

Polysomnography Report

Unknown Institution

Total Recording Time: 7 hours 8 minutes (428 minutes)
 Lights Off Clock Time: 28/10/2009 22:52
 Lights On Clock Time: 29/10/2009 6:00

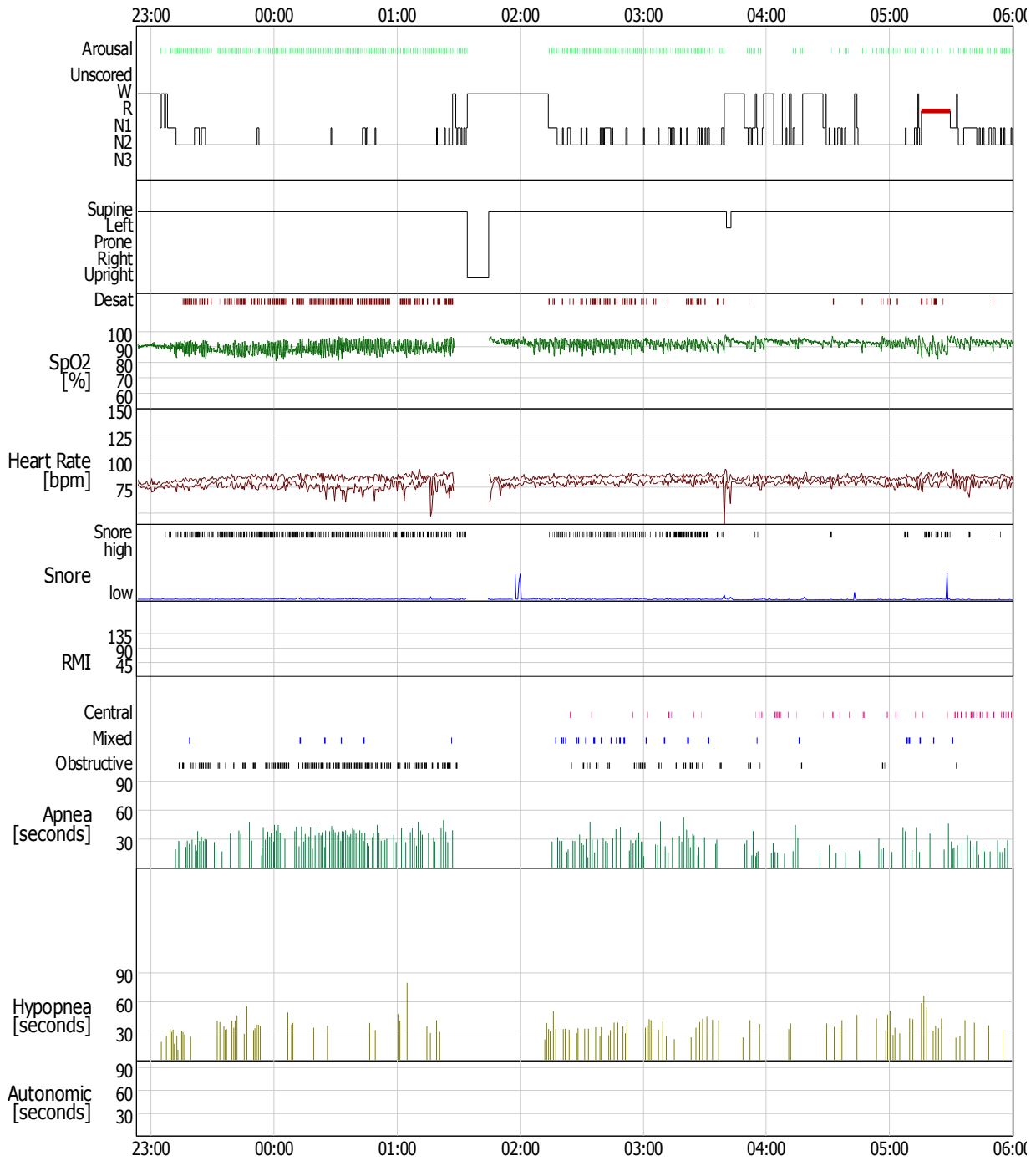
Patient Information

Name: PSG N7000, Split-Night	Date of Birth: 31/12/1946
ID: CSB	Age: 68 year(s)
Address:	Gender: Male
City:	Height: 1.70 m
Zip Code:	Weight: 73.9 kg
E-Mail:	BMI: 25.5
Phone:	

Sleep Summary

Total Recording Time:	428.0 minutes	Apnea + Hypopnea (A+H):	322	56.4 / h
Sleep Period:	416.0 minutes	Obstructive Apnea:	133	23.3 / h
Wake After Sleep Onset:	73.5 minutes	Central Apnea:	45	7.9 / h
Total Sleep Time:	342.5 minutes	Mixed Apnea:	30	5.3 / h
Sleep Onset:	12.0 minutes	Hypopnea (All):	114	20.0 / h
Sleep Efficiency:	80.0 %	Obstructive Hypopnea:	-	-
Number of Awakenings:	14	Central Hypopnea:	-	-
Sleep Latency to N1:	12.0 minutes	Mixed Hypopnea:	-	-
Sleep Latency to N2:	19.5 minutes	RDI:	56.4	
Sleep Latency to N3 (SWS):	0.0 minutes	Oxygen Desaturation Events (OD):	176	30.8 / h
Stage R Latency from Sleep Onset:	371.0 minutes	Snore Time:	104.2 minutes	30.4 %
		Limb Movement:	-	- / h
		PLMS:		- / h

Summary Graph



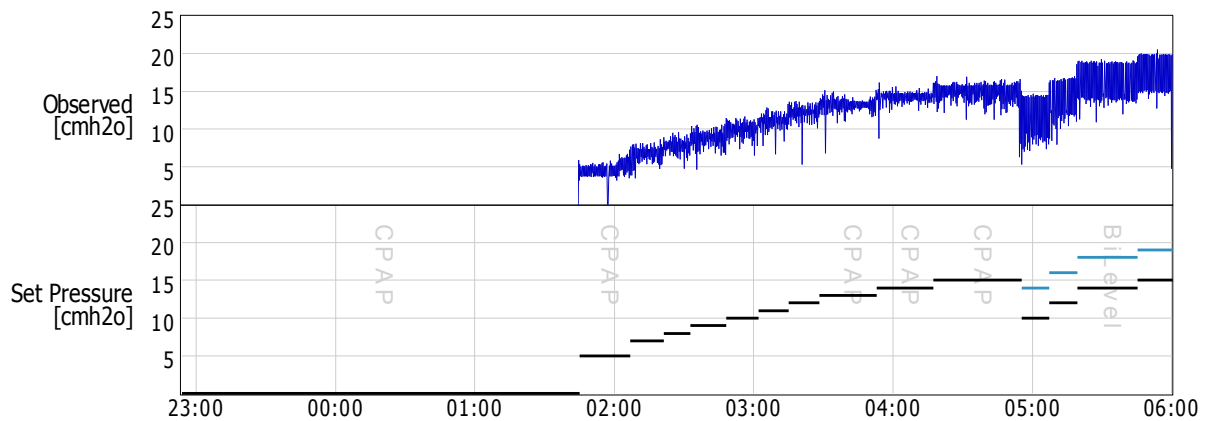
Sleep Information

	N1	N2	N3	R	Wake
Minutes:	67.0 min	261.5 min	0.0 min	14.0 min	85.5 min
% of TST	19.6 %	76.4 %	- %	4.1 %	-
% of Sleep Period	16.1 %	62.9 %	- %	3.4 %	17.7 %

Arousal Statistics

	Number	Index		Number	Index
Arousals	0	0.0	Spontaneous Arousals	1	0.2
Apnea Arousals	0	0.0	Hypopnea Arousals	0	0.0
LM Arousals	0	0.0	PLM Arousals	0	0.0
Desaturation Arousals	0	0.0	Snore Arousals	0	0.0
Respiratory Arousals	289	50.6	RERA	46	8.1
User Defined Arousals	0	0.0	Total Arousals	336	58.9

PAP Statistics



Statistics CPAP / APAP

Median Pressure: 13.3 cmh2o 95% Pressure: 16.5 cmh2o
 Maximum Pressure: 20.0 cmh2o

Titration Statistics

Device Mode	Pressure	Duration	OA	CA	MA	All H	AHI	RERA	All Resp	RDI	SpO2	SpO2
	/cmh2o	/min	#	#	#	#	/h	#	#	/h	Min %	Mean %
CPAP	0.0	172.7	100	-	6	42	61	22	170	70	79	90
CPAP	5.0	21.7	-	-	-	-	-	-	-	-	-	-
CPAP	7.0	14.3	-	-	3	6	70	-	9	70	83	92
CPAP	8.0	11.7	3	1	4	7	77	1	16	82	84	92
CPAP	9.0	15.2	5	1	4	7	67	-	17	67	85	92
CPAP	10.0	14.1	6	2	3	4	64	-	15	64	85	92
CPAP	11.0	12.8	2	2	1	8	61	1	14	66	86	92
CPAP	12.0	13.2	7	2	1	3	59	3	16	73	86	92
CPAP	13.0	24.8	5	-	1	6	47	1	13	51	86	92
CPAP	14.0	24.3	2	9	2	4	63	-	17	63	87	93
CPAP	15.0	38.2	-	6	-	6	27	5	17	38	86	93
BiLevel	14.0/10.0	11.9	2	2	-	6	51	-	10	51	87	92
BiLevel	16.0/12.0	12.2	-	2	3	4	46	2	11	56	83	92
BiLevel	18.0/14.0	25.7	1	10	2	9	52	6	28	67	81	92
BiLevel	19.0/15.0	15.3	-	8	-	2	39	5	15	59	87	93

Device Mode	Pressure	TST	REM	Non-REM	Wake	Arousal	Arousal	LM	LM	PLM	PLM
	/cmh2o	/min	/min	/min	/min	#	/h	#	/h	#	/h
CPAP	0.0	145.5	0.0	145.5	27.2	168	69	-	-	-	-
CPAP	5.0	0.0	0.0	0.0	21.7	-	-	-	-	-	-
CPAP	7.0	7.7	0.0	7.7	6.6	8	62	-	-	-	-
CPAP	8.0	11.7	0.0	11.7	0.0	16	82	-	-	-	-
CPAP	9.0	15.2	0.0	15.2	0.0	18	71	-	-	-	-
CPAP	10.0	14.1	0.0	14.1	0.0	14	60	-	-	-	-
CPAP	11.0	12.8	0.0	12.8	0.0	13	61	-	-	-	-
CPAP	12.0	13.2	0.0	13.2	0.0	14	64	-	-	-	-
CPAP	13.0	15.3	0.0	15.3	9.5	13	51	-	-	-	-
CPAP	14.0	16.3	0.0	16.3	8.0	7	26	-	-	-	-
CPAP	15.0	26.7	0.0	26.7	11.5	11	25	-	-	-	-
BiLevel	14.0/10.0	11.9	0.0	11.9	0.0	9	45	-	-	-	-
BiLevel	16.0/12.0	11.7	4.0	7.7	0.5	9	46	-	-	-	-
BiLevel	18.0/14.0	25.2	10.0	15.2	0.5	20	48	-	-	-	-
BiLevel	19.0/15.0	15.3	0.0	15.3	0.0	16	63	-	-	-	-

Apnea/Hypopnea Statistics

Respiration	Number	%	A or H/h	Supine	Non-Supine	Mean [seconds]	Longest [seconds]
Apnea	208	64.6	36.4	208	0	29.9	52.9
Obstructive	133	41.3	23.3	133	0	32.1	49.7
Central	45	14.0	7.9	45	0	19.6	33.9
Mixed	30	9.3	5.3	30	0	35.5	52.9
Hypopnea (All):	114	35.4	20.0	114	0	35.1	80.0
Obstructive	-	-	-	-	-	-	-
Central	-	-	-	-	-	-	-
Mixed	-	-	-	-	-	-	-
RDI				46.5	0.0		
Total	322		56.4	322	0	31.8	80.0

Respiration	Number in REM	REM Index	Number in NREM	NREM Index
Apnea	3	12.9	205	37.4
Obstructive	0	0.0	133	24.3
Central	2	8.6	43	7.9
Mixed	1	4.3	29	5.3
Hypopnea (All):	7	30.0	107	19.5
Obstructive	-	-	-	-
Central	-	-	-	-
Mixed	-	-	-	-
RDI		42.9		57.0
Total	10	42.9	312	57.0

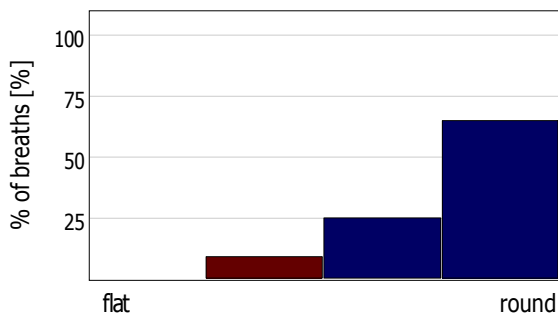
Apnea-Desaturation Relation

Desaturation	Apnea	Obstructive	Central	Mixed	Hypopnea	Total
>90%	4	1	1	2	2	6
81-90%	110	95	2	13	57	167
71-80%	2	2	0	0	0	2
61-70%	0	0	0	0	0	0
51-60%	0	0	0	0	0	0
<50%	0	0	0	0	0	0
Total	116	98	3	15	59	175

Snoring Statistics

Snoring Time:	104.2	minutes
Relative Snoring Time:	30.4	%
Number of Snoring Episodes:	247	
Average Snoring Episode Duration:	0.4	minutes
Longest Snoring Episode:	1.9	minutes

Flattening Statistics



Number of breaths detected 1569
Breaths below threshold 152 9.7%

SpO2 Statistics

Mean Oxygen Saturation: 91.0 % Saturation < 90%: 99.3 minutes 29.5 %
Lowest Oxygen Saturation: 79.0 % Saturation < 80%: 0 minutes 0.0 %
Average Desaturation: 8.2 % Saturation < 70%: - - %

Average Oxygen Saturation during wake: 92.7 %
Average Oxygen Saturation during REM: 89.5 %
Average Oxygen Saturation during NREM: 91.1 %

Desaturation Statistics

Position	Number	OD/h	Average OD Fall [%]	Average OD [%]
Total	176	30.8	8.2	85.5
Supine	176	30.8	8.2	85.5
Non-Supine	0	-	-	-

Desaturation Fall	Number	Cumulative Number	OD/h	Cumulative OD/h
Total	176	176	30.8	30.8
<5%	9	176	1.6	30.8
5%-9%	110	167	19.3	29.3
10%-20%	57	57	10.0	10.0
>20%	0	0	0.0	0.0

Desaturation Low Point	<90%	<85%	<80%	<70%	<60%
Number	167	51	0	0	0
OD/h	29.3	8.9	0.0	0.0	0.0

Heart Rate Statistics

	Mean [bpm]	(±STD) [bpm]	Min [bpm]	Max [bpm]
Total	81.0	3.8	47.0	92.0
Supine	81.0	3.8	47.0	92.0
Non-Supine	-	-	-	-
REM	82.7	3.8	70.0	90.0
NREM	80.9	3.8	47.0	92.0

Cardiac Events

Heart Rate

Average Heart Rate during Sleep:	80.88	bpm
Highest Heart Rate during Sleep:	92.00	bpm
Highest Heart Rate during Recording:	92.00	bpm
Lowest Heart Rate during Sleep:	47.00	bpm
Lowest Heart Rate during Recording:	47.00	bpm

Arrhythmias

Asystole:	Longest Pause	sec
Sinus Tachycardia:	Highest Heart Rate	bpm
Narrow Complex Tachycardia:	Highest Heart Rate	bpm
Wide Complex Tachycardia:	Highest Heart Rate	bpm
Bradycardia:	Lowest Heart Rate:	bpm
Atrial Fibrillation:		
Other Arrhythmia:		

Position Statistics

Position	Index time [minutes]	Relative [%]	Transitions	A+H/h
Supine	342.5	100.0		56.4
Left	0.0	0.0		-
Prone	0.0	0.0		-
Right	0.0	0.0		-
Upright	0.0	0.0		-
Unknown	0.0	0.0		-
Total	342.5	100.0	4 (0.7/h)	

Respiratory Data Integrity

Flow:	100.0 %	Percentage of time with no artifacts. Low values, less than 90%, normally indicate bad or low signal quality.
SpO2:	98.3 %	
Pulse:	98.3 %	

Scoring Information

Scorer Name: 19
Scoring Palette: Sleep Scoring
Comments:

Scoring Date: 30/10/2009 11:51:18

Recording Information

Trace: Activity_CU (Signal: Activity.Gravity-Gravity)
Trace: M1 (Signal: EEG-A1)
Trace: M2 (Signal: EEG-A2)
Trace: C3 (Signal: EEG-C3)
Trace: C4 (Signal: EEG-C4)
Trace: F3 (Signal: EEG-F3)
Trace: F4 (Signal: EEG-F4)
Trace: O1 (Signal: EEG-O1)
Trace: O2 (Signal: EEG-O2)
Trace: EKG (Signal: EKG)
Trace: Chin (Signal: EMG.Submental-Chin)
Trace: Left leg (Signal: EMG.Tibialis-Leg.Left)
Trace: Right Leg (Signal: EMG.Tibialis-Leg.Right)
Trace: EOG Left (Signal: EOG-Left)
Trace: EOG Right (Signal: EOG-Right)
Trace: Light_CU (Signal: Luminance-LDR)
Trace: Position_CU (Signal: Pos.Angle-Gravity)
Trace: Elevation_CU (Signal: Pos.Elevation-Gravity)
Trace: Gravity X (Signal: Pos.Gravity-X)
Trace: Gravity Y (Signal: Pos.Gravity-Y)
Trace: Pulse (Signal: Pulse.Averaged-Probe)
Trace: Flow_CU (Signal: Resp.Flow-Cannula.Nasal)
Trace: CPAP Flow (Signal: Resp.Flow-FlowGenerator)
Trace: Thermistor (Signal: Resp.FlowTemp-Thermistor.NasalOral)
Trace: Abdomen (Signal: Resp.Movement-Inductive.Abdomen)
Trace: Thorax (Signal: Resp.Movement-Inductive.Thorax)
Trace: Nasal Pressure (Signal: Resp.Pressure-Cannula.Nasal)
Trace: CPAP Pressure (Signal: Resp.Pressure-FlowGenerator)
Trace: P_Snore (Signal: Resp.Snore-Piezo.Neck)
Trace: SpO2 (Signal: SpO2.Averaged-Probe)
Trace: SpO2-Quality_CU (Signal: SpO2.Averaged-Quality)

Comments

Analysis Criteria

Respiratory Analysis Profile: AASM Standard
Report Profile: default

Desaturation detection:

An oxygen desaturation event was detected when the oxygen saturation fell by at least 4.0%. The slope of the fall had to be between 0.1% and 5.0% each second. The fall was not allowed to last longer than 120 seconds. The plateau before the rise had to be shorter than 20 seconds and the slope of the rise had to be faster than 0.5% each second. All desaturations events that fell below 50.0% were excluded as artifacts.

Apnea detection:

A sleep apnea event was detected when a 10.0 second(s) interval of the signal dropped below 10.0% of the reference amplitude.

The reference amplitude was calculated as the mean value of the peak amplitudes found in a period of 100 seconds preceding the event.

All events lasting longer than 120.0 seconds were excluded.

Hypopnea detection:

A hypopnea event was detected when a 10.0 second(s) interval of the signal dropped below 70.0% of the reference amplitude.

The reference amplitude was calculated as the mean value of the peak amplitudes found in a period of 100 seconds preceding the event.

All events lasting longer than 120.0 seconds were excluded. For a Hypopnea to be scored, a desaturation event had to occur no later than 30.0 seconds after the start of the Hypopnea.

Snoring detection:

Minimum number of snores needed to create a snoring period are 3. Snoring periods are merged into one if the interval between them was less than 10.0 s. Snoring periods are allowed to continue through movement periods.

Pulse artifact detection:

An artifact was scored in the Pulse trace where Pulse values below 25 or above 250 were found.

Automatic detection of events:

Events were not detected during movement period, 10.0 seconds after a movement period or in upright position or during wake if present.

Index Time = Analyzed Time - (Movement Time(+ interval of no events) + Upright Time + Wake Time).

The Index Time is derived from the total Analyzed Time minus the total Movement (and interval of no events), Upright position and Wake Time (if present) values.

Valid pulse interval is from 25.0 bpm to 250.0 bpm but not during artifacts. Values excluded from pulse spanned 5.7 minutes.

Valid SpO2 interval is from 50.0 % to 100.0 % but not during artifacts. Values excluded from SpO2 spanned 5.9 minutes.

Sleep Efficiency is calculated from Total Sleep Time/Total Recording Time.

Sleep onset is calculated as the duration from analysis start (Lights off) to the first epoch of Sleep.

Latency to stage N1 is calculated from analysis start (lights off) until 30.0 seconds of consecutive N1 sleep.

Latency to stage N2 is calculated from analysis start (lights off) until 30.0 seconds of consecutive N2 sleep.

Latency to stage N3 is calculated from analysis start (lights off) until 30.0 seconds of consecutive N3 sleep.

Latency to Stage R is calculated from sleep onset until 30.0 seconds of continuous R sleep.