

# **Central Sleep Apnea Case Studies**

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# “Greg” 53 M

- **HSAT 2017: Dx REI = 48.4, min SpO2 88%**
- 6', 220 lbs, BMI 29.83, Epworth 7/24, neck = 16.9 in
- Patient hx of Hypertension, GERD, OSA
- Currently using Auto PAP 5 – 8 cmH<sub>2</sub>O, AHI = 15 w/significant centrals
- Titration study ordered to fine tune therapy settings

# “Greg” 53 M

- Started with patient’s preferred mask AirFit P10, sleep latency = 4 min
- Titration initiated on CPAP for centrals
- Leak increased slightly and mask was changed to AirFit F40
- Centrals increased after adjustments, mask changed back to P10 as

Therapy Detail	TRT (min)	TST (min)	REM (min)	NREM (min)	Apnea C/O/M	Hypop C/O	Total Resp Count	AHI	CAHI	AHI Supine	Supine REM AHI	< 88% (min)	SpO2% Mean/Low
CPAP (CPAP/Mask/Humidifier/Pressure Relief)													
5/P/H/-	15.2	5.2	0.0	5.2	6/0/0	0/1	7	<b>80.8</b>	69.2	120.0	N/A	0.0	94/90
7/P/H/-	19.0	19.0	0.0	19.0	3/0/0	0/1	4	<b>12.6</b>	9.4	N/A	N/A	0.0	94/91
9/P/H/-	39.4	36.2	0.0	36.2	0/0/0	0/0	0	<b>0.0</b>	0.0	N/A	N/A	0.0	94/92
9/F/H/-	16.2	15.6	0.0	15.6	0/1/0	0/0	1	<b>3.8</b>	0.0	3.8	N/A	0.0	94/92
11/F/H/-	61.1	35.1	13.7	21.4	14/0/0	0/1	15	<b>25.6</b>	23.9	25.6	8.8	0.0	94/90
13/F/H/-	29.6	20.6	10.8	9.8	4/0/0	0/0	4	<b>11.6</b>	11.6	11.6	0.0	0.0	95/93
13/P/H/-	4.3	3.3	0.0	3.3	4/0/0	0/0	4	<b>72.0</b>	72.0	72.0	N/A	0.0	94/92
10/P/H/-	16.2	16.2	0.0	16.2	11/0/0	0/0	11	<b>40.7</b>	40.7	40.7	N/A	0.0	95/93



# “Julie” 67 F

- **HSAT 2023: Dx REI = 62, min SpO2 67.6%, slept supine 100%**
- 5'2", 124 lbs, BMI 22.68, Epworth 7/24, neck = 12.6 in
- Patient hx of RA, HTN, Atrial Fibrillation, Hypothyroidism, Migraines, diabetes
- Due to severity of sleep apnea, titration study was ordered and so began difficulty controlling central sleep apnea

# “Julie” 67 F

- First titration CPAP to BiLevel
  - CPAP titrated from 5 – 11 cmH<sub>2</sub>O with significant OSA
  - BiLevel initiated from 10/6 cmH<sub>2</sub>O – 13/9 cmH<sub>2</sub>O at which point, central apneas became dominate
  - Optimal pressure not found with an overall CAHI of 19.9/ hr
- Second titration BiLevel to BiLevel S/T
  - BiLevel titrated from 10/6 cmH<sub>2</sub>O – 22/18 cmH<sub>2</sub>O with persistent CAHI 16.8
  - BiLevel S/T initiated from 17/13 cmH<sub>2</sub>O – 20/16 cmH<sub>2</sub>O and back-up rate 12, AHI = 4.4 with controlled centrals

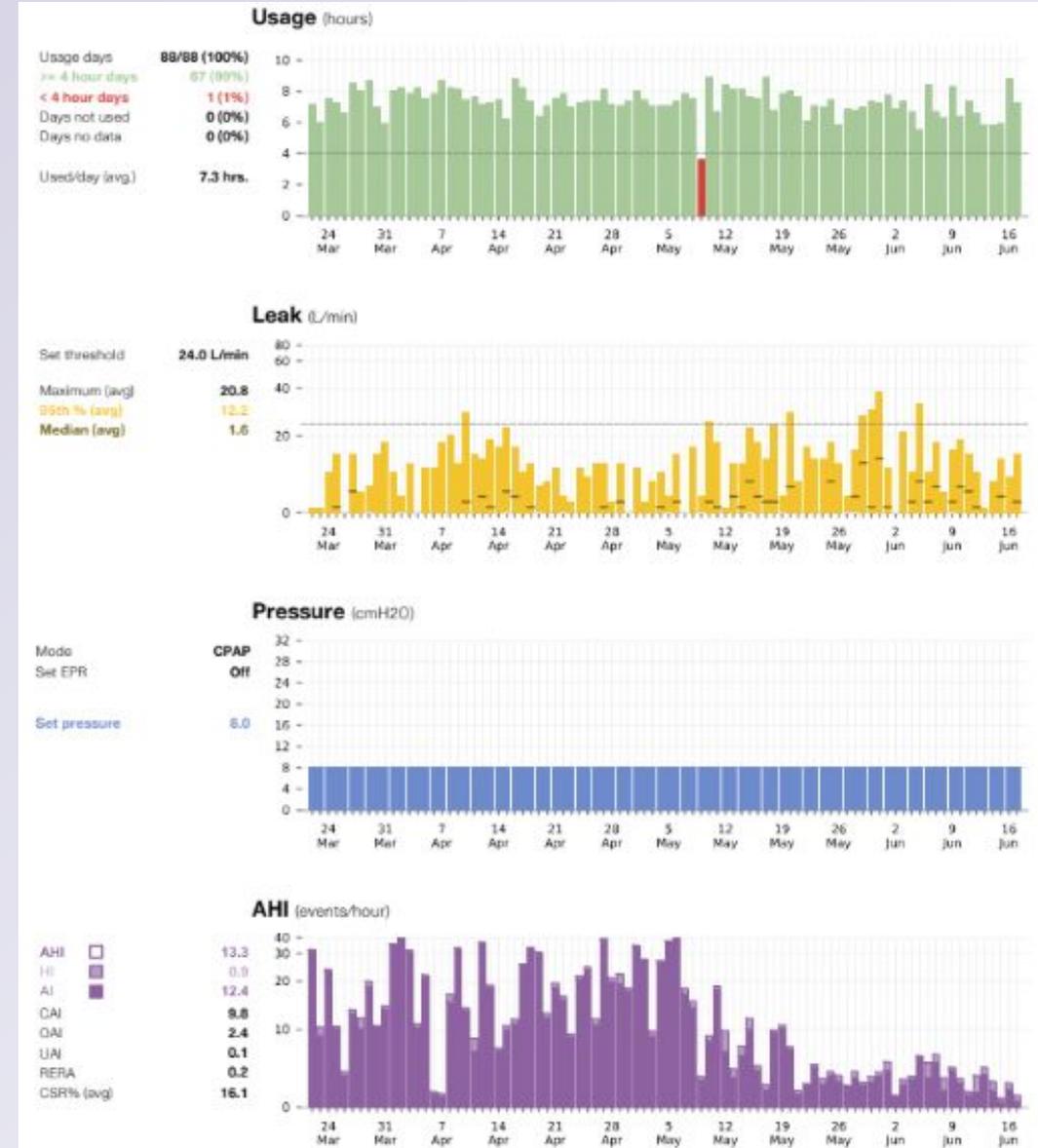
# “Julie” 67 F

- Third titration ordered:
  - compliance report demonstrating centrals
  - Epworth is now 15/24
  - Patient reported sleeping was uncomfortable
- Tech used an airplane neck pillow during titration to keep chin up while sleeping
- Titrated CPAP 5 – 13 cmH<sub>2</sub>O, trialed BiLevel 17/13 cmH<sub>2</sub>O
  - CPAP 13 cmH<sub>2</sub>O: AHI = 0.9, CAHI = 0.9

Therapy Detail	TRT (min)	TST (min)	REM (min)	NREM (min)	Apnea C/O/M	Hypop C/O	Total Resp Count	AHI	CAHI	AHI Supine	Supine REM AHI	< 88% (min)	SpO <sub>2</sub> % Mean/Low
CPAP (CPAP/Mask/Humidifier/Pressure Relief)													
5/F/H/-	52.8	38.8	0.0	38.8	1/6/0	0/1	8	12.4	1.5	12.4	N/A	0.0	96/88
6/F/H/-	19.9	18.9	3.2	15.7	1/3/0	0/1	5	15.9	3.2	15.9	37.5	0.2	96/86
7/F/H/-	5.8	5.8	5.8	0.0	0/3/0	0/0	3	31.3	0.0	31.3	31.3	1.8	91/78
9/F/H/-	10.3	10.3	1.5	8.7	0/10/0	0/0	10	58.5	0.0	58.5	77.8	0.1	94/86
11/F/H/-	11.6	10.6	0.0	10.6	0/3/0	0/1	4	22.7	0.0	22.7	N/A	0.5	95/85
12/F/H/-	6.2	6.2	0.0	6.2	0/0/0	0/5	5	48.1	0.0	48.1	N/A	0.6	93/84
13/F/H/-	285.2	261.7	57.5	204.2	4/0/0	0/0	4	0.9	0.9	0.9	4.2	0.0	96/84
BiLevel (IPAP/EPAP/Backup Rate/Mask/Humidifier/Pressure Relief)													
17/13/0/F/H/-	71.3	68.3	19.5	48.8	2/0/0	0/0	2	1.8	1.8	1.8	6.2	0.0	97/92

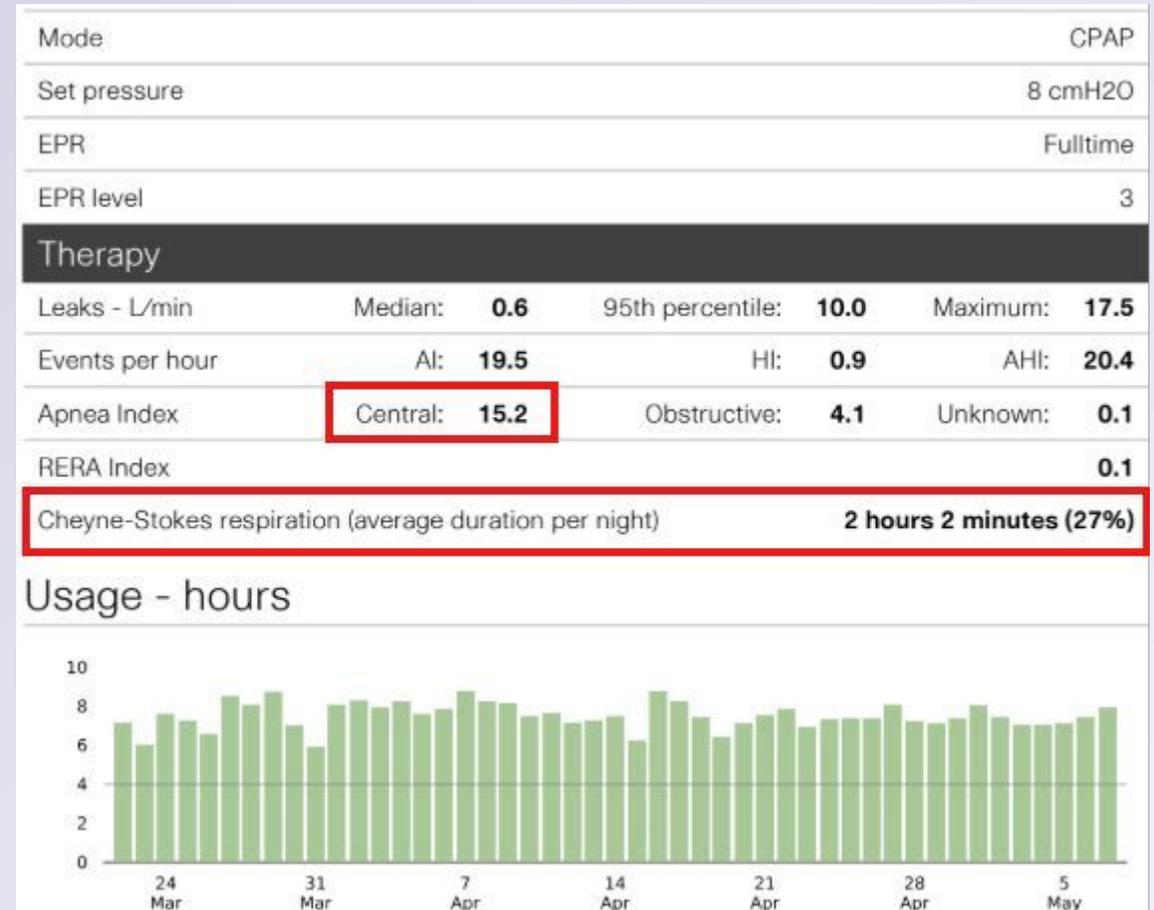
# “James” 80M

- RePAP
- Dx AHI: 19.2 in 2015
- Hx of Hypothyroidism, RA, Benign Prostatic Hyperplasia, Depression, and Hypertension



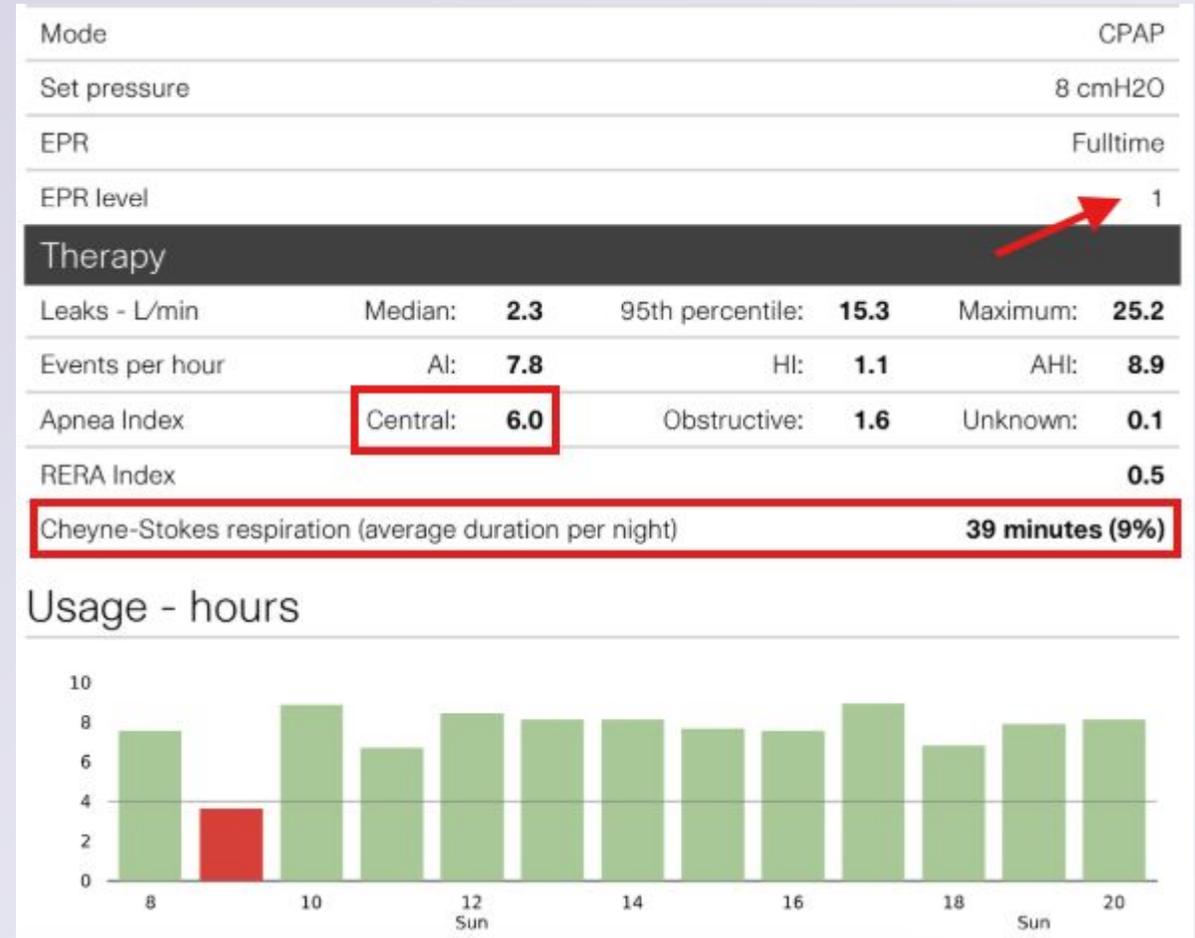
# “James” 80 M

- Day 1 – Day 47
- Tx AHI = 20.4 increased from Dx AHI = 19.2
- 100% usage compliance
- Leak within normal range
- CSR > 2 hrs, CAI = 15.2



# “James” 80 M

- Day 48 – Day 60
- **EPR dropped from 3 to 1**
- CSR reduced significantly from 2 hrs to 39 min
- Central Apneas lowered from 15.2 to 6.0



# “James” 80 M

- Day 61 – Day 90
- Compliance 100%
- Leak still within normal range
- EPR turned off
- CSR down to 4 minutes per night
- CAI now at 2.4/hr

Mode	CPAP		
Set pressure	8 cmH2O		
EPR	Off		
<b>Therapy</b>			
Leaks - L/min	Median: <b>2.7</b>	95th percentile: <b>14.3</b>	Maximum: <b>23.9</b>
Events per hour	AI: <b>2.7</b>	HI: <b>0.7</b>	AHI: <b>3.4</b>
Apnea Index	<b>Central: 2.4</b>	Obstructive: <b>0.1</b>	Unknown: <b>0.1</b>
RERA Index	<b>0.3</b>		
Cheyne-Stokes respiration (average duration per night)			<b>4 minutes (1%)</b>

## Usage - hours

