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Cost-effectiveness Analysis of Dupilumab in Severe atopic Dermatitis Patients Aged >= 6 Years Old Who have Failed to Topical Therapies or When Those Therapies Are Not Recommended

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INTRODUCTION

Atopic dermatitis (AD) is a systemic multifactorial disease characterized by the alteration of the skin barrier with immune dysregulation, clinically resulting in an inflammatory process of the skin associated with eczema and pruritus that follows a relapsing chronic course with exacerbations and remissions. Dupilumab is a human monoclonal IgG4 antibody that inhibits Il-13 and Il-14.

OBJECTIVE: To develop a cost-effectiveness analysis (CEA) from the Mexican NHS perspective of dupilumab as add-on therapy compared to Standard of Care (SoC) (Cyclosporine [CsA] + Best Supportive Care [BSC] or BSC alone) for severe AD patients >= 6 years old.

METHODS

- The analysis framed a Markov model to describe the natural history of disease through 10 health states defined by severity level, treatment and death in a lifetime horizon.
- Monte Carlo simulation was used to extrapolate results from the hypothetic population cohort.
- Response to treatment was assessed with the clinical instrument EASI scale (EASI 75%), where total score ranges from 0 to 72 points, with the highest score indicating worse severity of AD. EASI score of 75 indicates ≥ 75% improvement from baseline.
- Efficacy data came from pediatric/adolescent/adult RCTs.
- Dupilumab patients with response to treatment remained on it permanently, while patients on the CsA+BSC arm with response remained in it during the first year and, from the beginning of the 2nd year, they receive BSC permanently based on local CPG's recommendations. Patients with response on BSC remained on it permanently since the beginning.
- Sensitivity analysis explored different scenarios (time horizon, discount rate and efficacy wanning effect). A fixed exchange rate according to MX Central Bank (Banxico) was used (1 US dll= $18.103 MXN pesos)

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POSTER HIGHLIGHT: The model captures the effectiveness and costs through the natural history of AD using the bootstrapping method to approximate the distribution of effectiveness and costs to a normal distribution, sampling and averaging ten patients to obtain a second order iteration. 1,000 iterations were run per scenario.

Figure 1: Markov model structure (10 health states)

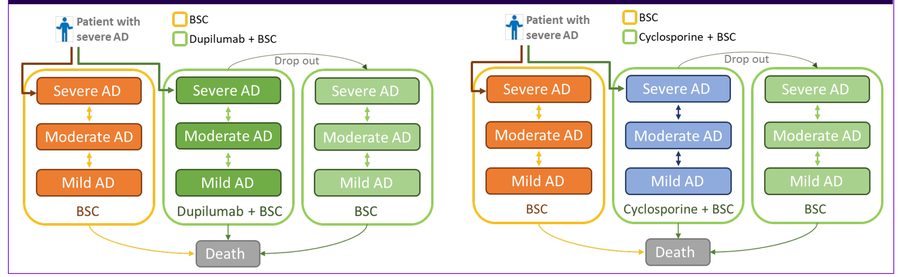


Figure 2: Incremental cost analysis

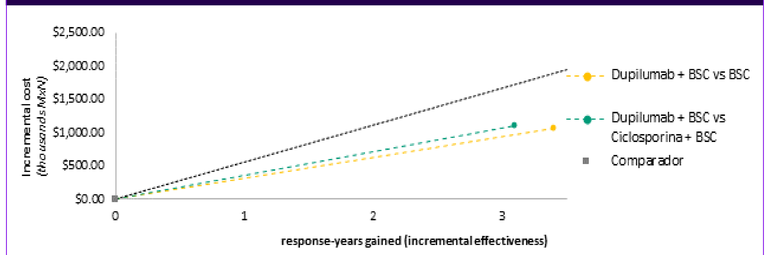
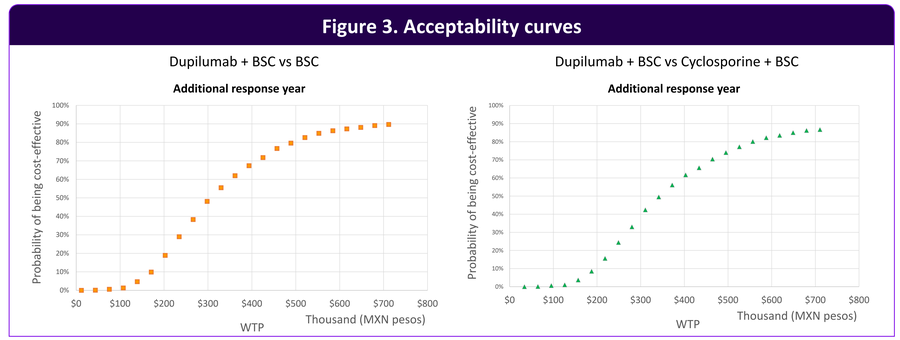


Figure 3. Acceptability curves



CONCLUSIONS: Dupilumab+BSC demonstrated better effectiveness vs BSC and CsA+BSC (3.4 & 3.2 response years gained). The incremental analysis showed dupilumab is a cost-effective alternative for the treatment of severe AD in patients ≥ 6 years old who failed topical therapies or in which those therapies are not recommended.

RESULTS

Base case analysis: the incremental cost effectiveness ratio per response-year (ICER/ry) gained was $17,560 USD dlls [$317,882 MXN pesos] for dupilumab+BSC vs BSC and $19,506 USD dlls [$353,114 MXN pesos] for dupilumab+BSC vs CSA+BSC.

Based on gross domestic product per capita (GDPpc) as willingness to pay threshold (GDPpc ranging between 1-3), dupilumab is a cost-effective alternative: ICER/ry= 1.48 GDPpc (vs BSC) and 1.64 GDPpc (vs CsA+BSC).

Exploratory sensitivity analyses: considering the waning effect used by NICE during the lifetime horizon, the ICERs/ry were 0.59 and 0.68 GDPpc vs BSC & CsA+BSC, respectively.

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