Valley Sleep Center
1612 West Olive Avenue, Suite #301
Burbank, CA. 91506
(818) 563-5412

POLYSOMNOGRAM: DIAGNOSTIC & TREATMENT NIGHT

PATIENT NAME:	**Smith, John**
AGE / GENDER:	**50 year / Male**
DATE OF STUDY:	**01/01/2011**
REQUESTING PHYSICIAN:	**Jane Doe, MD**
INDICATIONS:	**Possible Sleep Apnea**
REQUESTED STUDY:	**PSG Split Night**

INDICATIONS:

Mr. Smith weighs 200 lbs and is 6' 0" tall with a Body Mass Index of 27.1 kg/m2. The patient does not smoke cigarettes and reports taking the following medication: Benicar, Trilipix, and Aspirin. The patient presents to the sleep lab with complaints of daytime fatigue. The patient has an Epworth Sleepiness Scale 12/24 and reports a history of sleep apnea.

IMPRESSION:

1. Mild Obstructive Sleep Apnea
2. Upper Airway Resistance Syndrome
3. Successful CPAP Titration

RECOMMENDATIONS:

During the diagnostic portion of the polysomnogram Mr. Smith was observed to have mild obstructive sleep apnea (OSA) with an overall Apnea / Hypopnea Index (AHI) of 6.5 events per hour. Lowest oxyhemoglobin saturation recorded was 89%. Additional respiratory effort related arousals occurred at a rate of 5.8 bringing the overall Respiratory Disturbance Index (RDI) to 12 events per hour. EEG and EMG monitoring did not show any abnormalities. ECG monitoring showed runs of ventricular bigeminy (see figure on next page). Clinical correlation is strongly recommended. Patient showed marked sleep fragmentation, decreased percentage of REM and slow wave sleep, increased percentage of stage one sleep and snoring; findings consistent with diagnostic criteria for OSA. CPAP was initiated with pressures ranging from 5 - 7 cmH_2O, with the best response occurring at 7 cmH_2O. Patient appeared to tolerate CPAP well. At the optimal CPAP setting the AHI was reduced to 2 events per hour; sleep architecture improved and oxyhemoglobin levels stabilized at 97%. Treatment should be based on the patient's complete medical history, of which this study is only a part. Some RERAs persisted at the optimal CPAP setting, therefore continued treatment with auto adjusting CPAP set between 6 cmH_2O and 10 cmH_2O is recommended. Other therapeutic options include surgery and use of various oral appliances. Clinical follow-up is suggested.

Report Prepared and Electronically Signed by:

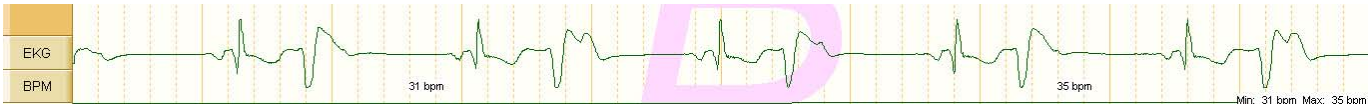
Earl E. Sleep, M.D.
Diplomate, American Board of Sleep Medicine

Patient Name: Smith, John **ID: 11-XXXX** **Technologist: Guy Tech, PSGT**
Study Date: 01/01/2011 **Scored by: Rick Score, RPSGT**

TECHNIQUE:

After the scalp was prepared, electrodes were applied according to the International 10-20 System of Electrode Placement. EEG was monitored from C3, C4, O1 and O2. Electrodes placed at the outer canthi monitored eye movements continuously. Nasal and oral airflow were monitored using a double port thermocouple. The respiratory effort was monitored by piezo-electric technology using abdominal and thoracic belts. Blood oxygen saturation was monitored by pulse oximetry. Heart rate and rhythm were monitored by surface electrocardiogram. Anterior tibialis EMG was studied using surface electrodes placed on both legs. Another EMG electrode was placed on the chin. A snoring sensor was used to monitor tracheal vibration and snoring.

DIAGNOSTIC FINDINGS:		**(PATIENT)**		**(NORMS)**
Arousal Index:		19.6	/hr	0 – 5/hr
Apnea / Hypopnea Index	(AHI):	6.5	/hr	0 – 5/hr
REM Apnea / Hypopnea Index	(REM AHI)	33	/hr	0 – 5/hr
Respiratory Events:	Apneas	1		0
	Hypopneas	16		
	Respiratory Effort Related Arousals (RERAs)	15		
	The lowest SpO2 saturation	89	%	90 - 99%
Periodic Limb Movements	(PLMS) Index:	0.0	/hr	0 – 5/hr
	Periodic Limb Movements with Arousals Index:	0.0	/hr	0 – 5/hr
Sleep Architecture				
	Sleep Efficiency:	91	%	85 – 99% Good
	Stage 1 sleep	14	%	5%
	Stage 2 sleep	78	%	50%
	Stage 3 sleep (Delta)	1	%	20-25%
	REM sleep	7	%	20-25%
Sleep Latency	(Time to fall asleep from Lights Out)	8.5	min	10-20 min
REM Latency	(Time to obtain REM from sleep onset)	75.0	min	90-120 min
TREATMENT FINDINGS:				
CPAP Toleration:		Good		
Apnea / Hypopnea Index at optimal pressure		2	/hr	0 – 5/hr
Optimal CPAP pressure was:		7	/cmH_2O	
Recommended Mask type/size:		ResMed Mirage FX / Standard		



TECHNICAL DISCUSSION- Diagnostic Portion:

Mr. Smith underwent a nocturnal sleep study under continuous observation by a sleep technologist on the night of 01/01/2011. Sleep onset was 8.5 minutes and the sleep efficiency was 91%. REM latency was 75.0 minutes. A total of 17 obstructive events (1 apneas/16 hypopneas) were noted with an overall Apnea / Hypopnea Index (AHI) of 6.5 per hour. Respiratory disturbances occurred more frequently during REM sleep with an AHI of 33 events per hour. The patient's SaO2 baseline was 94% and the lowest SaO2 was 89%. The patient's snoring was frequent and loud. There were 15 RERAs noted. ECG monitoring showed ventricular bigeminy (see figure above). There were 0 periodic leg movements (PLM) noted on the anterior tibialis EMG.

TECHNICAL DISCUSSION- Treatment Portion:

CPAP was initiated at a rate of 4.0 cm/H2O and titrated up to a maximum pressure of 7 cm/H2O using a ResMed Mirage FX mask, size standard with heated humidification. The patient's tolerance for the study was good. There were 0 periodic leg movements (PLM) noted on the anterior tibialis EMG.

Most sleep disordered breathing events and snoring was eliminated and the patient's SaO2 levels were normalized with CPAP 7 cm/H2O. The patient reported sleeping about the same as usual and felt well rested.

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Patient Name: Smith, John **ID: 11-XXXX** **Technologist: Guy Tech, PSGT**
Study Date: 01/01/2011 **Scored by: Rick Score, RPSGT**

Patient:	Smith, John	**Study Type:**	Split Night PSG
DOB:	06/01/1960	**Patient Details:**	Male, 50 years, Height 6' 0",
ID#:	SCHDAX0H3A		Weight 200 lbs, BMI 27.1
Physician:	Earl E. Sleepman, MD	**Ref. Physician:**	Jane Doe, MD
Technician:	Guy Tech, PST	**Recording Details:**	Recorded at 10:00:30 PM on 01/01/2011
			for 380 minutes.

SPLIT NIGHT CPAP REPORT

SLEEP SUMMARY DATA		
	DIAGNOSTIC	**TREATMENT**
Lights Out:	10:41:26 PM	1:46:56 AM
Lights On:	1:31:56 AM	4:59:56 AM
Total Recording Time (TRT):	185.3 min.	193.7 min.
Total Sleep Time (TST):	156.0 min.	176.0 min.
NREM Time:	145.0 min.	114.5 min.
REM Time:	11.0 min.	61.5 min.
Sleep Period Time (SPT):	162.0 min.	180.0 min.
Sleep Efficiency (SE):	91 %	91 %
Sleep Latency:	8.5 min.	4.5 min.
REM Latency:	75.0	10.0
Arousal Index:	19.6	14.3

SLEEP STAGING DATA					
	DIAGNOSTIC			**TREATMENT**	
	Duration (min)	**TST %**		**Duration (min)**	**TST %**
Stage Wake:	29.3 min.	--		17.2 min.	--
WASO:	6.0 min.	--		11.0 min.	--
NREM:	145.0 min.	93 %		114.5 min.	65 %
Stage N1:	21.5 min.	14 %		23.0 min.	13 %
Stage N2:	122.0 min.	78 %		91.5 min.	52 %
Stage N3:	1.5 min.	1 %		0.0 min.	0 %
REM:	11.0 min.	7 %		61.5 min.	35 %

POSITIONAL DATA					
	Event Count	**Index**		**Event Count**	**Index**
Supine:	31	6.2		22	3.1
Supine NREM:	23	4.6		13	3.1
Supine REM:	8	29		9	3
Non-Supine:	0	0.0		0	0.0
Non-Supine NREM:	0	0.0		0	0.0
Non-Supine REM:	0	0.0		0	0.0

RESPIRATORY DATA					
	Event Count	**Index**		**Event Count**	**Index**
AHI:	--	6.5		--	3.1
RDI:	--	12		--	8
Obstructive Apnea:	1	0.4		0	0.0
Central Apnea:	0	0.0		6	2.0
Mixed Apnea:	0	0.0		0	0.0
Hypopnea:	16	6.2		3	1.0
RERA:	15	5.8		13	4.4
Total Apneas:	1	0.4		6	2.0

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	DIAGNOSTIC PORTION	TREATMENT PORTION

RESPIRATORY DATA

	REM	NREM	SLEEP	REM	NREM	SLEEP
Supine Position:						
Obstructive Apneas:	0	1	1	0	0	0
Central Apneas:	0	0	0	0	6	6
Mixed Apneas:	0	0	0	0	0	0
Hypopneas:	5	10	15	3	0	3
RERA	3	12	15	6	7	13
Total Events:	8	23	31	9	13	22
AHI:	29	4.6	6.2	3	3.1	3.1
RDI:	45.9	9.5	12.0	8.8	6.8	7.5

	REM	NREM	SLEEP	REM	NREM	SLEEP
Non-Supine Position:						
Obstructive Apneas:	0	0	0	0	0	0
Central Apneas:	0	0	0	0	0	0
Mixed Apneas:	0	0	0	0	0	0
Hypopneas:	0	0	0	0	0	0
RERA	0	0	0	0	0	0
Total Events:	0	0	0	0	0	0
AHI:	0.0	0.0	0.0	0.0	0.0	0.0
RDI:	0.0	0.0	0.0	0.0	0.0	0.0

CPAP:

Therapy (cm H2O)	Time (min.)	REM (min.)	NREM (min.)	SE (%)	Apnea C/O/M	Hypop.	Snore Index	AHI	RDI	Lowest SpO2 (%)	Arousal Index
0	156.00	11.00	145.00	91	0/1/0	16	174.62	6.54	12.31	89	19.62
5	14.69	2.69	12.00	73	0/0/0	0	204.23	0.00	0.00	92	28.59
6	127.99	41.97	86.02	96	5/0/0	3	30.00	3.75	9.38	92	14.06
7	**33.32**	**16.84**	**16.48**	**86**	**1/0/0**	**0**	**5.40**	**1.80**	**3.60**	**93**	**9.00**

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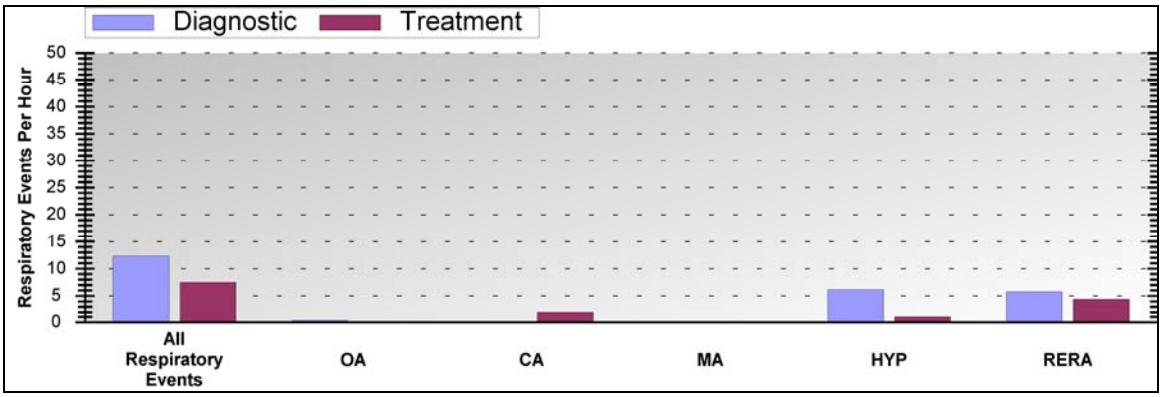
	DIAGNOSTIC PORTION	TREATMENT PORTION

AROUSAL SUMMARY DATA:					
	Event Count	**Index**		**Event Count**	**Index**
Apnea Arousals:	0	0.4		2	2.0
Hypopnea Arousals:	3	1.2		0	0.0
Snore Arousals:	8	3.1		3	1.0
PLM Arousals:	0	0.0		0	0.0
Non-Specific Arousals:	29	11.2		26	8.9
Total Arousals:	51	19.6		42	14.3

LIMB MVT SUMMARY DATA:					
	Event Count	**Index**		**Event Count**	**Index**
PLM:	0	0.0		0	0.0
PLM Series:	0	--		0	--

OXYGEN SATURATION DATA		
	DIAGNOSTIC	**TREATMENT**
SpO2 Mean Sleep:	94 %	96 %
SpO2 Mean REM:	93 %	96 %
SpO2 Mean NREM:	94 %	96 %
SpO2 Minimum Sleep:	89 %	92 %
SpO2 Minimum REM:	89 %	92 %
SpO2 Minimum NREM:	90 %	92 %
SpO2 Standard Deviation Sleep:	1.1 %	1.2 %
SpO2 Standard Deviaton REM:	1.5 %	1.2 %
SpO2 Standard Deviation NREM:	1.0 %	1.1 %
Time Below 89% (TST):	0.0	0.0

HEART RATE DATA		
	DIAGNOSTIC	**TREATMENT**
Sleep (bpm):	48	67
REM (bpm):	46	68
NREM (bpm):	48	67



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