stamina, Hoarseness, Sore Throat, Palpitations, Chest Pain, Arthralgia, Myalgia, Pain interfering with sleep, Leg Cramps, Back Pain

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 4/23/2004

TREATMENT:
CPAP, 6.5cm, nasal mask interface



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
None

Frequently (1 - 3 x per week):

Rhinorrhea

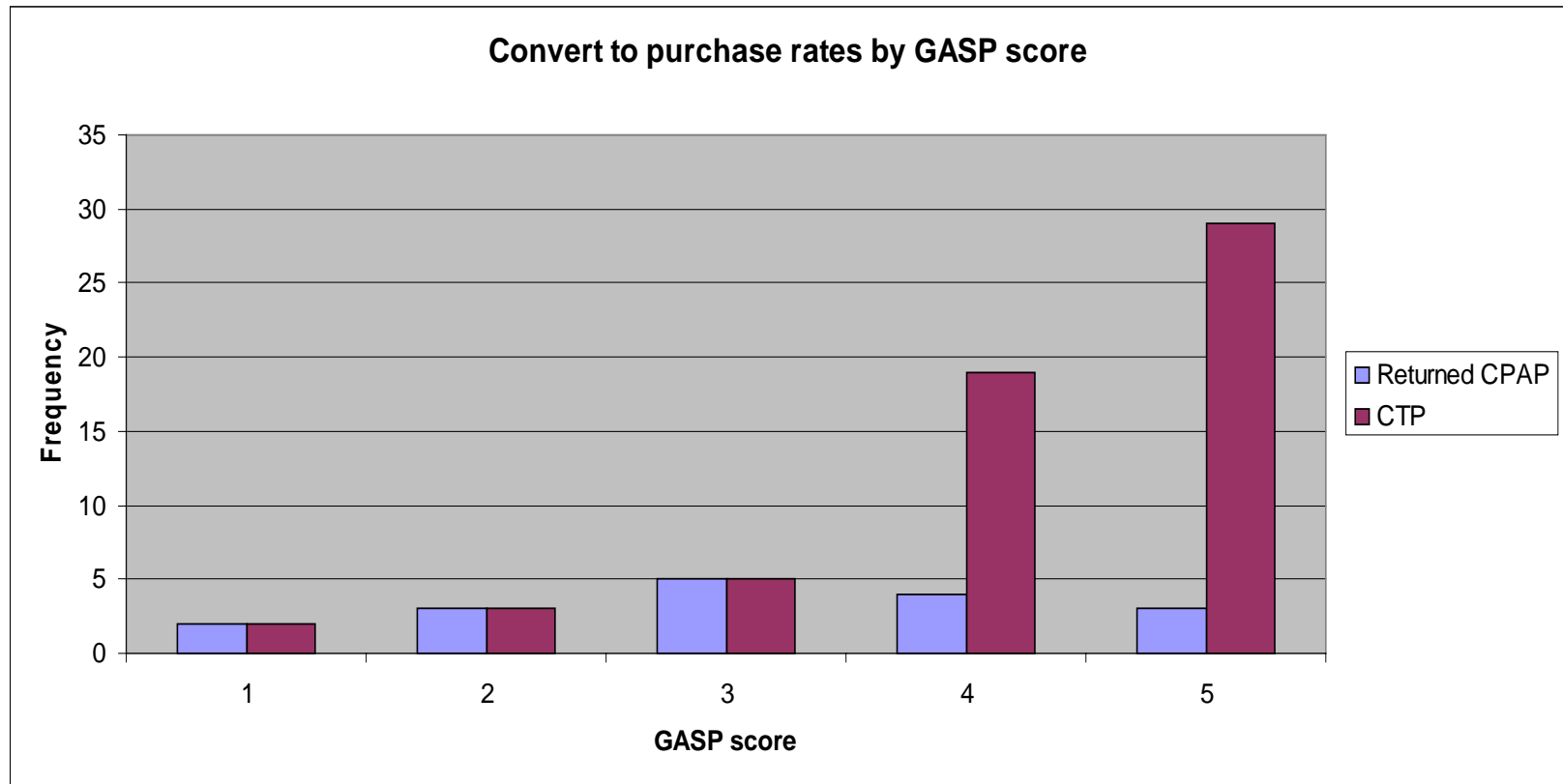
Occasionally (1 - 3 x per month):

Night Sweats, Coughing, Shortness of Breath, GERSx, Arthralgia, Myalgia

Acceptance of CPAP

- CPAP is essentially 100% successful in treating OSAS if worn nightly
 - Therefore clinical outcomes are tied directly to the acceptance rate
- 75 – 80% of patients who try CPAP go on to purchase it
- Rule of thirds
 - Long term compliance is tied to the degree of improvement in energy and alertness

Acceptance of CPAP Increases In Proportion to Symptom Burden



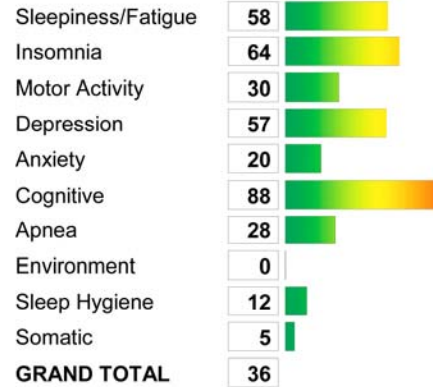
Attention To Detail Is Important

DOB: 01/07/1960

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 3/16/2004

TREATMENT:
CPAP 8cm pressure



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
None

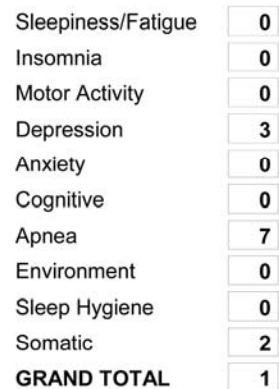
Frequently (1 - 3 x per week):
GERSx

Occasionally (1 - 3 x per month):
Decreased Stamina

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 5/4/2004

TREATMENT:
CPAP 8cm pressure, changed mask style,
effexor XR 150mg qd, clonazepam 1mg qhs



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
None

Frequently (1 - 3 x per week):
None

Occasionally (1 - 3 x per month):
GERSx

BiPAP

- Bi-Level PAP generators
 - Have a pressure transducer and algorithm for sensing inspiration and expiration
 - Deliver a higher inspiratory pressure than expiratory pressure
 - Step or rounded step (BiFlex)
 - Easier to tolerate for sensitive individuals
 - COPD
 - Morbid obesity
 - Light sleepers
 - About twice as expensive as CPAP generators

CPAP/BiPAP: Adverse Events

- Common:
 - Central apnea
 - Dermatitis
 - Allergic rhinitis
 - Claustrophobia
- Less Common:
 - Upper gumline erosion
 - Periorbital edema
- Rare
 - Pneumothorax
 - Pneumonia
 - Sinusitis

Oral Appliances

- Reduce airway obstruction by preventing tongue from drooping back and by stretching the soft palate, making it more taut.
- Two broad categories
 - Mandibular repositioning devices
 - Tongue retention devices
- Wide range in complexity and cost

goodhealthysleep



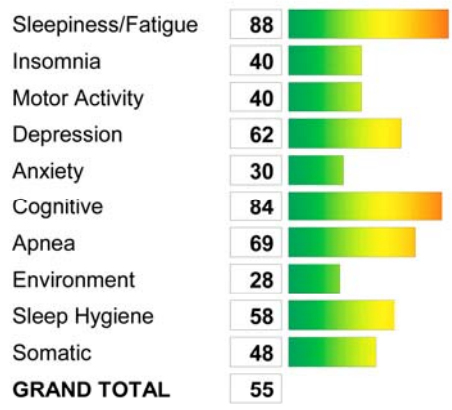
Oral Appliances Are Effective Therapy for OSAS

DOB: 02/17/1972

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 2/19/2004

TREATMENT:
Pre-treatment



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
Bruxism, TMJ Pain

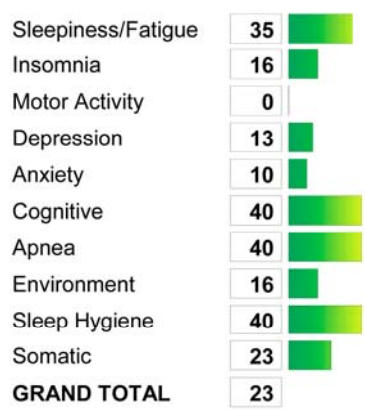
Frequently (1 - 3 x per week):
Decreased Stamina, AM Dehydration, Dry Mouth, Bloating, Myalgia

Occasionally (1 - 3 x per month):
Night Sweats, Rhinorrhea, Hoarseness, Sore Throat, GERSx, Abdominal Pain, Nocturia, Arthralgia, Morning Headache, Daytime/Evening Headache

S.O.M. QUESTIONNAIRE RESULTS

DATE COMPLETED: 4/8/2004

TREATMENT:
Snore Guard oral appliance for sleep apnea



SOMATIC COMPLAINTS BY FREQUENCY

Daily or almost daily:
None

Frequently (1 - 3 x per week):
None

Occasionally (1 - 3 x per month):
AM Dehydration, Dry Mouth, Bruxism, Myalgia

Acceptance of Oral Appliances for OSAS

- Approximately 75% of patients are able to accommodate to oral appliances
- Approximately 75 - 80% of pts wearing an oral appliance experience improvement in snoring or daytime fatigue
- Overall rate of response = 55 – 65%

Oral appliances: adverse events

- Drooling (5 – 10%)
- TMJ pain (5 – 10%)
- Malocclusion (1 – 5 %)
- TMJ subluxation or dislocation (less than 1%)
- Pressure sores on oral mucosa
- Periodontal disease

ENT Surgical Referral

- Pt preference
- Nasal obstruction interfering with CPAP use
- Failure of CPAP and/or oral appliance
- Airway obstruction easily amenable to airway surgery
 - Tonsillar hypertrophy
 - Redundant tissue in soft palate or uvula
- Unexpectedly rapid progression in person with risk factors for throat CA