

Tiotropium for children and adolescents with severe asthma

Jefferson Buendia¹ and Diana Guerrer¹

¹University of Antioquia

April 16, 2024

Abstract

Introduction An important proportion of asthma patients remain uncontrolled despite using inhaled corticosteroids and long-acting beta-agonists. Some add-on therapies, such as tiotropium bromide have been recommended for this subgroup of patients. The purpose of this study was to assess the cost-effectiveness of tiotropium as add-on therapies to ICS + LABA for children and adolescents with uncontrolled allergic asthma. **Methods** A probabilistic Markov model was created to estimate the cost and quality-adjusted life-years (QALYs) of patients with severe asthma in Colombia. Total costs and QALYs of two interventions including standard therapy (ICS + LABA), add-on therapy with tiotropium, were calculated over a time horizon from 6 to 18 years. Probability sensitivity analyses were conducted. Cost-effectiveness was evaluated at a willingness-to-pay value of \$19,000. **Results** The model suggests a potential gain of 0.51 QALYs per patient per year on tiotropium, with a difference of US\$265 per patient year with respect to standard therapy. The incremental cost-effectiveness ratio estimated was U\$ 1928 in the deterministic model and US\$2,017 in the probabilistic model after Monte-Carlo simulation. Our base-case results were robust to variations in all assumptions and parameters. **Conclusion** Add-on therapy with tiotropium was cost-effective when added to usual care in children and adolescents with severe asthma who remained uncontrolled despite treatment with medium or high-dose ICS/LABA. Our study provides evidence that should be used by decision-makers to improve clinical practice guidelines and should be replicated to validate their results in other middle-income countries.

Hosted file

main text tiotropio 6 to 17 271121.docx available at <https://authorea.com/users/316889/articles/712717-tiotropium-for-children-and-adolescents-with-severe-asthma>

Hosted file

Table 1.docx available at <https://authorea.com/users/316889/articles/712717-tiotropium-for-children-and-adolescents-with-severe-asthma>

Hosted file

Table 2 new.docx available at <https://authorea.com/users/316889/articles/712717-tiotropium-for-children-and-adolescents-with-severe-asthma>



