Cost-effectiveness Analysis of Follitropin Alfa Product (GONAL-F®) Compared to its Biosimilars Based on Meta-analysis of Randomized Controlled Trials

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METHODS

- A decision tree model was developed (**Figure 1**)
- Relative risks from the meta-analysis[1] were used as clinical inputs and costs were sourced from publicly available sources in Spain
- The analysis comprised one stimulation cycle with fresh embryo transfer
- ICER was calculated as the difference in total costs divided by the difference in LBRs
- A probabilistic sensitivity analysis was conducted

Figure 1. Model Structure

CONCLUSION

Cost per live birth was lower with originator r-hFSH-alfa versus r-hFSH-alfa biosimilars

The ICER was €7,208 for originator r-hFSH-alfa versus r-hFSH-alfa biosimilars

€18,138 Originator

€20,377 Biosimilars

Drug acquisition costs accounted for only a small proportion of the overall costs

RESULTS

- Originator r-hFSH-alfa was associated with an increased LBR versus r-hFSH-alfa biosimilars (**Table 1**)
- The cost per live birth was lower with originator r-hFSH-alfa versus r-hFSH-alfa biosimilars (**Table 1**), with an ICER of €7,208
- Total cost per patient was marginally higher with originator r-hFSH-alfa versus r-hFSH-alfa biosimilars (€4,789 vs €4,465), related to the costs associated with the higher number of pregnancies and live births observed with originator r-hFSH-alfa (**Figure 2**)
- Drug acquisition costs represented only a small proportion (~10%) of the overall costs (**Figure 2**)
- The probabilistic sensitivity analysis cost-effectiveness plane based on 1,000 Monte-Carlo simulations showed low uncertainty around the final results (**Figure 3**)

Figure 2. Cost Breakdown Per Patient According to Phase of MAR

Table 1. Cost Per Live Birth

	Originator r-hFSH-alfa	r-hFSH-alfa biosimilars	Difference
LBR	26.4%	21.9%	4.5%
Total Costs*	€4,789	€4,465	€323
Cost/Live Birth	**€18,138**	**€20,377**	

Figure 3. Probabilistic Sensitivity Analysis Cost-effectiveness Plane

*Source costs multiplied by probability. Higher total costs for originator r-hFSH-alfa due to its higher rate of pregnancy and live birth and consequently higher costs for these.
ICER, incremental cost-effectiveness ratio; **LBR**, live birth rate; **MAR**, medically assisted reproduction. **OS**, ovarian stimulation. **RCT**, randomised controlled trail; **r-hFSH**, recombinant human follicle-stimulating hormone.

INTRODUCTION

- Originator r-hFSH-alfa (GONAL-f®, Merck Healthcare KGaA, Darmstadt, Germany) demonstrated a higher probability of live birth and ongoing pregnancy versus r-hFSH-alfa biosimilars in a recent meta-analysis based on RCT data[1]
- Economic modelling using data from large populations (preferably meta-analyses[2]) can provide useful information to help decision-makers make informed evaluations on the optimal gonadotropin for OS
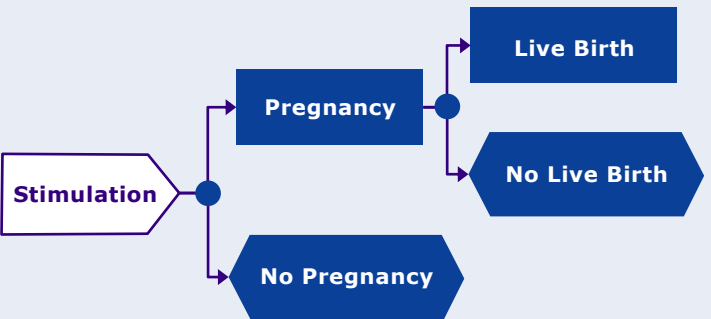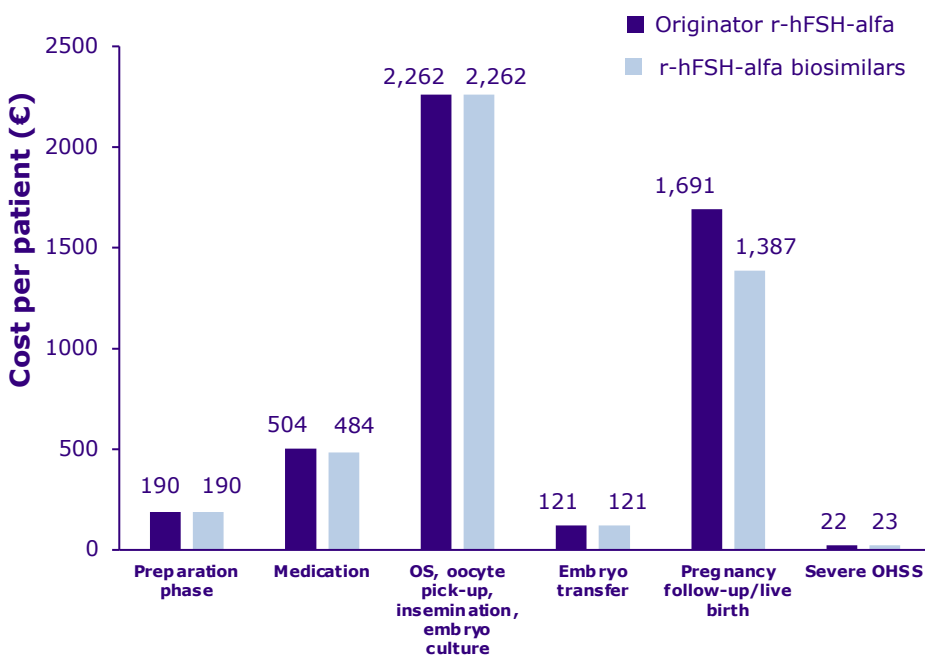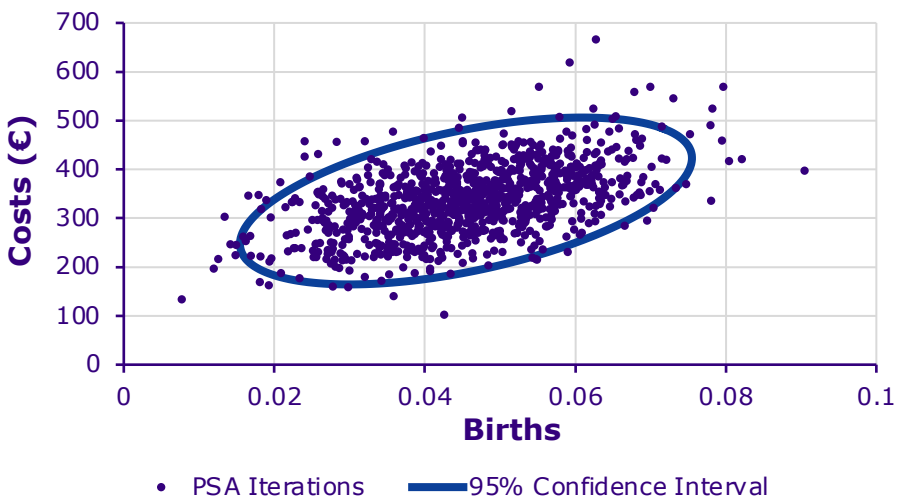
OBJECTIVES

To compare cost per live birth and cost effectiveness of originator r-hFSH-alfa and its biosimilars from a Spanish perspective, using clinical outcomes from a recent meta-analysis[1]