



Understanding Sleep Study Reports and Selecting Patients for Treatment With Oral Appliances

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Learning Objectives

1. To have a basic understanding of Obstructive Sleep Apnea and its prevalence.
2. To have an understanding of how to identify patients at risk for OSA.
3. To have a basic understanding of diagnostic tests (sleep studies) for OSA.
4. To understand how to select patients for treatment of OSA with oral appliances

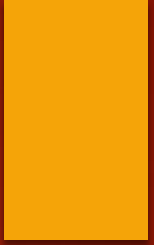
Disclosure

I have no actual or potential conflicts of interest
in relation to this program/presentation.

David W. Kohls, APNP

Obstructive Sleep Apnea

- ▶ Repeated apneas and hypopneas due to collapse of the upper airway during sleep.
 - ▶ Apnea - No airflow for 10 seconds or more with no change in effort
 - ▶ Hypopnea - Decreased airflow of at least 30 % with a 4% oxygen desaturation
 - ▶ AHI - Number of apnea/hypopnea events per hour of sleep
 - ▶ 0-5 Normal
 - ▶ 5-15 Mild
 - ▶ 15-30 Moderate
 - ▶ > 30 Severe



Respiratory Effort Related Arousal (RERAS) – Sleep disturbance caused by upper airway narrowing causing increased effort to breathe

Respiratory Disturbance Index (RDI) = Apneas + Hypopneas + RERAS/TST

Prevalence of OSA

- ▶ Prevalence appears to be high, but it is not clear
- ▶ Approximately 42 million American adults have SDB
- ▶ 1 in 5 has mild OSA
- ▶ 1 in 15 has severe OSA
- ▶ 9% of middle-aged women and 25% of middle-aged men suffer from OSA
- ▶ Most patients are asymptomatic or unaware of the indicators
- ▶ At least 75% of patients with OSA remain undiagnosed

- 
- ▶ Prevalence increases with age
 - ▶ Less than 10% at age 40
 - ▶ Approximately 20% at age 60
-
- ▶ Increases in the incidence of obesity

Increasing Rate of Discovery

- ▶ Wisconsin Sleep Cohort Study 1988-2011
 - ▶ 10% of adults 30-60 years old had clear evidence of OSA
- ▶ The Sleep Heart Health Study in the late 1990's
 - ▶ Approximately 17% of adults had OSA
- ▶ The National Sleep Foundation Poll in 2005
 - ▶ As many as 25% of American adults are at high risk for OSA



Prompts to seek medical attention

STOP-Bang Questionnaire

For the Assessment of Obstructive Sleep Apnea Risk

Name: _____

Have you been previously diagnosed with sleep apnea? Yes No

If so, are you currently using CPAP to treat your OSA? Yes No

Please answer the following eight questions **Yes** or **No**

- | YES | NO | |
|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | Snoring: Do you snore loudly? |
| <input type="checkbox"/> | <input type="checkbox"/> | Tiredness/Fatigue: Do you often feel sleepy during the day, even after a "good" night's sleep? |
| <input type="checkbox"/> | <input type="checkbox"/> | Observed Apnea: Have you ever been told you stop breathing during your sleep? |
| <input type="checkbox"/> | <input type="checkbox"/> | Pressure: Do you have or are you being treated for hypertension? |
| <input type="checkbox"/> | <input type="checkbox"/> | BMI: Do you weigh more for your height than is shown on the table at the right? |
| <input type="checkbox"/> | <input type="checkbox"/> | Age: Are you over 50 years old? |
| <input type="checkbox"/> | <input type="checkbox"/> | Neck size: Is your neck size more than 15 ¾" or 40 cm? |
| <input type="checkbox"/> | <input type="checkbox"/> | Gender: Are you a male? |

HEIGHT	WEIGHT
4'10	167
4'11	173
5'0	179
5'1	185
5'2	191
5'3	197
5'4	204
5'5	210
5'6	216
5'7	223
5'8	230
5'9	237
5'10	243
5'11	250
6'0	258
6'1	265
6'2	272
6'3	279
6'4	287
6'5	295

Score: Total number of "yes" answers _____

Interpretation:

- ☐ **High risk of OSA: answered yes to 3 or more questions**
Please take this form to your physician to discuss your sleep related concerns
- ☐ **Low risk of OSA: answered yes to 0-2 questions**
Talk with your physician if you have other sleep complaints

Chung et al. "STOP Questionnaire: A Tool to Screen Patients for Obstructive Sleep Apnea", Anesthesiology, 2008; 108(5):812-821

Please take this form with you and bring it to your physician to discuss your sleep concerns

This screening questionnaire is not a substitute for professional medical advice, and should not be used to diagnose or treat a health problem. Please know federal guidelines may require use of different sleep apnea screening criteria for certain occupations. Please consult with your primary care physician or healthcare provider if you have any questions or concerns.

Berlin Questionnaire®
Sleep Apnea

Height (m) _____ Weight (kg) _____ Age _____ Male / Female

Please choose the correct response to each question.

Category 1

1. Do you snore?

- ☐ a. Yes
- ☐ b. No
- ☐ c. Don't know

If you answered 'yes':

2. You snoring is:

- ☐ a. Slightly louder than breathing
- ☐ b. As loud as talking
- ☐ c. Louder than talking

3. How often do you snore?

- ☐ a. Almost every day
- ☐ b. 3-4 times per week
- ☐ c. 1-2 times per week
- ☐ d. 1-2 times per month
- ☐ e. Rarely or never

4. Has your snoring ever bothered other people?

- ☐ a. Yes
- ☐ b. No
- ☐ c. Don't know

5. Has anyone noticed that you stop breathing during your sleep?

- ☐ a. Almost every day
- ☐ b. 3-4 times per week
- ☐ c. 1-2 times per week
- ☐ d. 1-2 times per month
- ☐ e. Rarely or never

Category 2

6. How often do you feel tired or fatigued after your sleep?

- ☐ a. Almost every day
- ☐ b. 3-4 times per week
- ☐ c. 1-2 times per week
- ☐ d. 1-2 times per month
- ☐ e. Rarely or never

7. During your waking time, do you feel tired, fatigued or not up to par?

- ☐ a. Almost every day
- ☐ b. 3-4 times per week
- ☐ c. 1-2 times per week
- ☐ d. 1-2 times per month
- ☐ e. Rarely or never

8. Have you ever nodded off or fallen asleep while driving a vehicle?

- ☐ a. Yes
- ☐ b. No

If you answered 'yes':

9. How often does this occur?

- ☐ a. Almost every day
- ☐ b. 3-4 times per week
- ☐ c. 1-2 times per week
- ☐ d. 1-2 times per month
- ☐ e. Rarely or never

Category 3

10. Do you have high blood pressure?

- ☐ Yes
- ☐ No
- ☐ Don't know

Scoring Berlin Questionnaire

The questionnaire consists of 3 categories related to the risk of having sleep apnea. Patients can be classified into High Risk or Low Risk based on their responses to the individual items and their overall scores in the symptom categories.

Categories and Scoring:

Category 1: items 1, 2, 3, 4, and 5;

Item 1: if 'Yes', assign **1 point**

Item 2: if 'c' or 'd' is the response, assign **1 point**

Item 3: if 'a' or 'b' is the response, assign **1 point**

Item 4: if 'a' is the response, assign **1 point**

Item 5: if 'a' or 'b' is the response, assign **2 points**

Add points. Category 1 is positive if the total score is 2 or more points.

Category 2: items 6, 7, 8 (item 9 should be noted separately).

Item 6: if 'a' or 'b' is the response, assign **1 point**

Item 7: if 'a' or 'b' is the response, assign **1 point**

Item 8: if 'a' is the response, assign **1 point**

Add points. Category 2 is positive if the total score is 2 or more points.

Category 3 is positive if the answer to item 10 is 'Yes' or if the BMI of the patient is greater than 30kg/m².

(BMI is defined as weight (kg) divided by height (m) squared, i.e., kg/m²).

High Risk: if there are 2 or more categories where the score is positive.

Low Risk: if there is only 1 or no categories where the score is positive.

Additional Question: item 9 should be noted separately.

THE EPWORTH SLEEPINESS SCALE

How likely are you to doze off or fall asleep in the following situations, in contrast to feeling just tired?

This refers to your usual way of life in recent times. Even if you have not done some of these things recently try to work out how they would have affected you. Use the following scale to choose the most appropriate number for each situation:

0 = no chance of dozing

1 = slight chance of dozing

2 = moderate chance of dozing

3 = high chance of dozing


SITUATION	CHANCE OF DOZING
Sitting and reading	_____
Watching TV	_____
Sitting inactive in a public place (e.g a theater or a meeting)	_____
As a passenger in a car for an hour without a break	_____
Lying down to rest in the afternoon when circumstances permit	_____
Sitting and talking to someone	_____
Sitting quietly after a lunch without alcohol	_____
In a car, while stopped for a few minutes in traffic	_____

To check your sleepiness score, total the points . Check your total score to see how sleepy you are.

A Score of 10 or More
Indicates EDS

Comparison of Screening Questionnaires for OSA

- ▶ Berlin, STOP-Bang, Stop, Epworth Sleepiness Scale
- ▶ 234 patients completed questionnaire and underwent attended polysomnography
- ▶ Sensitivity to predict OSA
 - ▶ STOP-BANG – 97.55%
 - ▶ Berlin – 95.07%
 - ▶ STOP – 91.67%
- ▶ Low Specificity
 - ▶ 26.32%, 25%, and 25%, respectively

- 
- ▶ Epworth Sleepiness Scale
 - ▶ Highest specificity – 75%
 - ▶ But the lowest sensitivity – 72.55%

Comparison of Four Questionnaires for Screening Obstructive Sleep Apnea, *Egyptian J of Chest Diseases and Tuberculosis*, Vol 61, Issue 4, Oct 2012, 433-441

Best Source of Information/History?

- ▶ Many patients minimize or do not recognize the indicators of OSA
- ▶ Bed partners or caregivers generally are better at identifying snoring, abnormal breathing, and EDS

Sagaspe P, et al. Might the Berlin Sleep Questionnaire Applied to Bed Partners be Used to Screen Sleep Apneic Patients? Sleep Med 2010;11:479-483

Modified Mallampati Score

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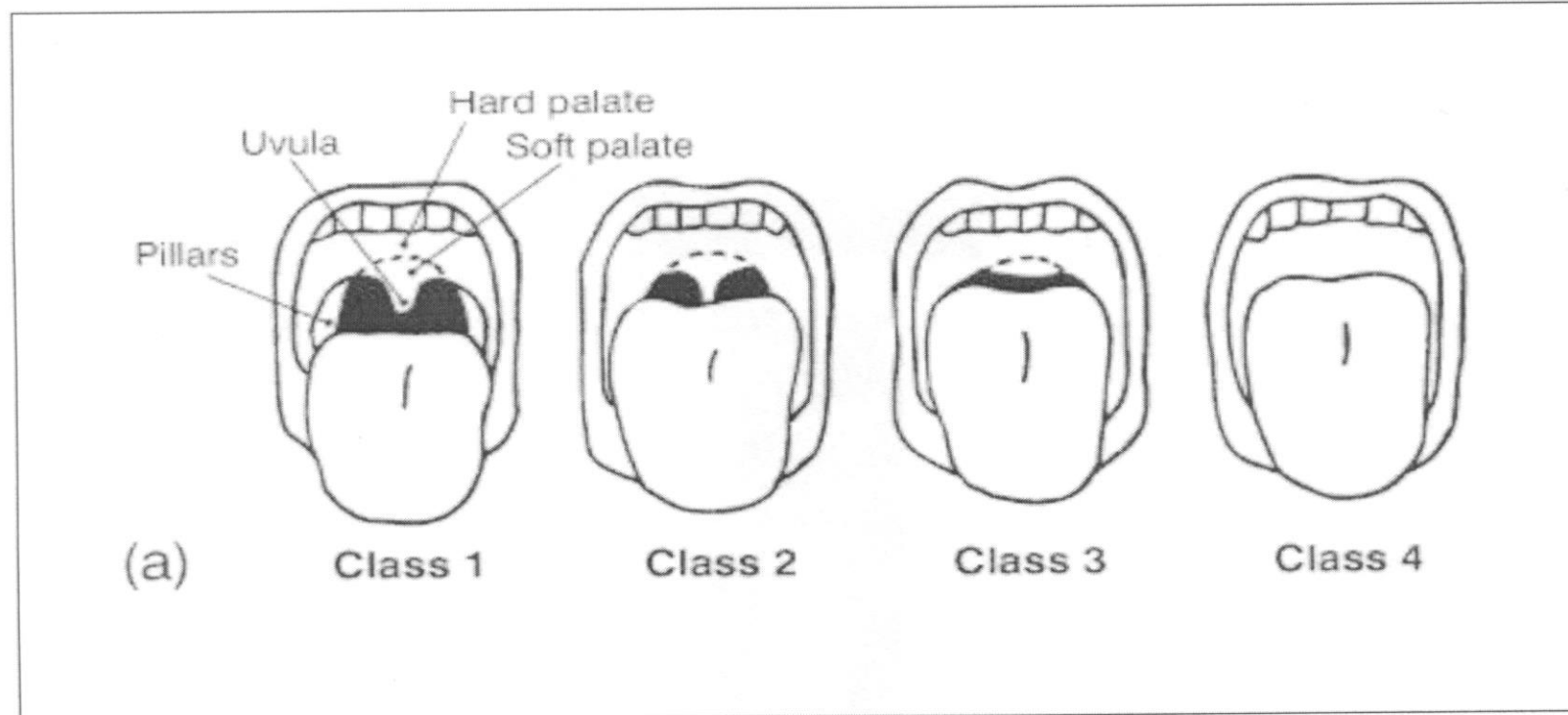


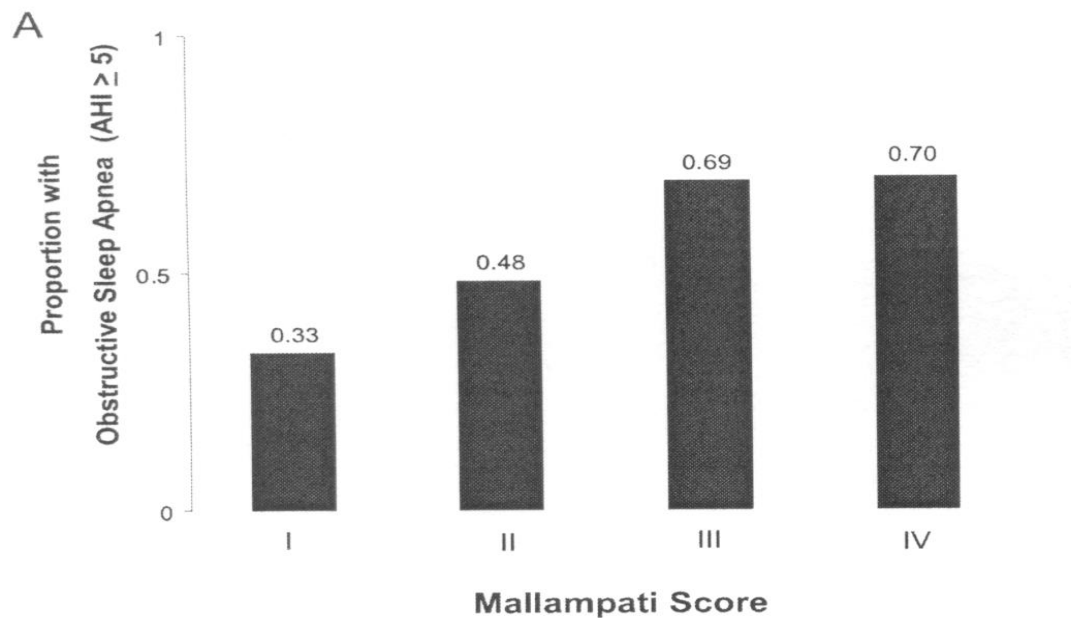
Figure 1. The Mallampati score:

Class 1. Complete visualization of the soft palate

Class 2. Complete visualization of the uvula

Class 3. Visualization of only the base of the uvula

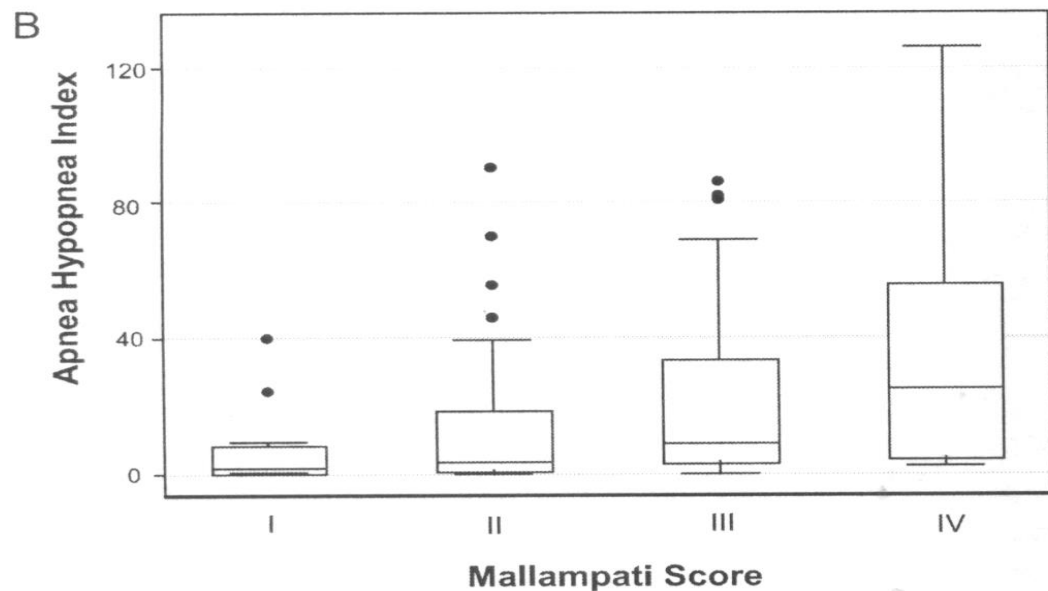
Class 4. Soft palate is not visible at all



➤ For every 1-point increase in the score, the odds of having OSA increase by more than 2-fold

➤ The AHI increases by more than 5 events per hour

Physical Examination: Mallampati Score as an Independent Predictor of Obstructive Sleep Apnea, Sleep, Vol. 29, No. 7, 2006



Testing For OSA

- ▶ Four Types of Monitoring Devices Have Been Defined

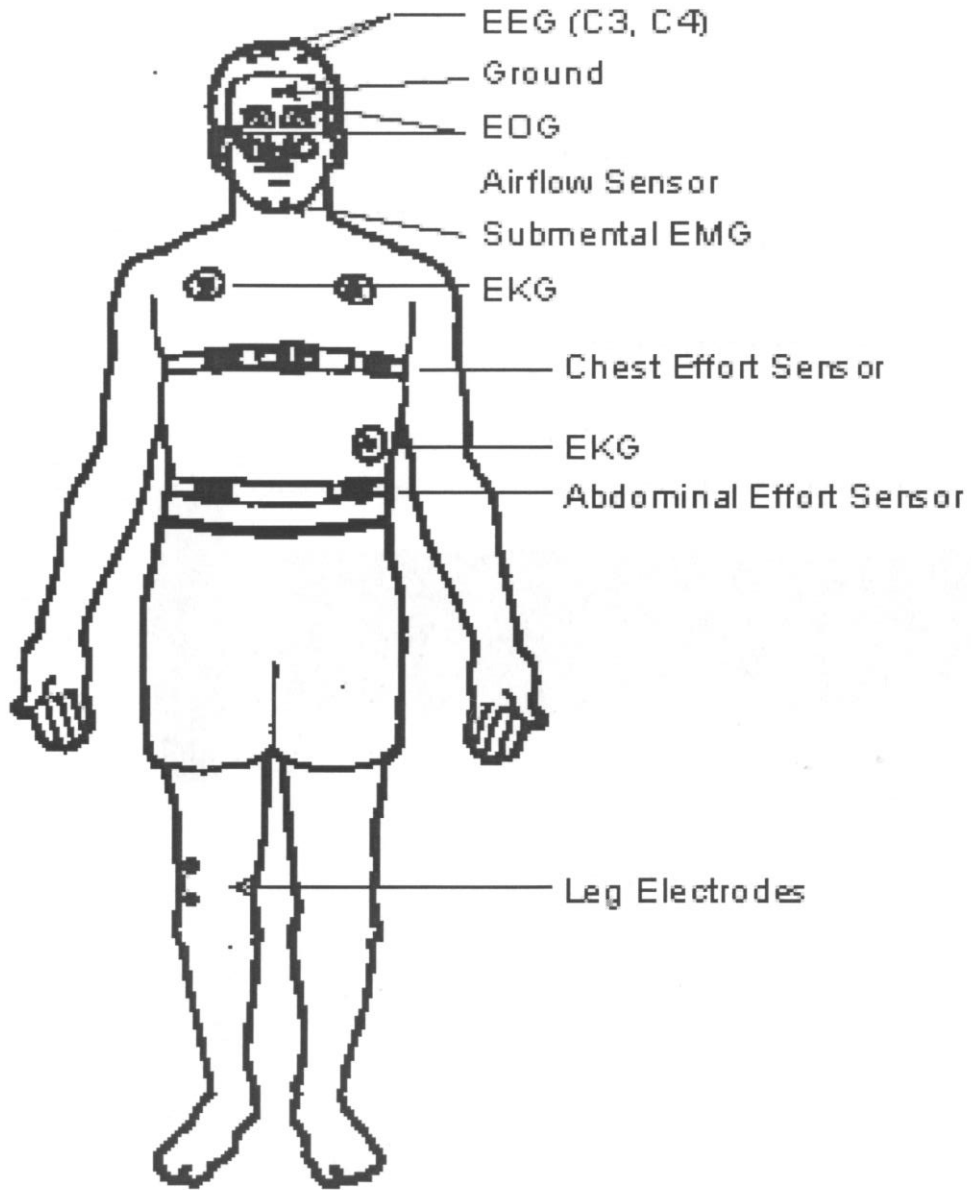
Type 1 Devices

- ▶ Considered the Gold Standard Form of Testing
- ▶ Technician Attended, Overnight Polysomnography

Polysomnography



Sleep Monitoring



- Includes Pulse Oximetry
- Additional Options
 - Transcutaneous CO₂
 - Esophageal Pressure
 - Forearm EMG

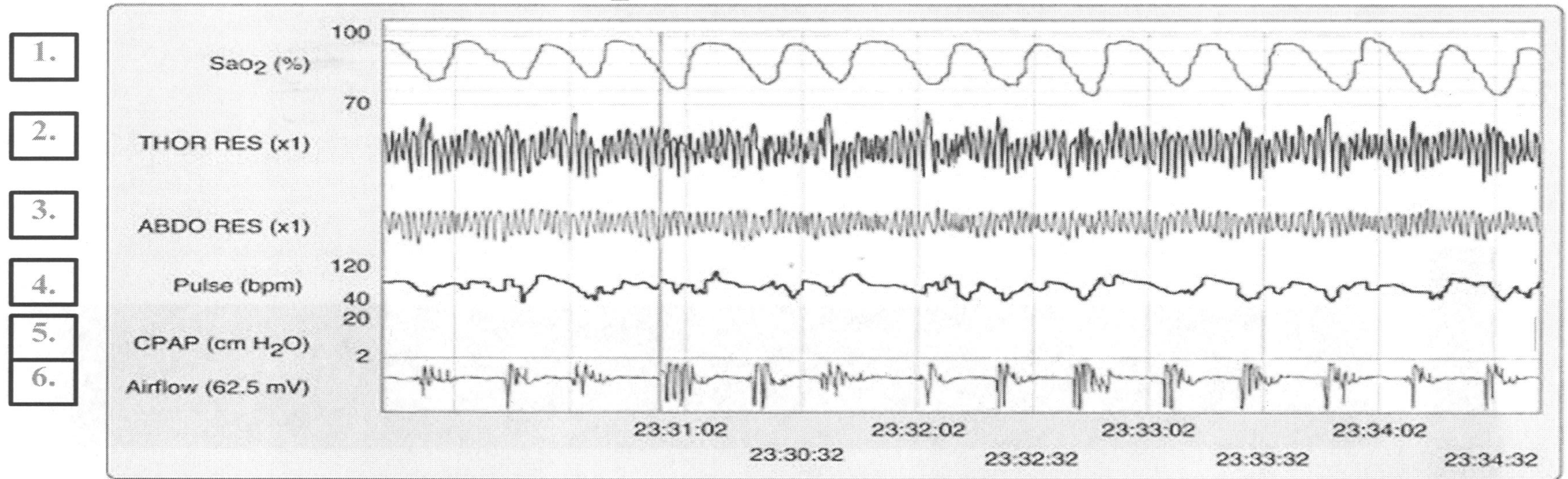


Let's Review: Obstructive Apnea



Snoring at the end of the apneas & arousal

The PSG: A patient with severe OSA



- The bottom six channels represent about 5 minutes of data and show the information used to document apnea type.
- The channels from top to bottom are:
 1. **oxyhemoglobin saturation (SaO₂),**
 2. **thoracic movement,**
 3. **abdominal movement**
 4. **pulse rate**
 5. **CPAP pressure, and**
 6. **nasal airflow**

Let's Review: Central Apnea



“THOR” and “ABD” leads show no respiratory *effort*

ST. VINCENT HOSPITAL SLEEP DISORDERS CENTER

POLYSOMNOGRAPHY REPORT

Patient Name:

Study Date: 06/09/2003

Referring Physician: Reynolds

ID:

Height: 67"

Scorer: Laurie

DOB:

Weight: 160 lbs.

Start/End Time: 11:19 PM - 6:57 AM

DIAGNOSTIC

	Minutes	%	# of Breathing Related Arousals	
Total Sleep Time (TST)	124.0			5
STG 1	34.5	27.8%	# of Central Apneas	4
STG 2	47.0	37.9%	# of Obstructive Apneas	97
Delta	36.0	29.0%	# of Mixed Apneas	8
REM	6.5	5.2%	# of Hypopneas	17
Movement Time	0.0	0.0%	Apnea Index per Hour of Sleep $\left(\frac{\# \text{ of apneas}}{\text{TST} / 60} \right)$	61.0
Recording Time (TRT)	156.0		Resp. Dist. Index $\left(\frac{\text{BRAs} + \text{Apneas}}{\text{TST} / 60} \right)$ per Hr. of Sleep	63.4
Sleep Latency	3.5	2.2%	Lowest O2 Saturation %	70
Wakefulness	28.5	18.3%	Baseline Saturation	96
Total Time Out of Bed	0.0	0.0%	Total Periodic Leg Movements in Sleep (PLMS)	0
Awakenings Total			Total PLMS with Arousal	0
Awakenings > 1 Min.			PLMS Index $\left(\frac{\text{PLMS}}{\text{TST} / 60} \right)$	0.0
Total # Stage Shifts				
Sleep Efficiency (TST / TRT x 100)		79.5%		
Duration Rem 1st 1/2 of Night		6.5		
Duration Rem 2nd 1/2 of Night		64.5		
REM Latency		134.0		
Total # Rem Ps		4		

Parameters

EEG (C4C3, O2O1, A2A1)	<input checked="" type="checkbox"/>	ECG	<input checked="" type="checkbox"/>
EOG	<input checked="" type="checkbox"/>	Legs	<input checked="" type="checkbox"/>
EMG: Chin	<input checked="" type="checkbox"/>	Intercostals	<input checked="" type="checkbox"/>
Respirace	<input checked="" type="checkbox"/>	Therms	<input checked="" type="checkbox"/>
Snore Mic.	<input checked="" type="checkbox"/>	PES	<input type="checkbox"/>
Seizure Montage	<input type="checkbox"/>	CPAP Flow	<input type="checkbox"/>
ET CO2	<input type="checkbox"/>		
Arms (Motion Detectors)	<input type="checkbox"/>		

Number of Respiratory Events Per:

	Body Position				REM	NREM
	Supine	Prone	Left	Right		
Obstructive	96	0	0	1	8	89
Mixed	8	0	0	0	0	8
Central	4	0	0	0	1	3
Hypopnea	12	0	0	5	0	17
BRA's	5	0	0	0	0	5
Total	125	0	0	6	9	122

POST-TREATMENT

	Minutes	%	# of Breathing Related Arousals	
Total Sleep Time (TST)	276.5			4
STG 1	34.0	12.3%	# of Central Apneas	2
STG 2	125.5	45.4%	# of Obstructive Apneas	1
Delta	52.5	19.0%	# of Mixed Apneas	0
REM	64.5	23.3%	# of Hypopneas	0
Movement Time	0.0	0.0%	Apnea Index per Hour of Sleep $\left(\frac{\# \text{ of apneas}}{\text{TST} / 60} \right)$	0.7
Tot. Recording Time (TRT)	299.5		Resp. Dist. Index $\left(\frac{\text{BRAs} + \text{Apneas}}{\text{TST} / 60} \right)$ per Hr. of Sleep	1.5
Wakefulness	23.0	7.7%	Lowest O2 Saturation %	C
Total Time Out of Bed	0.0	0.0%	Baseline Saturation	C
Awakenings Total			Total Periodic Leg Movements in Sleep (PLMS)	0
Awakenings > 1 Min.			Total PLMS with Arousal	C
Total # Stage Shifts			PLMS Index $\left(\frac{\text{PLMS}}{\text{TST} / 60} \right)$	0.0
Sleep Efficiency (TST / TRT x 100)		92.3%		
Duration Rem 1st 1/2 of Night		6.5		
Duration Rem 2nd 1/2 of Night		64.5		
Total # Rem Ps		4		

Parameters

EEG (C4C3, O2O1, A2A1)	<input checked="" type="checkbox"/>	ECG	<input checked="" type="checkbox"/>
EOG	<input checked="" type="checkbox"/>	Legs	<input checked="" type="checkbox"/>
EMG: Chin	<input checked="" type="checkbox"/>	Intercostals	<input checked="" type="checkbox"/>
Respirace	<input checked="" type="checkbox"/>	CPAP Flow	<input checked="" type="checkbox"/>
Snore Mic.	<input checked="" type="checkbox"/>		
Seizure Montage	<input type="checkbox"/>		
PES	<input type="checkbox"/>		
Arms (Motion Detectors)	<input type="checkbox"/>		

Number of Respiratory Events Per:

	Body Position				REM	NREM
	Supine	Prone	Left	Right		
Obstructive	1	0	0	0	0	1
Mixed	0	0	0	0	0	0
Central	2	0	0	0	0	2
Hypopnea	0	0	0	0	0	0
BRA's	4	0	0	0	0	4
Total	7	0	0	0	0	7

Tech Notes: Patient was tested for 7.6 hours with standard polysomnography, of which he slept 6.7 hours. A short sleep latency was scored. The pt. Snored. Obstructive apneas were scored. CPAP +5 was started and titrated up to +9. In the morning the pt. Stated that he had slept better than he usually does at home.

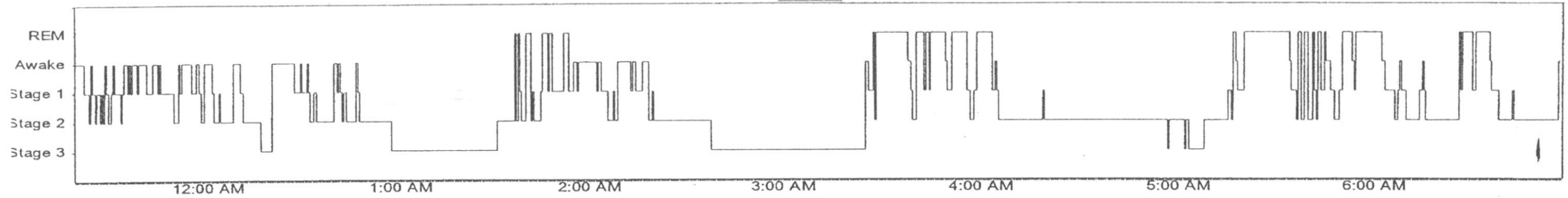
St. Vincent Hospital Sleep Disorders Center Polysomnography Graphic Summary

ame:

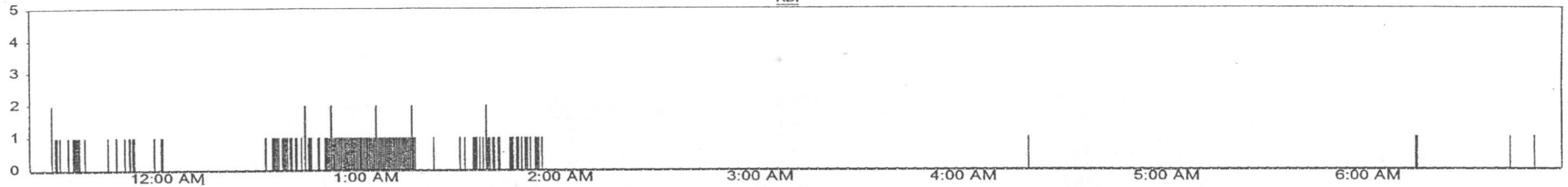
Recording Date: Monday, June 09, 2003

ID: 00475402

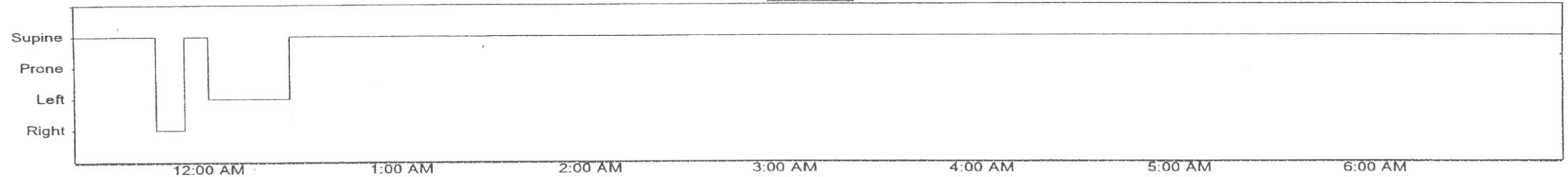
Histogram



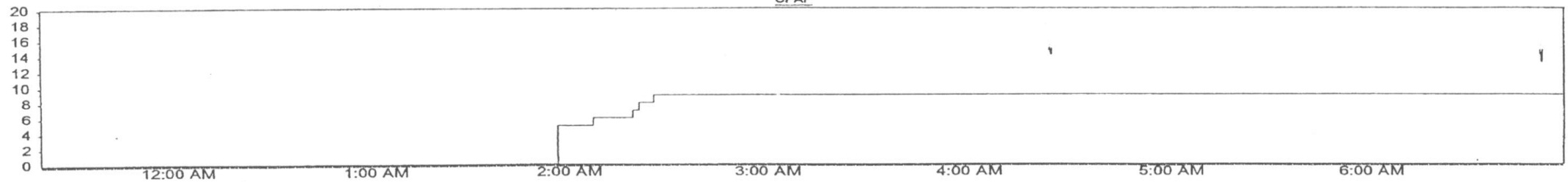
RDI



Body Position



CPAP

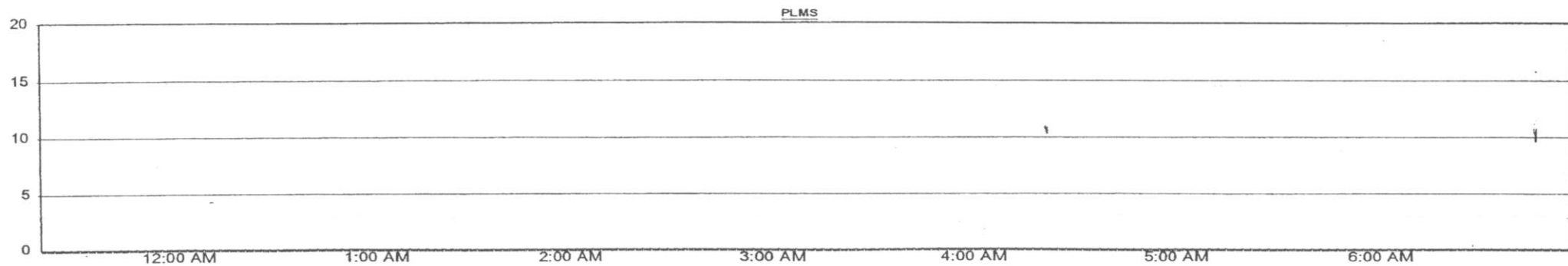
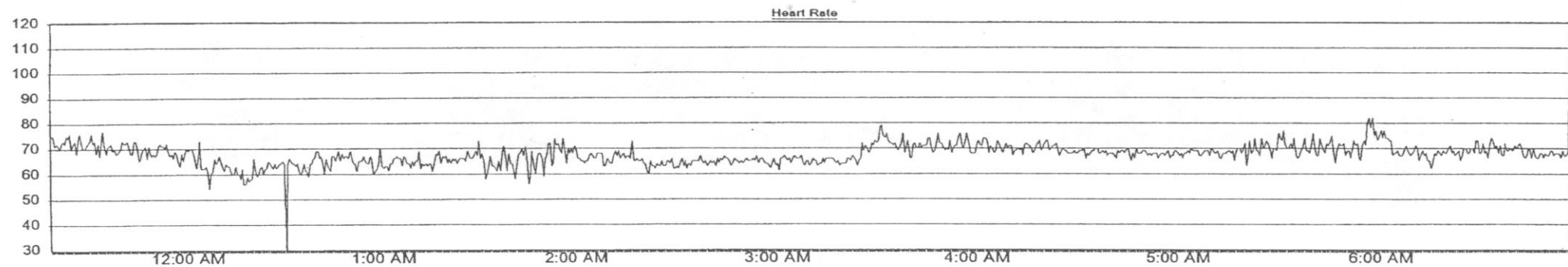
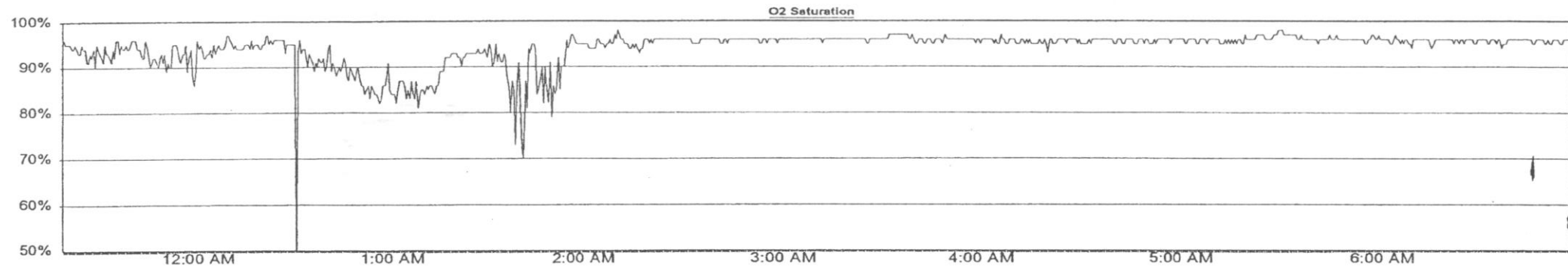


St. Vincent Hospital Sleep Disorders Center
Polysomnography Graphic Summary

ame:

Recording Date: Monday, June 09, 2003

ID: 00475402



Type 2 Devices

- ▶ Can Record The Same Variables As Type 1 Devices
- ▶ Done Outside Of The Sleep Lab And They Are Unattended Studies

Type 3 Devices

- ▶ Four To Seven Variables Measured
 - ▶ Two Respiratory Variables - Effort and Airflow
 - ▶ A Cardiac Variable - Heart Rate or ECG
 - ▶ Oxyhemoglobin Saturation via Pulse Oximetry
 - ▶ Some Devices Detect Snoring, Body Position, or Movement
 - ▶ Sleep Stages Are Typically Not Measured
 - ▶ Unattended Studies

ApneaLink - Report of 5/17/2016 1:35 PM

Treating physician

David Kohls APNP

Referral to

Patient data

First name:
Last Name:
Street:
City, ST, Zip:
Phone:

Patient ID:

DOB:

Height:

5 ft 7 in

Weight:

218.54 lbs

BMI:

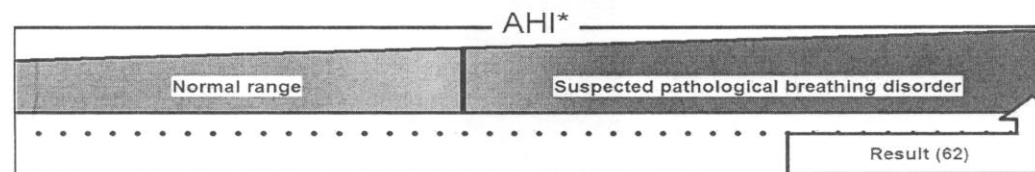
34.3 kg/m²

Recording

Date: 5/13/2016
Start: 8:57 PM
End: 5:38 AM
Duration: 8 h 41 min

Evaluation

Start: 9:07 PM
End: 5:20 AM
Duration: 6 h 10 min



* See Clinical Guide for abbreviations and ResMed standard parameters

Analysis (Flow evaluation period: 6 h 10 min / SpO₂ evaluation period: 8 h 11 min)

Indices

		Normal
AHI*:	62	< 5 / h
RI*:	66	< 5
Apnea index:	54	< 5 / h
UAI:	0	
OAI:	54	
CAI:	0	
MAI:	0	
Hypopnea index:	8	< 5 / h
% Flow lim. Br. without Sn (FL):	14	< Approx. 60
% Flow lim. Br. with Sn (FS):	21	< Approx. 40
ODI Oxygen Desaturation Index*:	52	< 5 / h
Average saturation:	90	94% - 98%
Lowest desaturation:	63	-
Lowest saturation:	63	90% - 98%
Baseline Saturation:	93	%
Minimum pulse:	58	> 40 bpm
Maximum pulse:	117	< 90 bpm
Average pulse:	75	bpm
Proportion of probable CS epochs:	0	0%

Result

Average breaths per minute [bpm]:	7.05
Breaths:	2606
Apneas:	337
Unclassified apneas:	0 (0%)
Obstructive apneas:	332 (99%)
Central apneas:	2 (1%)
Mixed apneas:	3 (1%)
Hypopneas:	50
Flow lim. Br. without Sn (FL):	365
Flow lim. Br. with Sn (FS):	551
Snoring events:	2806
No. of desaturations:	428
Saturation ≤ 90% :	176 min (36%)
Saturation ≤ 85% :	103 min (21%)
Saturation ≤ 80% :	44 min (9%)
Saturation ≤ 89% :	158 min (32%)
Saturation ≤ 88% :	143 min (29%)

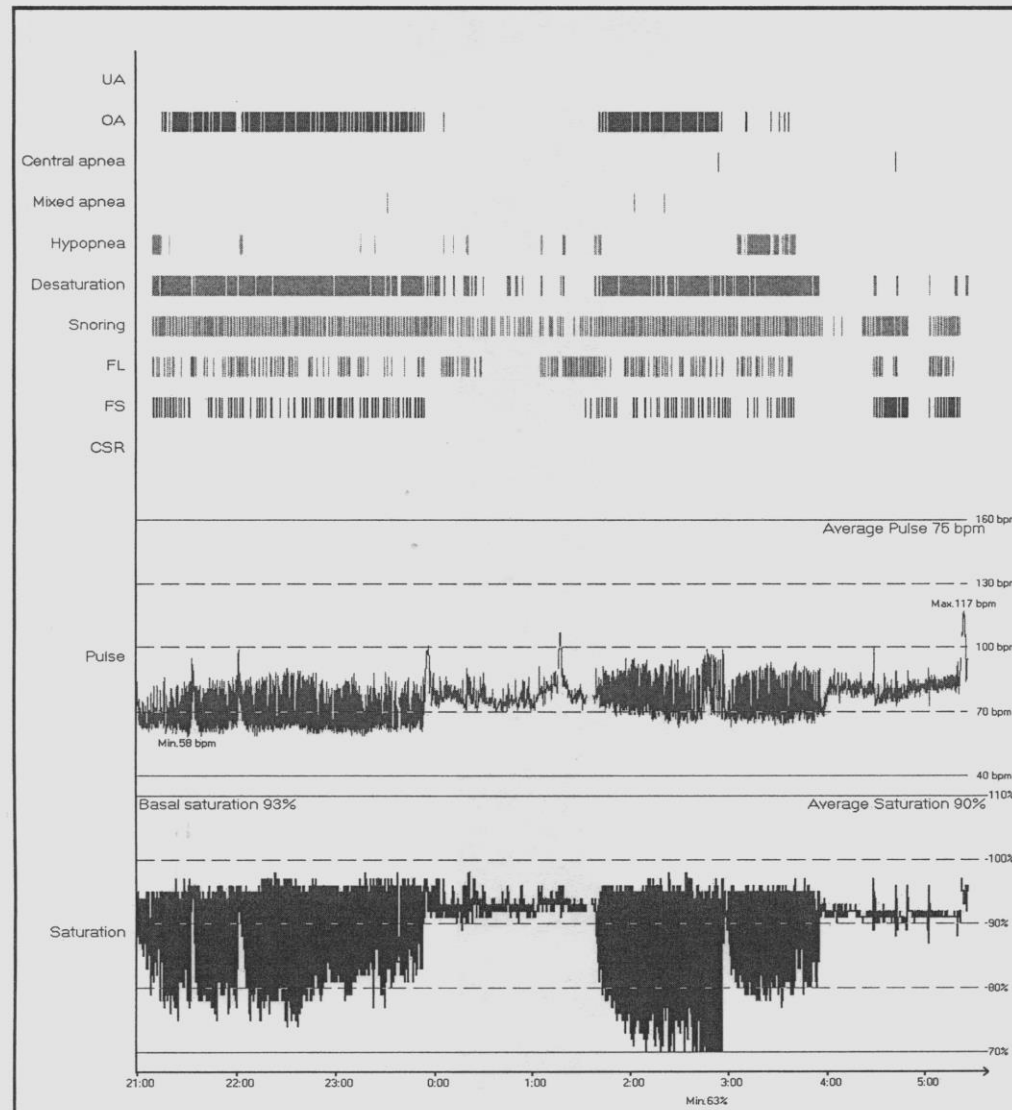
Analysis status: Edited manually

Analysis parameters used (Default)

Apnea [20%; 10s; 80s; 1.0s; 20%; 60%; 8%]; Hypopnea [70%; 10s; 100s; 1.0s]; Snoring [6.0%; 0.3s; 3.5s; 0.5s]; Desaturation [4.0%]; CSR [0.50]

Comments

Edit Comments



Type 4 Devices

- ▶ Record One Or Two Variables
 - ▶ Airflow
 - ▶ Pulse Oximetry
 - ▶ Unattended By A Technician
- ▶ A Novel CMS Defined Type 4 Device Measures Arterial Tonometry, Oximetry, Snoring, Actigraphy, And Body Position.

Sleep Study Report



Sleep Summary

Start Study Time: 9:03:06PM
End Study Time: 6:00:13AM
Total Study Time: 8 hrs, 57 min

Sleep Time: 8 hrs, 8 min
% REM of Sleep Time: 27.7

Oxygen Saturation Statistics

Mean: 91 Minimum: 78 Maximum: 97
Mean of Desaturations Nadirs (%): 89

Oxygen Desatur. %:	4-9	10-20	>20	Total
Events Number	154	3	0	157
Total	98.1	1.9	0.0	100.0

Oxygen Saturation	<90	<88	<85	<80	<70
Duration (minutes):	50.3	5.5	0.6	0.1	0.0
Sleep %	10.3	1.1	0.1	0.0	0.0

Pulse Rate Statistics during Sleep (BPM)

Mean: 70 Minimum: 49 Maximum: 108

Respiratory Indices

	REM	NREM	All Night
pRDI:	33.6	22.0	25.2
pAHI:	30.9	20.6	23.5
ODI:	24.2	17.6	19.4

Indices are calculated using valid sleep time of 8 hrs, 5 min.
pRDI/pAHI are calculated using oxi desaturations $\geq 4\%$

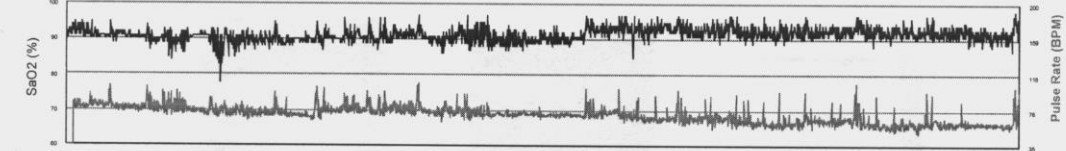
PAT Respiratory Events



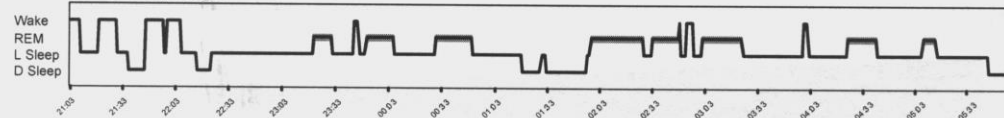
Snore / Body Position



Oxygen Saturation / Pulse Rate (BPM)



Wake / Sleep stages



PAP Therapy is the Gold Standard Treatment for OSA

- ▶ Air pressure, measured in cmH₂O, is used to splint the upper airway open

Adherence to PAP Therapy

- ▶ 50-60 % of patients are adherent to PAP therapy
- ▶ 29-83% of patients are non-adherent to PAP therapy
- ▶ The decision is usually made during the first week of therapy
- ▶ Use increases gradually once the decision to adhere is made
- ▶ The average use of PAP therapy is approximately five hours per night

PAP or No PAP?

- ▶ 2006 AASM Practice Parameters
- ▶ PAP therapy is an option in mild OSA
- ▶ Mixed results in studies of outcome
- ▶ PAP reduces AHI, but does not necessarily reduce BP or improve EDS, mood, or quality of life
- ▶ Of 32 patients with $AHI < 10$, ten had improved quality of life at 4 weeks
- ▶ At 3 months, only 4 continued to adhere to PAP therapy

PAP or No PAP?

- ▶ Important to correlate AHI with symptoms and co-morbidities
- ▶ As many as 25% of sleep patient have more than one sleep disorder
- ▶ Consultation and patient education with a sleep specialist

Oral Appliances

- ▶ AASM/AADSM 2015 Guidelines
- ▶ OA should be prescribed, rather than no therapy, for patients requesting treatment for primary snoring (STANDARD)
- ▶ A qualified dentist should use a custom, titratable device (GUIDELINE)
- ▶ Consider OA for patients who are intolerant of PAP therapy or prefer alternative therapy (STANDARD)
- ▶ Qualified dentist provides oversight of treatment and periodic follow up visits with sleep specialist (GUIDELINE)
- ▶ Follow up testing (GUIDELINE) (24)

Oral Appliances (cont.)

- ▶ Most Effective For Mild to Moderate OSA
- ▶ AHI Above 30 – About 50% effective
- ▶ On Average, Resolution of OSA (AHI < 5) Occurs in About 48% of Patients (Range – 29 to 71%)
- ▶ Approximately One-third of Patients Experience No Therapeutic Benefit
- ▶ On PSG, The Effectiveness of PAP is Superior
- ▶ However, Many Patients Prefer Oral Appliances and Report Greater Adherence to Therapy
 - ▶ This May Counteract the Inferiority Over PAP to Reduce AHI

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Patient Selection For Treatment With An Oral Appliance

Favorable Factors

- ▶ Less severe disease
- ▶ Supine-predominant OSA
- ▶ Younger age, female gender
- ▶ Lower BMI and neck circumference
- ▶ Shorter soft palate length
- ▶ Greater angle between the cranial base and mandibular plane
- ▶ A retrognathic mandible (Class 2 malocclusion)
- ▶ These factors = a higher likelihood of success, but are not universal

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Who Should Not Be Considered A Candidate For An OA

- ▶ Patients with Central Sleep Apnea
- ▶ Patients with sleep related hypoventilation
 - ▶ COPD, obesity-related hypoventilation, neuromuscular disease, drug-induced hypoventilation
- ▶ Patients with poor dentition or who are edentulous
- ▶ Patients with acute TMJ derangement or disc displacement

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- ▶ Patients who require objective monitoring for their occupations
- ▶ ? Patients with prior orthodontic correction

Obstacles

- ▶ Insurance Coverage
- ▶ Awareness Among Healthcare Professionals and Patients

Summary

- ▶ Oral Appliances Can Be A Very Effective Alternative To PAP Therapy
- ▶ Improving Awareness of This Among Health Care Providers and Patients Has The Potential To Help A Significant Number Of Patients With OSA Who Would Otherwise Remain Untreated And At Risk For Reduced Quality Of Life And Significant Health Consequences
- ▶ A Collaborative Relationship Between Dentists and Sleep Medicine Specialists Is The Key



Thank You

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