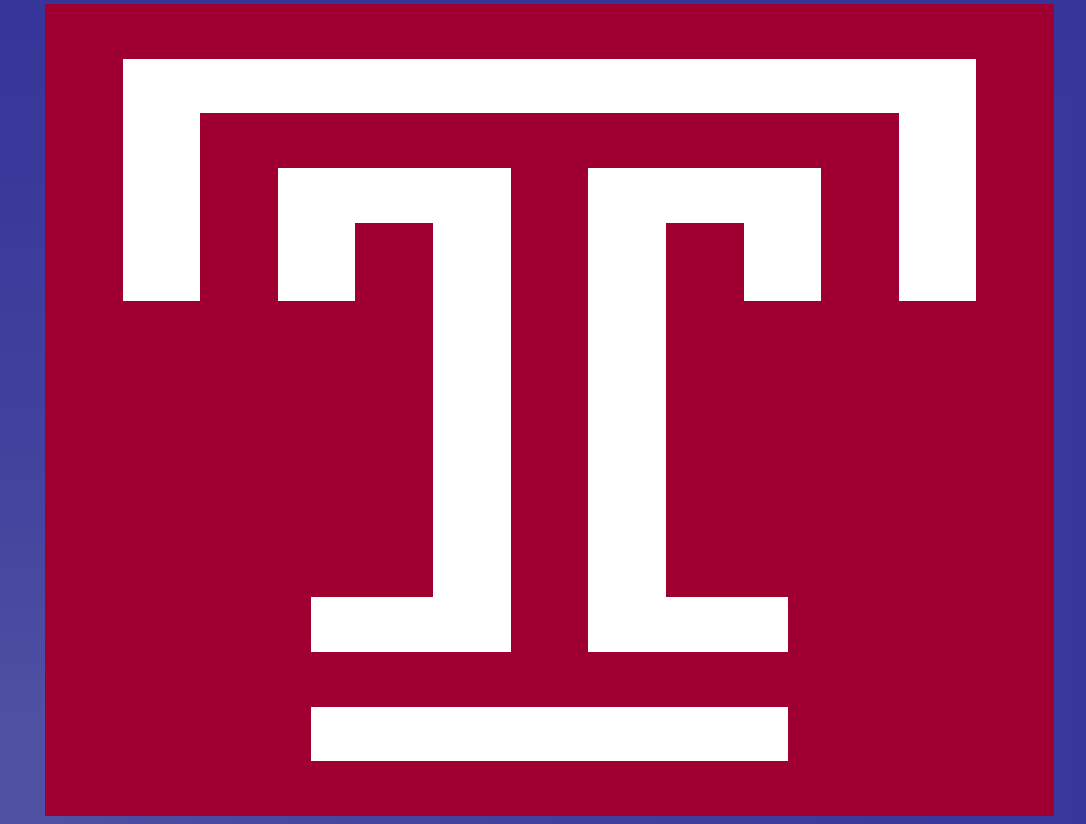


Cost Effectiveness of Incorporating Positional Therapy into a Treatment Algorithm for Obstructive Sleep Apnea



Ramos FL, Chatila W, Shariff T, Jaffe F, D'Alonzo GE, Vega ME, Krachman SL
Temple University School of Medicine, Philadelphia, PA,

Abstract

Introduction: Positional obstructive sleep apnea (OSA) is prevalent among patients with OSA. Positional therapy has been shown to be as effective as continuous positive airway pressure (CPAP) at normalizing the apnea-hypopnea index in positional OSA. However, a cost analysis of incorporating positional therapy into the treatment of OSA has not been performed.

Methods: Study population was composed of law enforcement personnel undergoing screening for OSA. Patients at high risk for OSA based on a questionnaire underwent a home sleep test (HST). Those with positional OSA (non-supine apnea-hypopnea index [AHI] <5 events/hr) were prescribed a positional device. The remainder with OSA received either an auto-titrating CPAP, an oral appliance, or conservative management. Information on total costs for auto-titrating CPAP, and the positional device were obtained from a private insurer.

Results: Forty-nine patients (35 males, 51 ± 9 yrs, BMI 36 ± 6 kg/m²) were identified as having a high risk for OSA based on a questionnaire. Forty-six of the 49 patients who did not have a prior history of OSA underwent a HST. Forty-two of the 46 patients (91%) were diagnosed with OSA (AHI 26 ± 21 events/hr) after the HST. Twelve patients (29%) had positional OSA and received a positional device and 23 patients (55%) received CPAP therapy. One subject (2%) was treated with an oral appliance and 6 patients (14%) were treated with weight management. Total initial costs for the 23 patients who received CPAP therapy was \$22,137.27 (\$962.49/patient) as compared to \$3479.40 (\$289.95/patient) for the 12 patients treated with the positional device, resulting in a total cost of \$25,616.67. In contrast, if all 35 patients had received CPAP therapy, the total cost would have been \$33,687.15, resulting in a 24% cost savings by incorporating positional device therapy into the treatment algorithm.

Conclusion: Incorporating positional therapy into an algorithm for the treatment of OSA is cost effective.

Protocol

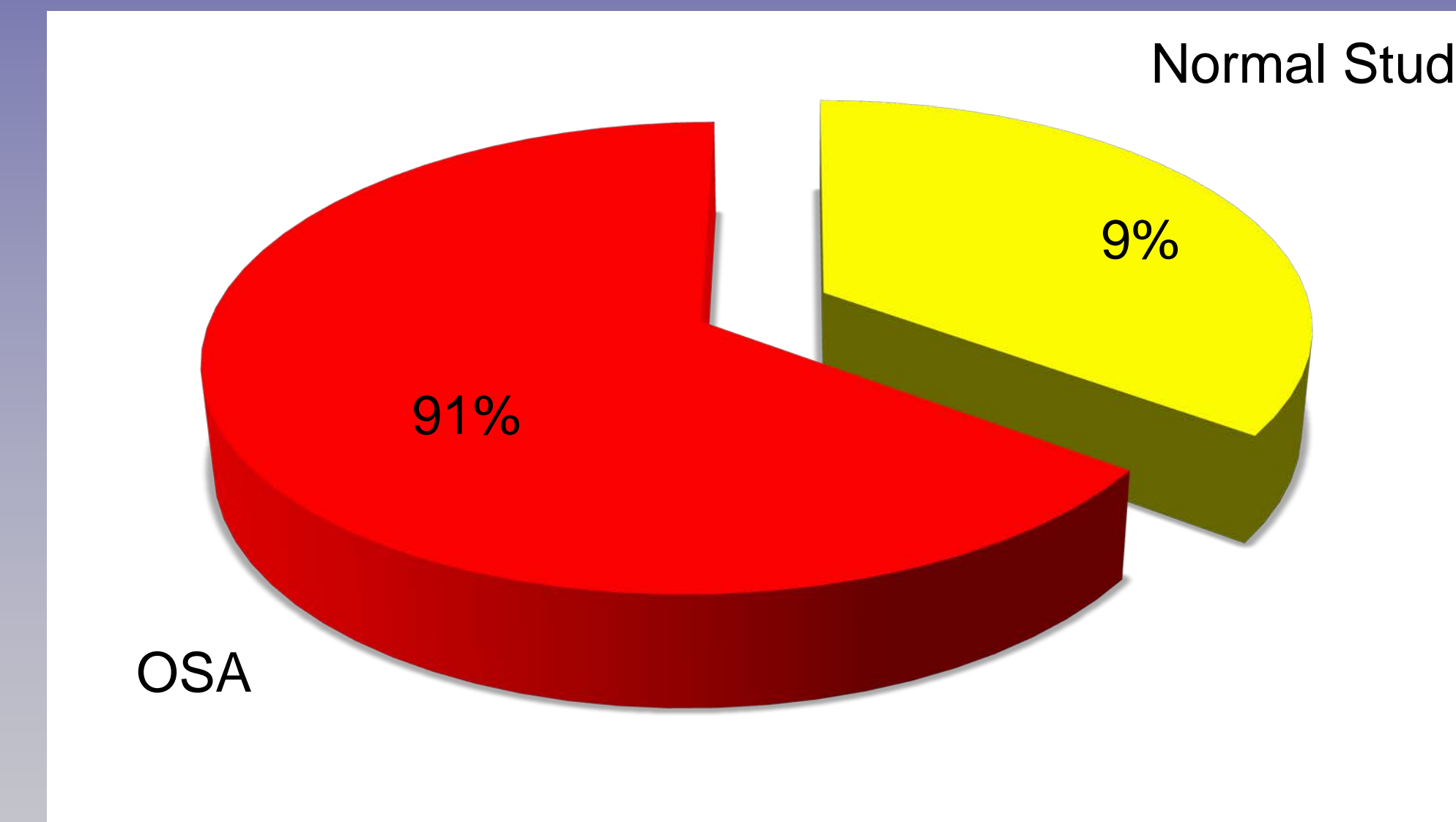
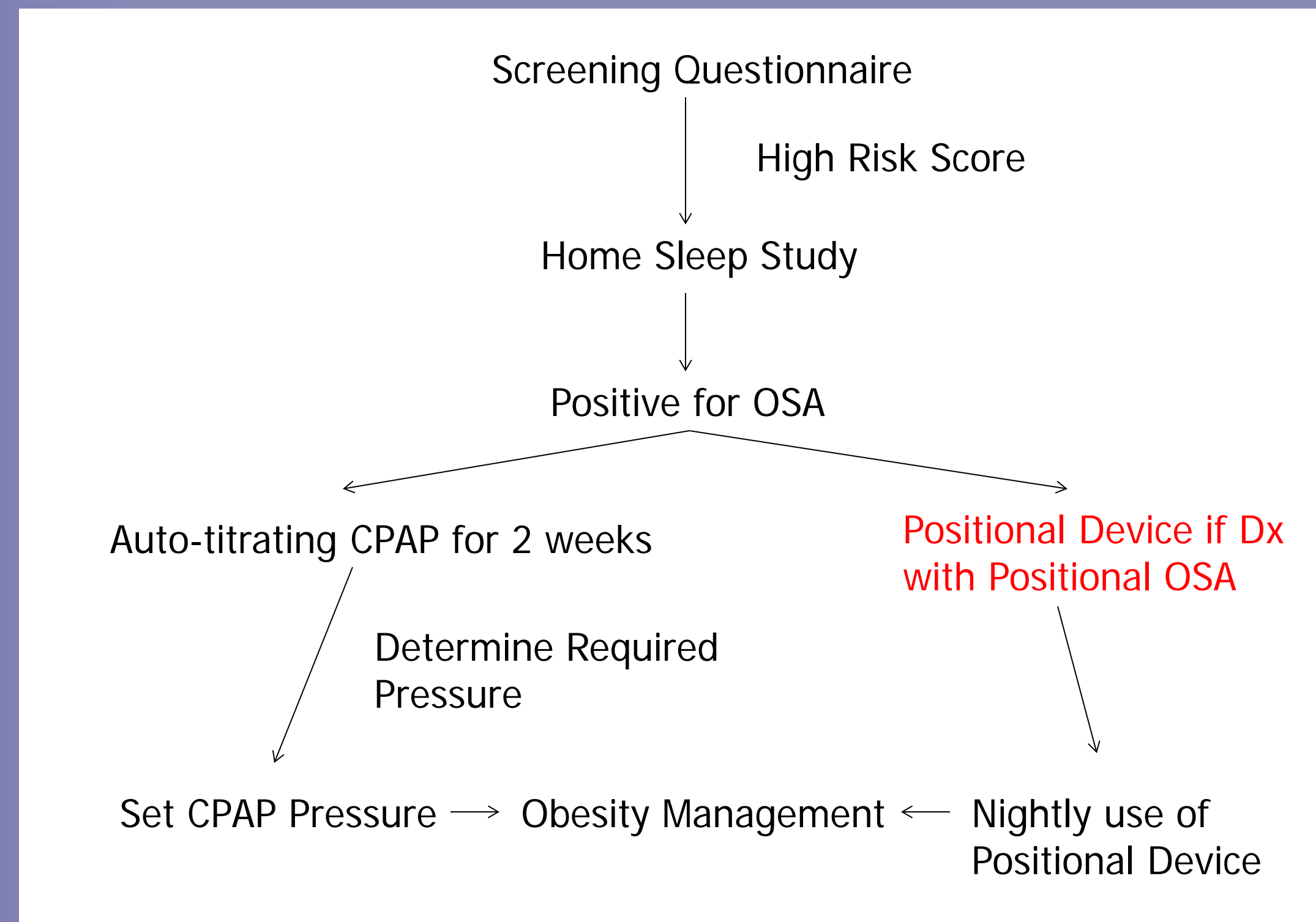


Figure 1. The percentage of patients screened that had OSA on their home sleep test.

- 31 CPAP patients & 13 Zzoma Patients
- \$29,837.19 + \$3,769.35 = \$33,606.54

- If all 44 patients had been Rx CPAP
- \$42,349.56

- Cost Savings by Incorporating Positional Therapy

21%

Summary

- In police union members, 91% demonstrated OSA with the use of a screening questionnaire and a home sleep test.

- In those patients with OSA, 29.6% had positional OSA, with 24% accepting positional therapy.

- Including positional therapy as a treatment option in those patient with positional OSA resulted in a 21% cost savings.

Introduction

- Positional obstructive sleep apnea (OSA) is prevalent among patients with OSA (1).

- Positional therapy has been shown to be as effective as continuous positive airway pressure (CPAP) in normalizing the apnea-hypopnea index (AHI) in patients with positional OSA (2).

- However, no previous study has performed a cost analysis of incorporating positional therapy into the treatment of OSA.

Purpose

- We hypothesized that incorporating positional therapy (Zzoma Positional Device) into an algorithm for the diagnosis and treatment of OSA would result in a significant cost savings.

Methods

Patient Selection: Patients included members of the Philadelphia Law Enforcement Health Benefits (LEHB) organization who were being screened for possible OSA.

Screening Questionnaire: Patient completed a screening questionnaire for OSA that has been previously validated (3). Those patients with a total score of 6-10 (high risk) or ≥11 (very high risk) for OSA were included in the study.

Home Sleep Test (HST): All patients underwent a HST using the Nox T3 device.



Zzoma Positional Device

Results

Table 1. Baseline Characteristics* N = 59

Variable	Value
Age, yrs	49 ± 9
Male : Female	45 : 14
BMI, kg/m ²	35.2 ± 5.6
Epworth Sleepiness Scale	10.6 ± 5.0
Heart Rate, beats/min	69 ± 10
Recording Time Analyzed, min	377 ± 76
Sleep Efficiency, %	87 ± 16
Apnea-Hypopnea Index, events/hr	22.4 ± 20.1
Mean SaO ₂ , %	93 ± 2.4
Lowest SaO ₂ , %	79 ± 8

*Data presented as the mean ± SD unless otherwise indicated. BMI – body mass index

Table 2. Comparison of Patients With and Without Positional OSA on their Home Sleep Test

Variable	Total Group (N=54)	Without Positional OSA (N=38)	With Positional OSA (n=16)	P Value
Age, yrs	49 ± 9	50 ± 9	47 ± 8	0.317
Male : Female	43 : 11	31 : 7	12 : 4	1.0
BMI, kg/m ²	35.2 ± 5.3	36.4 ± 5.1	32.4 ± 5.1	0.009
Epworth Sleepiness Scale	10.6 ± 5.0	11.8 ± 4.8	7.8 ± 4.5	0.009
Heart Rate, beats/min	69 ± 10	70 ± 10	68 ± 13	0.442
Recording Time Analyzed, min	373 ± 77	365 ± 81	395 ± 64	0.218
Sleep Efficiency, %	86 ± 17	83 ± 18	93 ± 8	0.007
Apnea-Hypopnea Index, events/hr	24.2 ± 20.1	30.0 ± 21.3	10.4 ± 4.3	< 0.001
Mean SaO ₂ , %	93 ± 2	92 ± 3	93 ± 1	0.54
Lowest SaO ₂ , %	79 ± 8	78 ± 8	82 ± 7	0.024

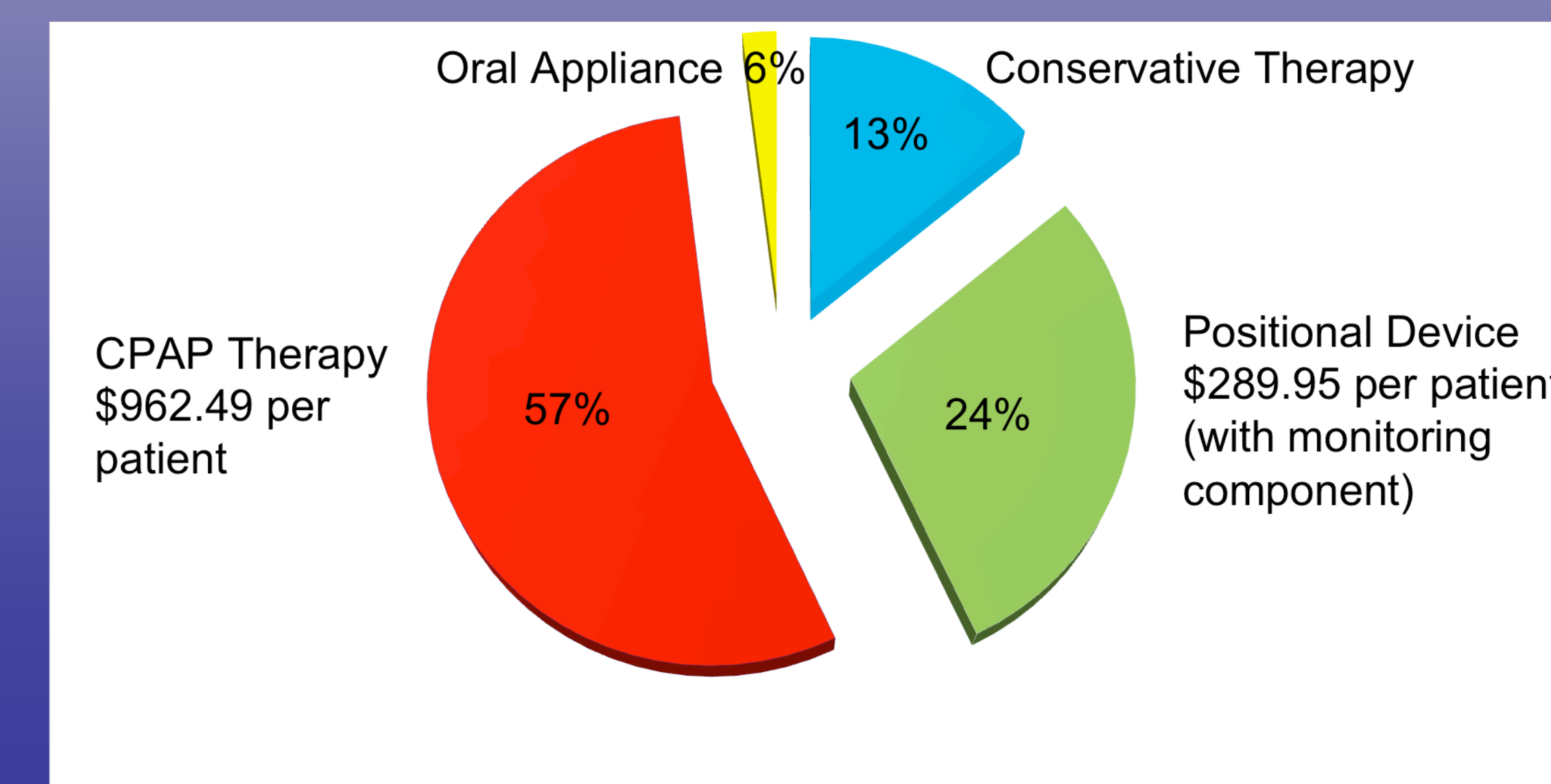


Figure 2. Therapies accepted by patients to treat their OSA

Conclusion

- Incorporating positional therapy into the treatment algorithm for the treatment of OSA is cost effective

References

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