

# The economic impact of adopting structured education and Pen Needle- 4mm- for insulin administration by patients with diabetes in Spain

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## INTRODUCTION AND OBJECTIVE

Growing research indicates that structured training in insulin injection techniques - including education on site rotation, lipohypertrophy, needle length, and in some cases transitioning to a shorter needle - reduces insulin consumption and improves glycaemic control, underscoring the importance of proper insulin delivery for optimal diabetes management<sup>1-4</sup>. This study aims to assess the economic impact of using 4mm Pen Needles (PNs) and providing structured education on insulin administration for patients with diabetes in Spain.

## METHODS

A budget impact model was developed to estimate the direct medical costs from the Spanish National Healthcare System (NHS) perspective associated with using BD-branded 4mm PN and providing structured education on insulin administration (the “embecta° program”), compared to using longer PNs without any educational support (the “Base case”), over a 1-year period. The number of patients eligible to receive 4mm PNs was estimated based on the population in Spain<sup>5,6</sup>, the prevalence of type 1 and type 2 diabetes<sup>5,6</sup>, and the proportion of patients treated with insulin<sup>7</sup>. Healthcare resource utilization, including insulin usage and management of diabetes-related complications, was derived from literature, and unit costs were obtained from local healthcare databases (€2023). Sensitivity analyses were conducted to test the robustness of the analysis against key variables and assumptions.

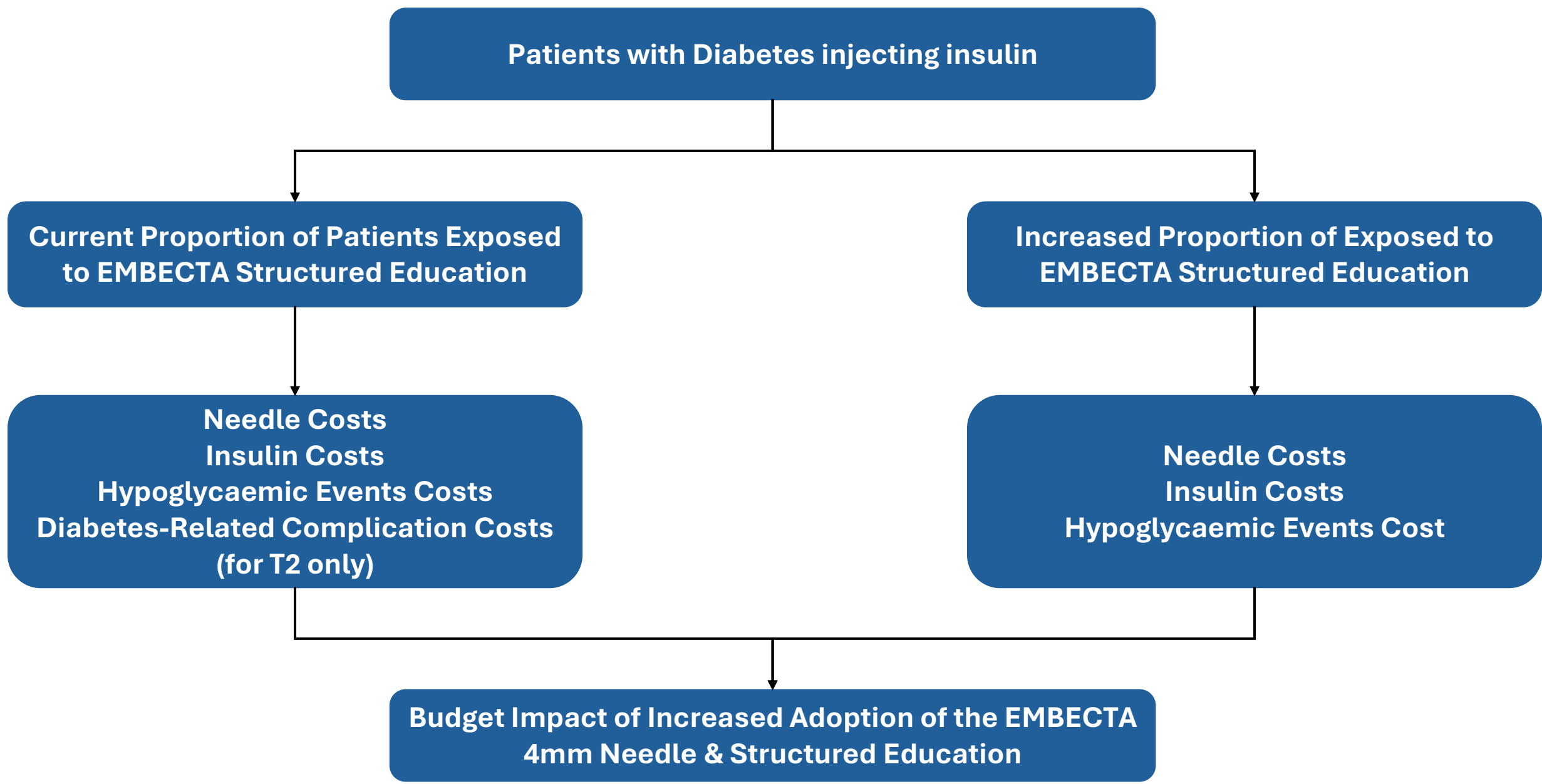


Figure 1. Budget Impact rational

## RESULTS

A total of 3.5M people with Type 1 (3.4%) or Type 2 (96.6%) diabetes mellitus (DM) were identified in Spain<sup>5,6</sup>, with 712,289 (20% of the whole DM population<sup>7</sup>) of them being treated with insulin. A poor glycaemic control is translated to diabetes-related complications like ischemic heart disease (IHD), stroke or renal failure. Costs associated to these complications range between €1,428.0 for blindness to €46,700.64 for renal failure (Figure 2).

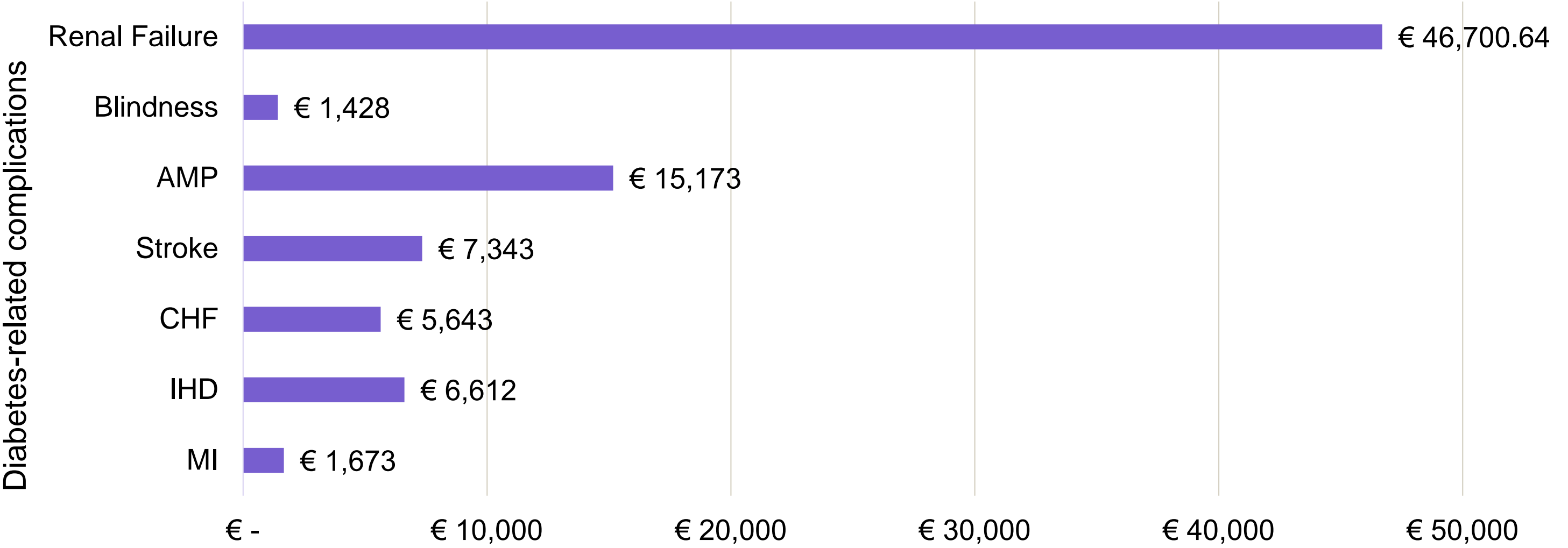


Figure 2. Cost (€2023) per diabetes-related complication currently in Spain.

The current market shares of embecta PN are around 67% while for all other needles around 33%<sup>8</sup>. In the potential scenario, an increase in market share is estimated to reach 90% for embecta PN and a reduction for the rest of the needles up to 10%. Total events currently in Spain are around 171,974,7 cases, when applying this hypothetical case scenario, a reduction of 46,535 cases is expected (Figure 3).

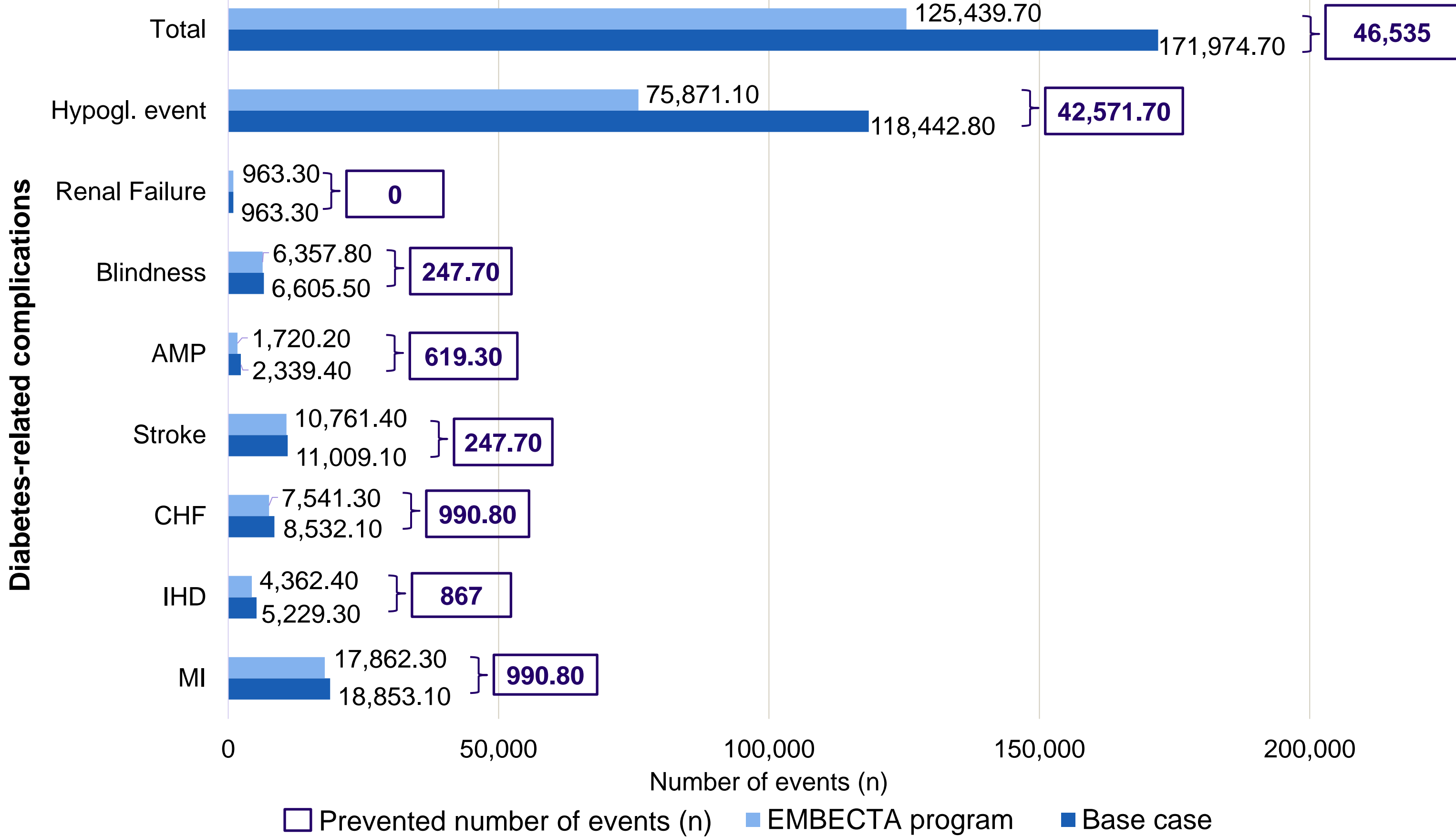


Figure 3. Cases (n) and decrease in cases (%) base case vs. new situation

## STUDY LIMITATIONS

As is the case with all budget impact models, the one used in this research is subject to the limitations inherent to such models, including uncertainty associated with data, simplifying assumptions, and limited time horizons, which may result in the overlooking of long-term economic impact.

Increasing the use of embecta PN in Spain from 67% to 90% MS, is expected to generate savings related to disease-related complications of €75 per patient per year and a total of €53.37M in one year for Spain (Figure 4).

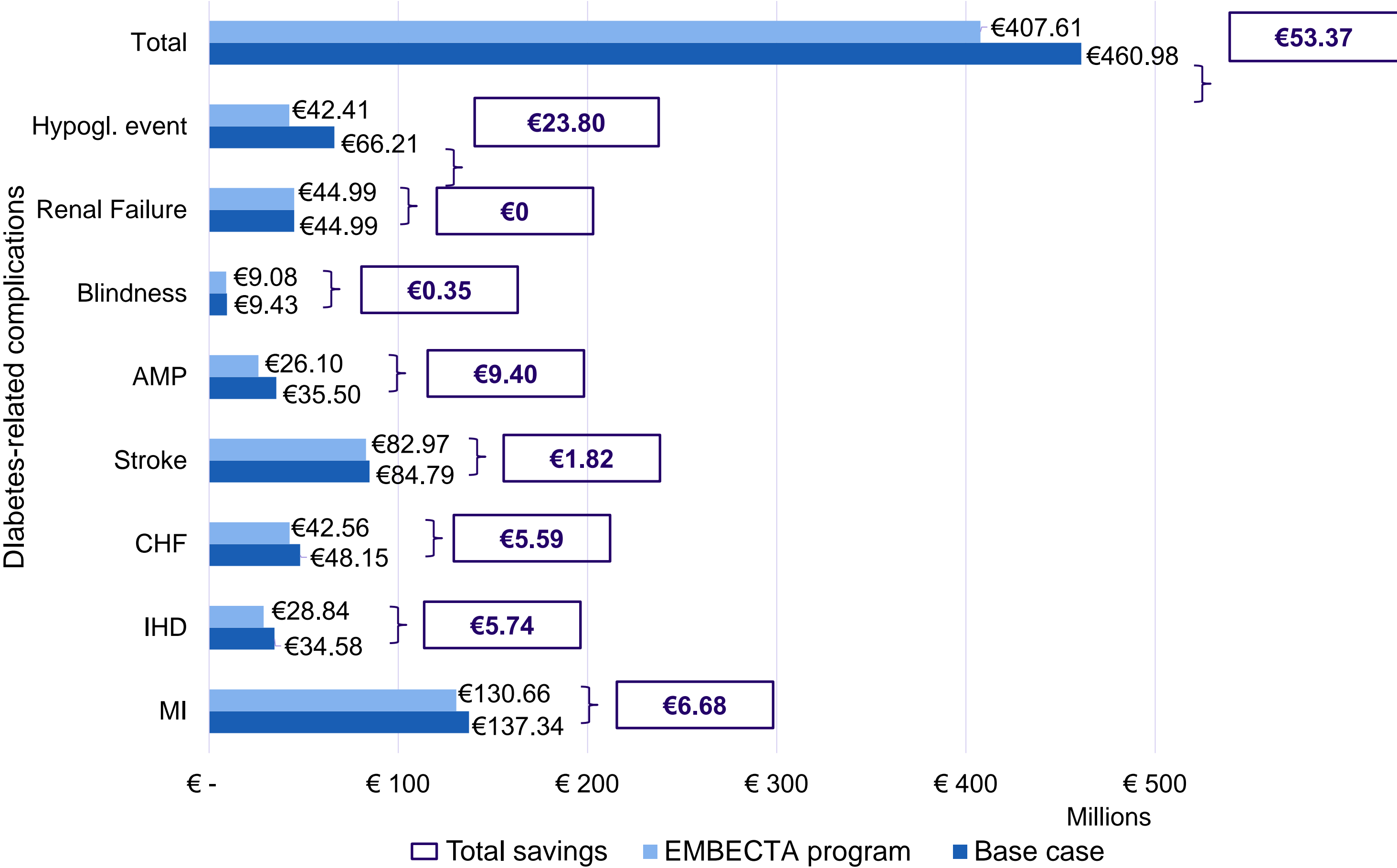


Figure 4. Cost (€2023) and decrease in cost (€2023) base case vs. new situation per complication

Regarding total savings, after considering complication costs, insulin costs and needle costs, savings of €79 per patient per year and a total of €56.5M in one year for Spain are expected (Figure 5).

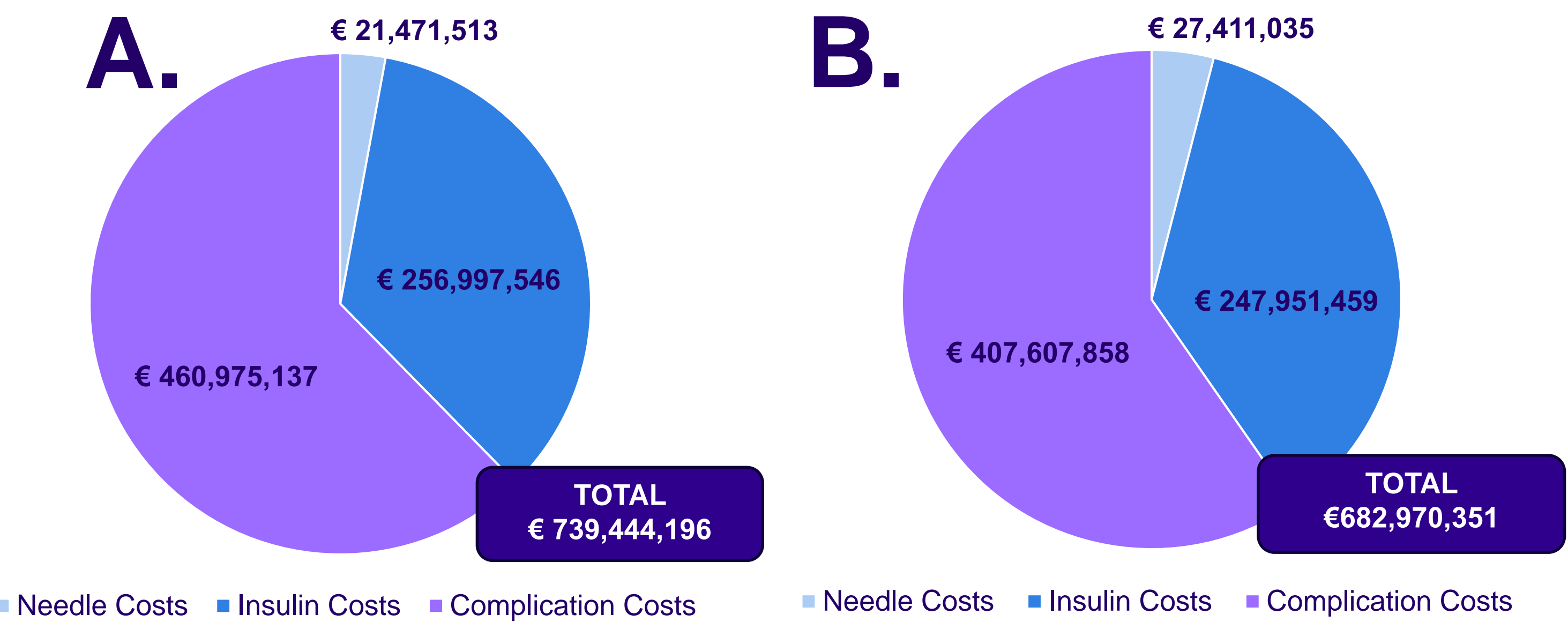


Figure 5. A. Costs (€2023) base case. B. Costs (€2023) new situation

This savings are primarily driven by reduced insulin usage and a decrease in diabetes-related complications, particularly hypoglycaemic events. Total saving depend on current regional consumption patterns and market penetration assumptions.

## CONCLUSIONS

Increasing the adoption of 4mm PNs combined with a structured educational program has the potential to improve diabetes management and could be an effective strategy to reduce healthcare expenditure within the Spanish NHS.