

THE ECONOMIC IMPACT OF THE USE OF TWO FLOWABLE HEMOSTATIC MATRICES IN SPINAL SURGERY IN THREE EUROPEAN COUNTRIES

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INTRODUCTION

Failure to maintain hemostasis during surgery can result in excessive bleeding, thereby complicating procedures and increasing the risk of morbidity and mortality¹. Spine surgeries are typically longer than other elective surgeries and have an elevated risk of perioperative blood loss with significant associated blood transfusion requirements^{2,3}. Failure to maintain hemostasis during surgery can also result in in greater healthcare resource utilization and elevated costs³. When bleeding cannot be controlled by conventional methods (such as suturing, cautery, or manual compression) or when conventional methods are impractical, topical hemostatic agents are often used¹. Commonly used gelatin-thrombin based flowable advanced topical hemostats are FLOSEAL Hemostatic Matrix (Baxter Healthcare Corporation, Deerfield, IL) and SURGIFLO Hemostatic Matrix Kit with thrombin (Ethicon Incorporated, Somerville, NJ)¹.

OBJECTIVE

Previous studies comparing clinical product performance between FLOSEAL and SURGIFLO have found mixed or comparable results indicating that clinical outcomes during spine surgery may not be dependent on the choice of gelatin hemostatic matrix^{4,5}. Therefore, the aim of this study is to evaluate the economic impact associated with the use of two flowable hemostatic matrices, Floseal and Surgiflo, from a hospital perspective in Greece, Italy and Spain.

METHOD

An economic model was developed to compare the resource consumption associated with the use of FLOSEAL in 5mL tubes and SURGIFLO in 8mL tubes during surgery from hospital perspective, assuming no statistically significant difference in efficacy between the two products, as supported by the literature^{4,5}. Inputs captured in the model included the following:

- the number of procedures performed annually;
- the mean number of used items;
- the price of hemostatic matrices.

The number of procedures performed annually was assumed to be 350. The mean number of used items for each hemostatic agent was calculated from a retrospective comparative study of FLOSEAL vs SURGIFLO sourced from the US Premier Hospital database from January 1, 2010–June 30, 2012⁶. The price of hemostatic matrices was identified from officially awarded tenders in each of the three countries. Deterministic and probabilistic sensitivity analyses were performed on all inputs (number of items used and unit costs) to investigate the model robustness.

Table 1. Inputs included into the economic model

	FLOSEAL 5mL	SURGIFLO 8mL
Number of cases per year	350	
Mean number of used items	1,21	1,54
Price of hemostatic matrices		
Greece ⁷	€274	€274
Italy ⁸	€189,5	€191,9
Spain ^{9,10}	€211	€244

RESULTS

The use of SURGIFLO was associated with savings per patient of €90, €60 and €30 per surgery in Greece, Italy and Spain, respectively, due to the reduced number of items required per surgery (1.21 versus 1.54) and the lower price per mL. Assuming 350 annual cases, the savings per year were estimated to be €31,647, €20,871 and €10,395 in Greece, Italy and Spain, respectively. Probabilistic sensitivity analyses indicated that SURGIFLO was cost-savings in 89%, 86% and 70% of the 1,000 simulations in Greece, Italy and Spain, respectively. Deterministic sensitivity analyses showed SURGIFLO to be cost-savings in most of the cases, when varying inputs by ±20%.

Figure 1. Deterministic sensitivity analysis - Greece

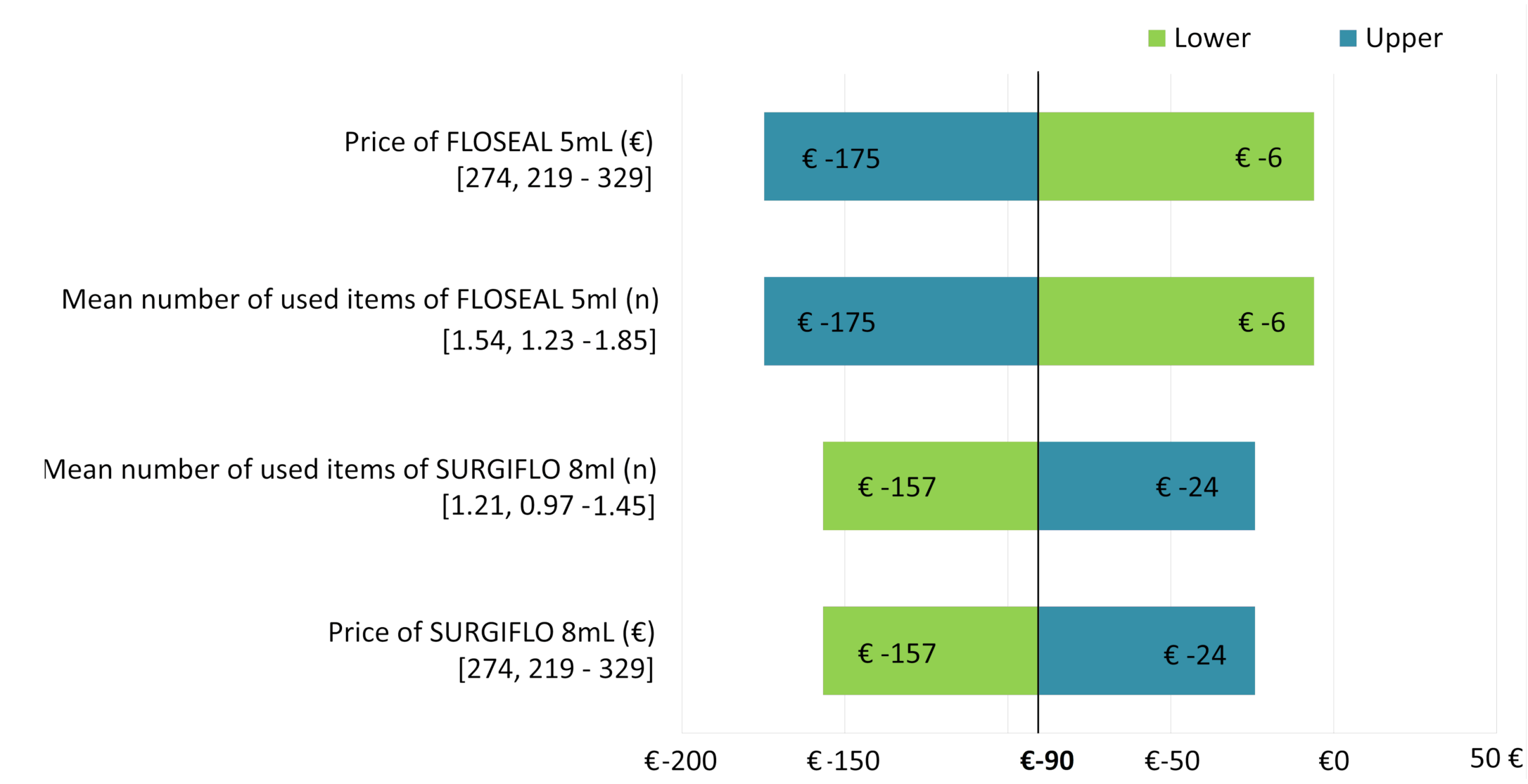


Figure 2. Deterministic sensitivity analysis - Italy

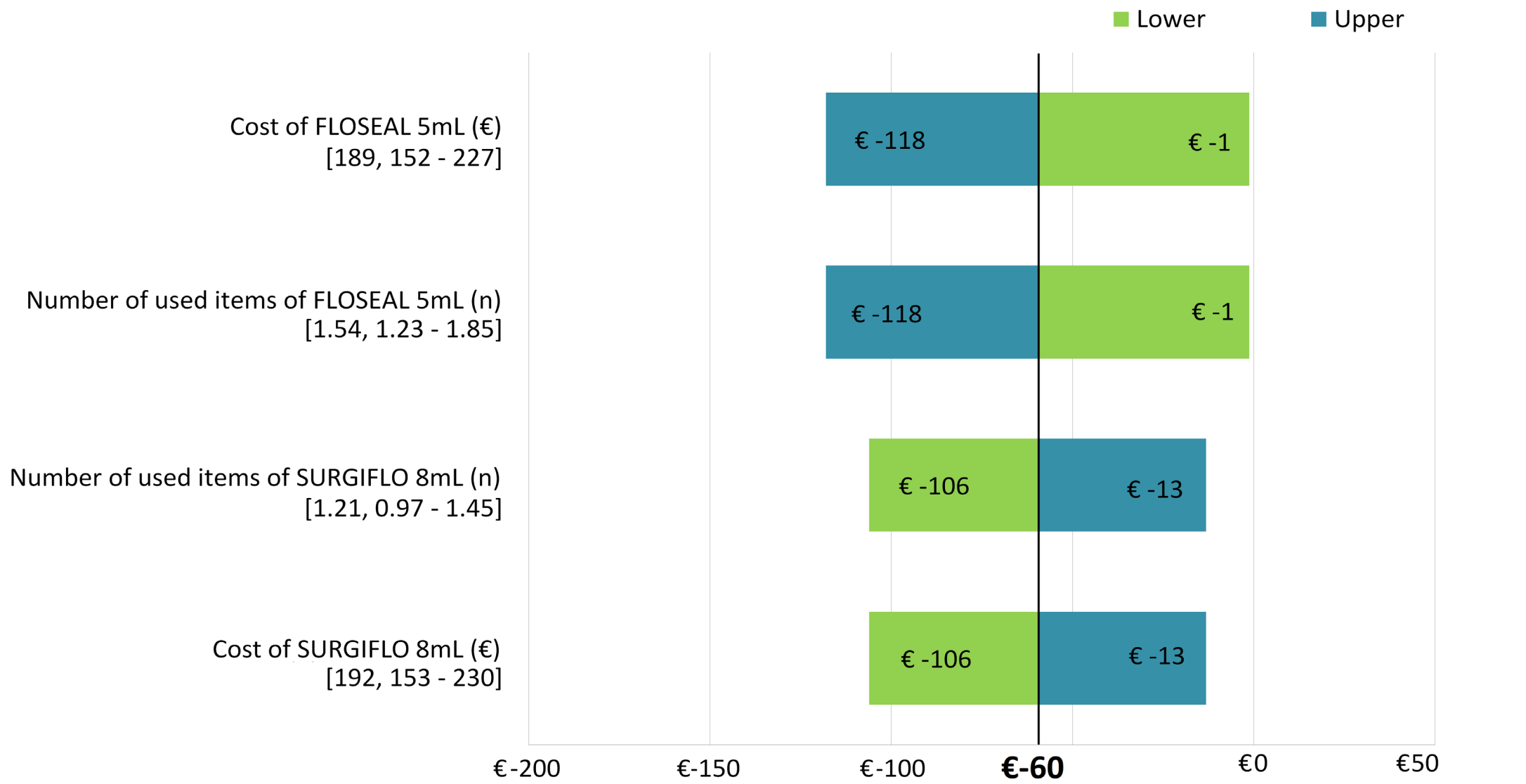
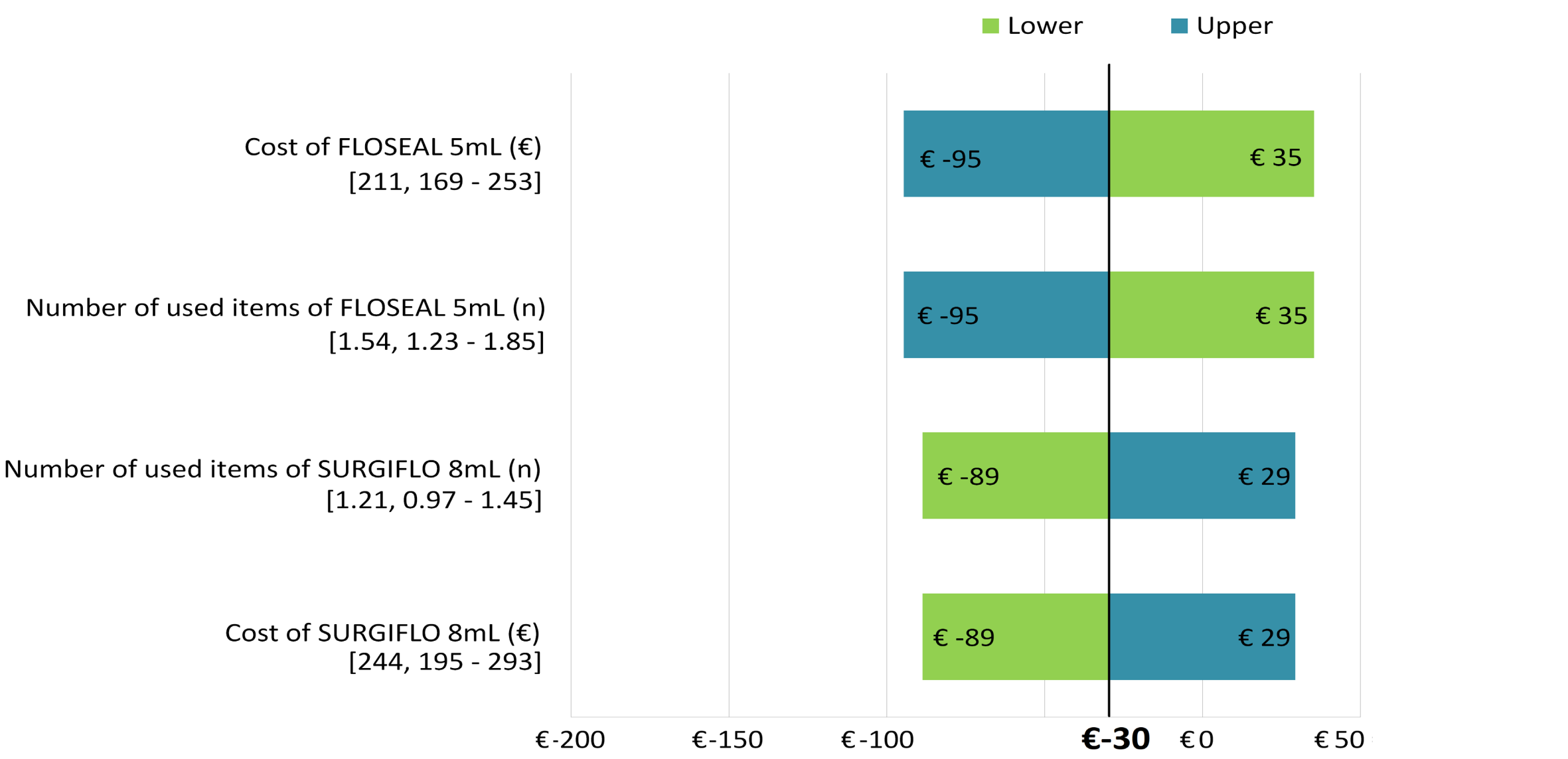


Figure 3. Deterministic sensitivity analysis - Spain



CONCLUSIONS

In the three countries SURGIFLO appears to be a cost-saving solution compared to FLOSEAL due to the optimized number of items used and the reduced price per mL. Results were consistent across sensitivity analyses.

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