

# BUDGET IMPACT MODEL (BIM) OF THE NEWLY PROPOSED VALUE-BASED POSITIVE AIRWAY PRESSURE (PAP) THERAPY BASED ON TELEMONITORING IN PATIENTS WITH OBSTRUCTIVE SLEEP APNEA (OSA) IN SPAIN.

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## **Introduction and Objective**

Currently, in Spain the home care model for OSA patients with PAP treatment is standard of care for all patients. Optimal benefits of PAP therapy are often not achieved due to poor treatment adherence, which commonly starts in the first few weeks of treatment<sup>1</sup>. Remote monitoring of PAP therapy adherence via the ResMed system allows rapid identification of patients needing support, and significantly improves treatment adherence compared with non-cloud-connected PAP therapy<sup>2-6</sup>. In public tenders, the adherence of patients and individual needs are not considered in Spain. The value-based care model aims to improve the adherence by identifying non-adherent patients at an earlier stage with telemonitoring and provide additional educational support. This economic analysis shows the implementation and over four-year budget impact of the newly proposed model from the National Health System perspective.

### \*Educational program includes:

- Follow-up by teleconsultation (or face-to-face if needed) to:
- Early detect side effects and/or poor adherence
- Segmentation of the patients and adapting the therapy to the patient's needs Suspend treatment if needed
- Possibility to set up a CPAP school with an expert patient to guide the patient (on demand)

### **Proposed Model Current Model Key Changes:** 40% Non-adherent **Adherent** Non-Adherent All patients ✓ Telemonitoring is a key patients enabler for patient Standard Home Care segmentation Standard Home Care Standard Home Care treatment – no patient treatment treatment segmentation ✓ Utilization of Non –adherent patients performance indicators direct healthcare use costs **Telemonitoring Telemonitoring** ✓ Patient segmentation **5,24 times** more than adherent patients 7 ✓ Personalized therapy Educational Program\* **Key Points:**

Figure 1: OSA patients care pathway

- Adherence is improved by segmenting patient profiles and adjusting the therapy according to the patients' needs.
- Improved adherence translates into reduced health care consumption.

### Methods

**Table 1:** Patients at risk of non-adherence in the current and value-based model

Population: 100,000 patients	Current model	Value-based model			
Patient profile	Total # of patients	Patient with adherent profile	Patients at risk of non- adherence	Total # of patients	
Number of patients included	100,000	60,000	40,000	100,000	
Adherent patients	60%			<b>76</b> %	
Number of adherent patients	60,000	60,000	16,000	76,000	
Number of non-adherent patients	40,000	0	24,000	24,000	

A 16% increase in patients' adherence is targeted

In order to estimate the economic impact of the implementation of the value-based care model, a budget impact model was developed. The BIM was calculated for a hypothetical cohort of 100,000 OSA patients. For the base case scenario, direct healthcare, non-healthcare and indirect costs for adherent and non-adherent patients were obtained from a recent study in Spain<sup>7</sup>. 60% adherence rate<sup>8,9</sup> was assumed as baseline based on published literature and an increase of 16%<sup>10</sup> is targeted with the new model which is observed as a result of remote monitoring during Covid-19 pandemic. An average cost (260€/year) for current PAP therapy was assumed provided by home care providers and for the proposed model a lower rate was estimated for the basic therapy provision (215€), in addition to telemonitoring (45€) for all patients and additional trainings (90€) for non-adherent group. In order to estimate the budget impact over 4 years, 7.5% increase in new patients and 2.5% drop out rate are assumed.

### Results

Implementing the new model would cost 3.6 M€ for a hypothetical cohort of 100,000 patients and create a cost-saving of 20.4M€ in the first year related to direct healthcare costs. For every euro of investment in the value-based model, there is a potential cost-saving of 6.7€ in direct healthcare costs and 4.9€ in non-healthcare & indirect costs. Cost per adherent patient in the current model is 433€ and reduces to 389€ in the value-based model.

**Table 2:** Cost-savings associated with the use of telemonitoring and educational support

	Current model		Value-based model		
	Adherent	Non-adherent	Adherent	Non-adherent	
Target population		100,000		100,000	
Adherence rate	60%	40%	60%	40%	
Number of patients	60,000	40,000	60,000	40,000	
CPAP therapy cost/year	260 €	260 €	215 €	215 €	
Remote Monitoring/year			45 €	45 €	
Additional training support/year				90 €	
Total cost/year	260 €	260 €	260 €	350 €	
Budget impact for VBM provision	15,600,000 €	10,400,000 €	15,600,000 €	14,000,000 €	
		26,000,000 €		29,600,000 €	
Net budget impact of VBM	3,600,000				
	Adherent	Non-adherent	Adherent	Non-adherent	
Adherence rate	60%	40%	76%	24%	
Number of patients	60,000	40,000	76,000	24,000	
Cost of diagnosis	358 €	358 €	358 €	358 €	
Direct healthcare costs /ptn <sup>7</sup>	354 €	1,855 €	354 €	1,855 €	
Direct healthcare costs	42,720,000 €	88,520,000 €	54,112,000 €	53,112,000 €	
		131,240,000 €		107,224,000 €	
Cost savings				-24,016,000 €	
Net budget impact (only direct healthcare cost factored)	-20,416,000 €				
	Adherent	Non-adherent	Adherent	Non-adherent	
Direct non-healthcare costs /ptn <sup>7</sup>	20 €	76 €	20 €	76 €	
Indirect costs /ptn <sup>7</sup>	65 €	1,111 €	65 €	1,111 €	
Direct non-healthcare & indirect costs	5,100,000 €	<b>47,480,000 €</b>	6,460,000 €	28,488,000 €	
		52,580,000 €	, 11,111	34,948,000 €	
Cost savings		, , ,		-17,632,000 €	
Total Cost Savings (indirect healthcare &indirect costs)				-41,648,000 €	
Net Budget Impact (all costs factored)				-38,048,000 €	

Figure 2: Mean return on investment for each euro invested in the value-based model

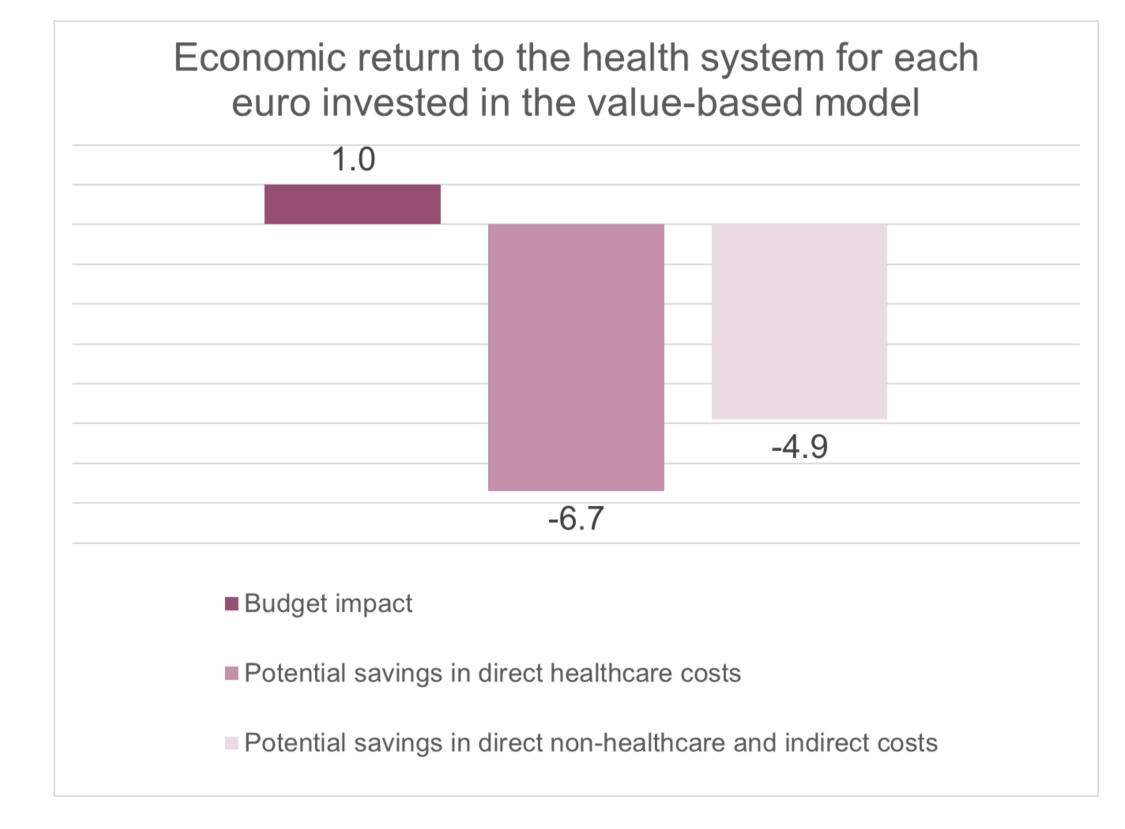


Table 3: Annual budget impact of the new model

	Year					
	0	1	2	3	4	Cumulative
Previous year patients	100,000	0	100,000	105,000	110,250	
New patients	7.5%	100,000	7,500	7,875	8,269	
Drop out	2.5%		2,500	2,625	2,756	
Patients of the year		100,000	105,000	110,250	115,763	
Cost of the new model		29,600,000€	28,350,000€	29,767,500€	31,255,875€	118,973,375€
Cost of the current model		26,000,000€	27,300,000€	28,665,000€	30,098,250€	112,063,250€
Annual budget impact		3,600,000€	1,050,000€	1,102,500€	1,157,625€	6,910,125€
Annual budget impact (%)		13.8%	3.8%	3.8%	3.8%	10%

## Conclusion

Improvement in the cost effectiveness of respiratory therapy

12% reduction in annual therapy cost per adherent patient

Actual model 433

New model 389

The budget impact of a value-based model is reduced by 10% points



Impact at 4 years: 10%

Year 1 Year 4 13.8% 3.8% Return on health costs for every 1 euro invested Reduction (€) per patient with the value-based mode Direct healthcare 6.7 € costs Direct non-

healthcare &

indirect costs

4.9€

- > Implementation cost of a value-based care model based on telemonitoring is offset by the cost savings from the reduction in direct healthcare costs.
- > Healthcare providers should take consideration potential cost saving solution offerings such as remote monitoring and contracting of adjust the sleep therapy accordingly.

## References