

Event and Cost Offsets of a Comprehensive Program to Improve Adherence of Continuous Positive Airway Pressure Treatment in Obstructive Sleep Apnea Patients in Spain.

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INTRODUCTION

Continuous positive airway pressure (CPAP) therapy is the first-line treatment for obstructive sleep apnea (OSA). Lack of adherence is the main challenge to CPAP effectiveness. A multicentre, randomized controlled trial (RCT) showed that an individualized sleep apnea adherence improvement program (PIMA) based on patient stratification and personalized care plans, improved adherence to CPAP treatment versus standard follow up.

PIMA : Patient Support Program by Vitalaire Spain, an entity of Air Liquide Santé International



OBJECTIVE

To estimate the clinical and economic outcomes of PIMA from the payer (Spanish Healthcare System) and societal perspectives.

METHODS

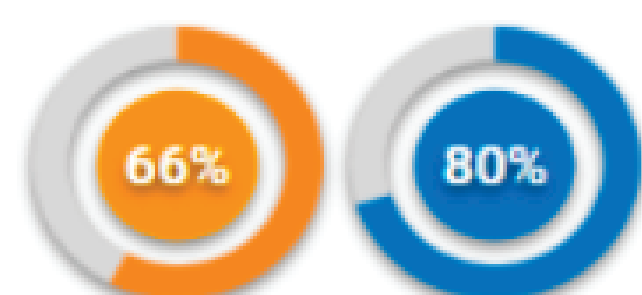
A health economic model was developed in Microsoft® Excel to estimate the clinical events avoided, healthcare resource utilization and costs associated with CPAP therapy with standard follow up, versus CPAP therapy that implements PIMA, according to adherence improvement.

An incremental impact was estimated over a 1-year time horizon after the onset of CPAP therapy as the difference with and without PIMA.

Direct costs included all direct medical costs (medical visits, hospital, emergency department (ED), and intensive care unit (ICU) admissions) for cardiovascular disease occupational and road traffic accidents. Direct non-healthcare costs included patient transport and medical fees for occupational accidents. Indirect costs included in the societal perspective were the costs associated with days of work missed in active employment for care.

MODEL INPUTS

Rate of adherent patients* with and without PIMA at 1 year¹



Standard follow-up group (N=105)
PIMA group (N=108)

* Defined by mean number of hours of CPAP use per day ≥ 4

Cost per patient for the first year of CPAP treatment²

	Adherent (n=309)	Non-Adherent (n=64)	p
Direct healthcare cost (mean±SD)	354 € ±568	1 855 € ±2914	<.001
Direct non-healthcare cost (mean±SD)	20€ ±31	76€ ±158	<.05
Indirect cost (mean±SD)	65€ ±421	1 111€ ±2423	<.001

Costs correspond to those of the Catalan Health Service (CatSalut) for the year 2013 inflated to 2022 price levels.³

The cost of PIMA implementation was absorbed into the cost of CPAP device maintenance service such that the cost of CPAP therapy with and without PIMA is the same. The model was used to simulate different scenarios of the eligible patient population.

RESULTS

SIMULATION 1:

Impact if all patients treated by CPAP were followed by PIMA
-> 775 850 patients in 2021

SIMULATION 2:

Impact if all NEW patients treated by CPAP were followed by PIMA
-> 35 000 patients in 2021

SIMULATION 3:

Impact of the patients already followed by PIMA
-> 5 000 patients until April 2022

OSA events avoided attributable to PIMA over the 12-month period:

	SIMULATION 1	SIMULATION 2	SIMULATION 3
Cardiovascular events	- 32 260	- 1 455	- 208
Road traffic accidents	- 8 662	- 391	- 56
Occupational accidents	- 1 724	- 57	- 8

Number of healthcare resource avoided attributable to PIMA over the 12-month:

	SIMULATION 1	SIMULATION 2	SIMULATION 3
Specialized care visits	- 150 003	- 6 767	- 967
Emergency department visits	- 53 008	- 2 391	- 342
Hospital days	- 16 594	- 749	- 107
Hospital admissions	- 30 811	- 1 390	- 199
ICU admissions	- 5 476	- 247	- 35
Work days missed	- 2 071 364	- 93 443	- 13 349

Cost avoided attributable to PIMA over the 12-month period:

Perspective	TYPE OF COST	SIMULATION 1	SIMULATION 2	SIMULATION 3
Health Care System (Payer)	Direct medical cost	- 186 734 338 €	- 8 423 925 €	- 1 203 418 €
	Direct non-medical cost	- 13 043 828 €	- 588 431 €	- 84 062 €
	TOTAL DIRECT COSTS	- 199 778 166 €	- 9 012 355 €	- 1 287 479 €
Societal	Indirect cost	- 292 831 954 €	- 13 210 180 €	- 1 887 169 €
	TOTAL DIRECT AND INDIRECT COSTS	- 492 610 120 €	- 22 222 536 €	- 3 174 648 €

These results correspond to net direct and total cost savings of €257 and €635 per patient per year respectively.

CONCLUSIONS

Widespread use of interventions to increase CPAP adherence based on patient stratification and personalized care plans, such as PIMA, could represent a significant immediate health benefit to patients and substantial cost savings for the Healthcare System and society as a whole. In the first year alone, PIMA is estimated to save 25% and 42% in direct and total costs respectively.

REFERENCES

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