# Modelling the healthcare burden of oral corticosteroid use in Mexico

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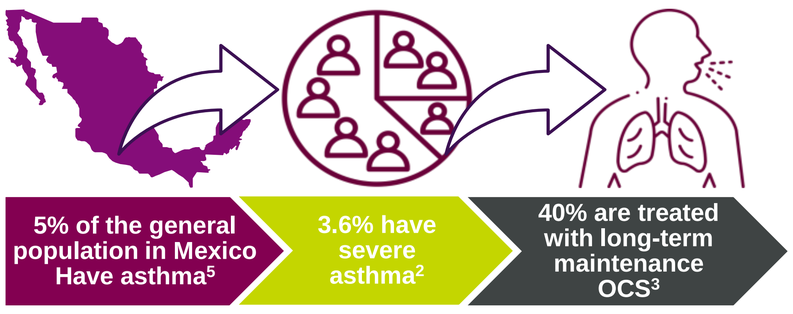
**EE589**

## Introduction

- Asthma is a chronic disease affecting people around the world at all life stages. 3.6% of patients experiencing severe asthma, where disease cause a substantial burden on individuals and health services, including premature death or a severely reduced quality of life[1,2]
- Up to 40% of patients with severe asthma are treated with long-term maintenance oral corticosteroids (OCS) – OCS treatment is associated with an increased risk of serious adverse events (AEs), such as adrenal insufficiency, type-2 diabetes, or renal impairment, with these risks accumulating over a patient's lifetime[3,4]

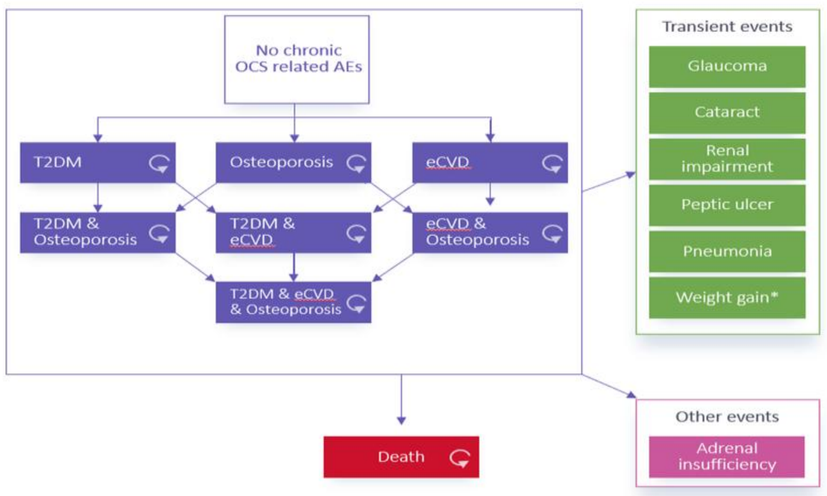



In this study, we aim to quantify both the patient impact and economic burden of OCS-related AEs as healthcare system costs in patients with severe asthma in Mexico

## Methods

- A cost-offset model with a Markov structure (Figure 1) was developed, aligned to conference abstract present presented at the 2024 ERS Congress[6]
- The model compares an OCS intervention arm versus a no-OCS control arm over a lifetime horizon with 4-week cycles

**Figure 1: Model structure and patient flow**.




### Population

- Aligned to OPRI RWE study[7]
- Matched between arms country-specific data

### Health states and events

- All events captured with per cycle risk
- Risk data were reported by the literature, if possible, from Mexico or used from congress abstract[6]

### Dosing

- 5.5 mg/day of prednisone[6]
- Capturing maintenance OCS and short-term burst OCS

### Outcomes

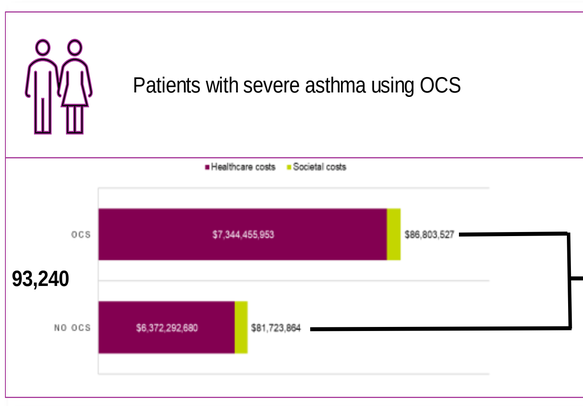
- Incremental burden from OCS-related complications were captured
- Each complication included direct healthcare costs and societal costs. Societal costs consisted of 'hospital bed days' required, and 'workdays lost'
- The model captured costs in Euros. Costs are presented in USD using budget rates, $1 USD = €0.9

## Results

- Treating patients with severe asthma using OCS resulted in substantially higher costs per patient
- Healthcare resource utilization is high in the Mexican patients with severe asthma using OCS
- When OCS is used in severe asthma, it implies an incremental decrease of 9,811 QALYs (1,002,355 for no-OCS vs 992,544 with OCS)

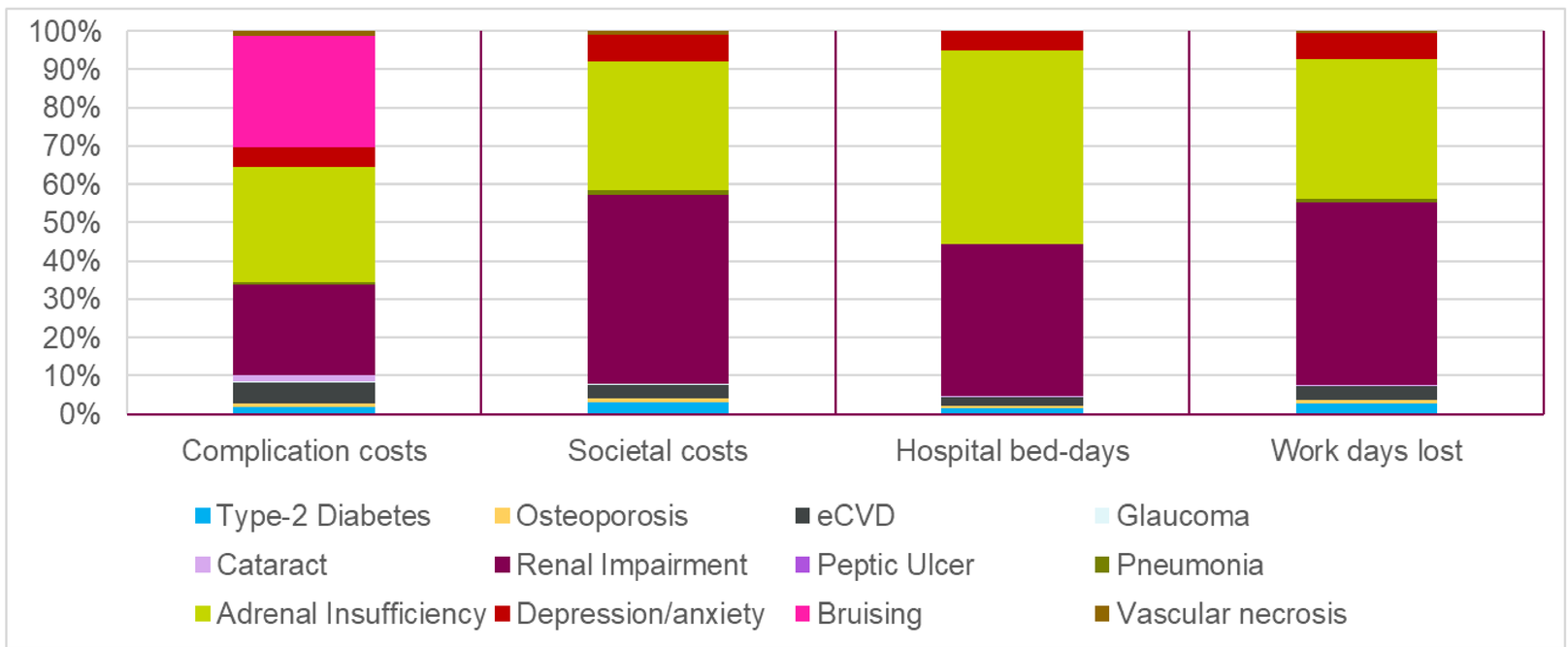
**Figure 2 Total lifetime costs**

| Patients with severe asthma using OCS | Incremental lifetime cost of OCS use | | Total additional lifetime bed days | | Total additional work days lost | |
|---|---|---|---|---|---|---|
| | per cohort | per patient | per cohort | per patient | per cohort | per patient |
| 93,240 | $977,242,937 | $10,481 | 5,116,668 | 55 | 856,299 | 9 |




- The most impactful OCS-related AEs in terms of cost were renal impairment, adrenal insufficiency, depression/anxiety and bruising
- The most impactful OCS-related AEs in terms of health burden were renal impairment, adrenal insufficiency, and depression/anxiety
- Renal and adrenal complications accounted for the highest costs, as well as hospital bed days and workdays lost the highest throughout life

**Figure 3 Contribution of individual AEs to the lifetime incremental burden of OCS complications**




**Assumptions/limitations:**

- Not all events could be tracked as health states
- Inhaled corticosteroids were not included, so, the total burden of corticosteroids may be underestimated

**Data availability was a challenge:**

- Depression/anxiety had limited data
- Treatment costs did not always include both hospitalizations and outpatient resource use
- When data were limited, it was assumed that the same value as international data or, that lost workdays were equivalent to days in bed

## Conclusions

- OCS use in severe asthma led to significantly higher cost per-patient to the national health system
- OCS use in severe asthma imposes a significant clinical and economic burden, mainly driven by renal and adrenal complications
- These findings support the need for OCS-sparing strategies in Mexico, in line with global recommendations for better patient outcomes and resource optimization

**References**

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**Abbreviations**

AE, adverse event; eCVD, established cardiovascular disease; OCS, oral corticosteroids; OPRI, Observational and Pragmatic Research Institute; RWE, real world evidence; T2DM, type 2 diabetes mellitus

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**Disclosures**

This study was funded by AstraZeneca. The authors are employees of AstraZeneca.

*Supported by* AstraZeneca

*Presented at the ISPOR Europe 2025, Glasgow, Scotland, UK, 9-12 November 2025*