Management of Moderate-to-Highly Exuding Leg Ulcers with Polyacrylate Dressings vs. Foam Dressings in Spanish Settings: An Early-Stage Cost-Effectiveness and Budget-Impact Analysis

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INTRODUCTION

Leg ulcers are the most frequent hard-to-heal ulcers in Spain, typically arising from chronic venous disease and often persisting beyond 4–6 weeks despite standard care, which creates substantial clinical and service burdens in an ageing population. Local epidemiology indicates that leg ulcers account for the largest share of chronic wounds seen in primary care, yet comprehensive Spanish cost-of-illness data for leg ulcers remain limited. Despite this, prior economic evaluations in Spain comparing superabsorbent polymer (SAP) with foam dressings are lacking, motivating an early-stage model-based analysis to quantify short-term costs and outcomes from the National Health Service perspective.

OBJECTIVE

To assess the 6-month cost-effectiveness and budget impact of SAP dressings versus foam dressings for moderate-to-highly exuding leg ulcers from the perspective of the Spanish National Health Service.

METHOD

We built a patient-level microsimulation with weekly cycles over 24 weeks, informed by individual patient data for SAP effectiveness and a systematic review/meta-analysis for foam comparators. Health-state costs followed a chronic-wound costing framework with Spanish unit costs, while dressing costs were modelled separately by wound size and change frequency. Outcomes included healed ulcers at 6 months and quality-adjusted life-weeks (QALWs). Uncertainty was examined using one-way sensitivity analysis and probabilistic sensitivity analysis; a €25,000 per QALY willingness-to-pay threshold was adopted. A national budget-impact scenario extrapolated model results to Spain using recent epidemiology and census data.

RESULTS

In the base case over 24 weeks, SAP dressings lowered mean direct medical costs to €3,836 per patient compared with €4,407 for foams, yielding incremental savings of €570. SAP also improved clinical and quality-of-life outcomes: the healed-ulcer probability at 6 months was 33.25% with SAP versus 30.92% with foams (absolute difference 2.33 percentage points), and quality-adjusted life-weeks (QALWs) averaged 17.161 with SAP versus 17.032 with foams (increment +0.129 QALWs). These results imply dominance of SAP over foams (lower costs, greater benefits) under a €25,000/QALY willingness-to-pay benchmark.

One-way sensitivity analysis showed the findings were most influenced by dressing change frequency (both arms), the transition probability from static unhealed to healed, selected health-state utilities, and the number of wounds. Across tested ranges, SAP remained cost-saving.

Probabilistic sensitivity analysis (5,000 simulations) confirmed robustness: the mean incremental cost was −€575 with an incremental +0.142 QALWs (medians −€598 and +0.150, respectively), placing virtually all iterations in the southeast quadrant of the cost-effectiveness plane and identifying SAP as cost-saving with higher benefits in 100% of cases.

At the system level, a budget-impact extrapolation using 2023 census and epidemiology estimated 380,920 persons with wounds and 76,184 moderate-to-highly exuding leg ulcers; treating these with SAP rather than foams would reduce 6-month spending from €335.72 million to €292.27 million, for a national saving of €43.46 million.

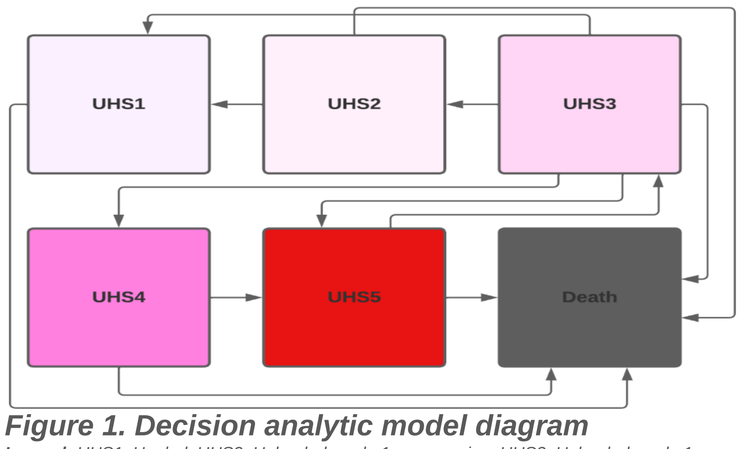

Figure 1. Decision analytic model diagram

Legend: *UHS1: Healed, UHS2: Unhealed grade 1: progressing, UHS3: Unhealed grade 1: static, UHS4: Unhealed grade 1: deteriorating, UHS5: Unhealed grade 2: severe, D: Death; *Adjusted for all patients using the risk prediction model*

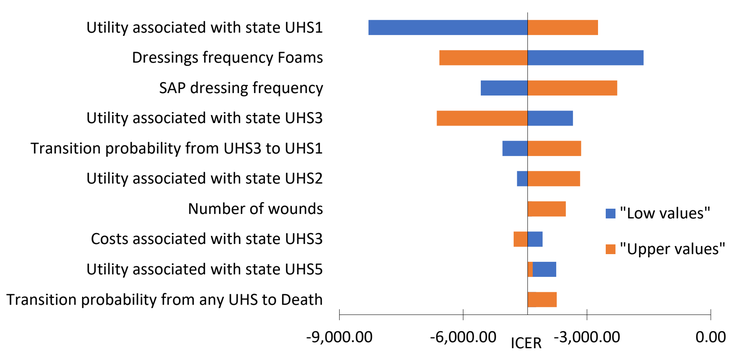

Figure 2. Tornado diagram for one-way sensitivity analysis

Legend: *UHS1: Healed, UHS2: Unhealed grade 1: progressing, UHS3: Unhealed grade 1: static, UHS5: Unhealed grade 2: severe, SAP: Superabsorbent Polymer Wound Dressings, ICER: Incremental Cost-effectiveness ratio.*

Table 1. Results of cost-effectiveness analysis

SAP		FOAMS		ICER
Dressings tender prices				
Cost	**QALWs**	**Cost**	**QALWs**	**Cost/QALW**
4,806 €	17.18	5,479€	17.05	SAPs dominantes Foams
Dressings reimbursement prices				
4,628 €	17.16	5,489 €	17.03	SAPs dominantes Foams

Legend: *SAPs - Superabsorbent Polyacrylate Wound Dressings, QALWs - Quality Adjusted Life Weeks, HR - Healing Rate, ICER - Incremental Cost-effectiveness ratio*

Table 2. Results of budget impact analysis

Prevalence	Census Spain, N	Patients with wounds, N	Moderate-to-highly Exuding Leg Ulcers, N	SAPs Dressing Cost	SAPs Dressing Costs	Budget Impact
0.8%	47,615,034	380,920	76,184	362,072,337 €	417,629,787 €	-55,557,450 €

Legend: *N – total population, SAPs: Superabsorbent Polymer Wound Dressings*

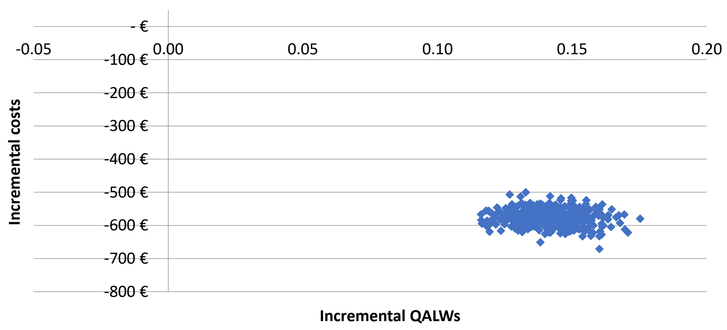

Figure 3. Cost-effectiveness plane

Legend: *QALWs - quality-adjusted life-weeks*

CONCLUSIONS

Within the Spanish National Health Service and over a 6-month horizon, SAP dressings dominate foam dressings by achieving higher healing and QALW gains at lower total cost per patient. Deterministic and probabilistic analyses consistently support cost-saving superiority, and national scaling suggests material budget relief on the order of €43 million per year if SAP replaces foams for eligible cases. Given that this is an early-stage evaluation informed by non-randomized SAP effectiveness and literature-based transition inputs, the findings should be implemented alongside prospective monitoring and, where feasible, longer-horizon studies that capture recurrence and downstream utilization. Nevertheless, by contextualizing contemporary Spanish prices and population data, the analysis provides actionable evidence to prioritize SAP dressings for moderate-to-highly exuding leg ulcers in routine Spanish practice.

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