

Cost-Effectiveness Analysis of First Line Treatment Strategies for Acute Promyelocytic Leukemia in Adults in Colombia

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Objectives

To evaluate the cost-effectiveness of a treatment with arsenic trioxide (ATO) added to all-trans retinoic acid (ATRA) compared to the standard approach using ATRA plus idarubicin in adults with newly diagnosed acute promyelocytic leukemia (APL) in Colombia.

Materials and methods

We designed a Markov model with one-month cycles, a ten-year time horizon and 4 mutually exclusive states: event free survival (EFS), therapeutic failure (TF), failure after treatment (FAT) and death. EFS was the entry state, TF was a transient state before relapse was diagnosed, in which case the state went automatically to FAT and set for further treatment. Severe adverse events occurred during the first month of treatment while in EFS, transition rates and utilities (QALY) were obtained from the literature. 5% discount rate for cost and utilities was applied. A third-party payer perspective (Colombian healthcare system) was used.

The costs for medications were extracted from SISMED, the official medication database, all other costs were taken from the institutional tariff manual used in our hospital. Costs in Colombian pesos (COP) 2021 were converted at official average exchange rate (1 USD = 3,799). Three times the per capita GDP (USD \$13,161) was used as threshold.

Results

The costs of using ATO plus ATRA was USD \$74,024, IDA plus ATRA would cost USD \$11,904. QALYs gained were 5.84 for ATO and 5.13 for IDA. The use of ATO was associated with a gain of 0.71 QALY for an incremental cost of USD \$62,120, which leads to an incremental cost-effectiveness ratio (ICER) of USD \$88,742.

Conclusions

Despite its superior effectiveness and better safety profile, ATO plus ATRA is not cost-effective in our country. The cost of medication should be reduced by around 80% in order to reach the cost-effectiveness threshold.

Cost-Effectiveness Analysis

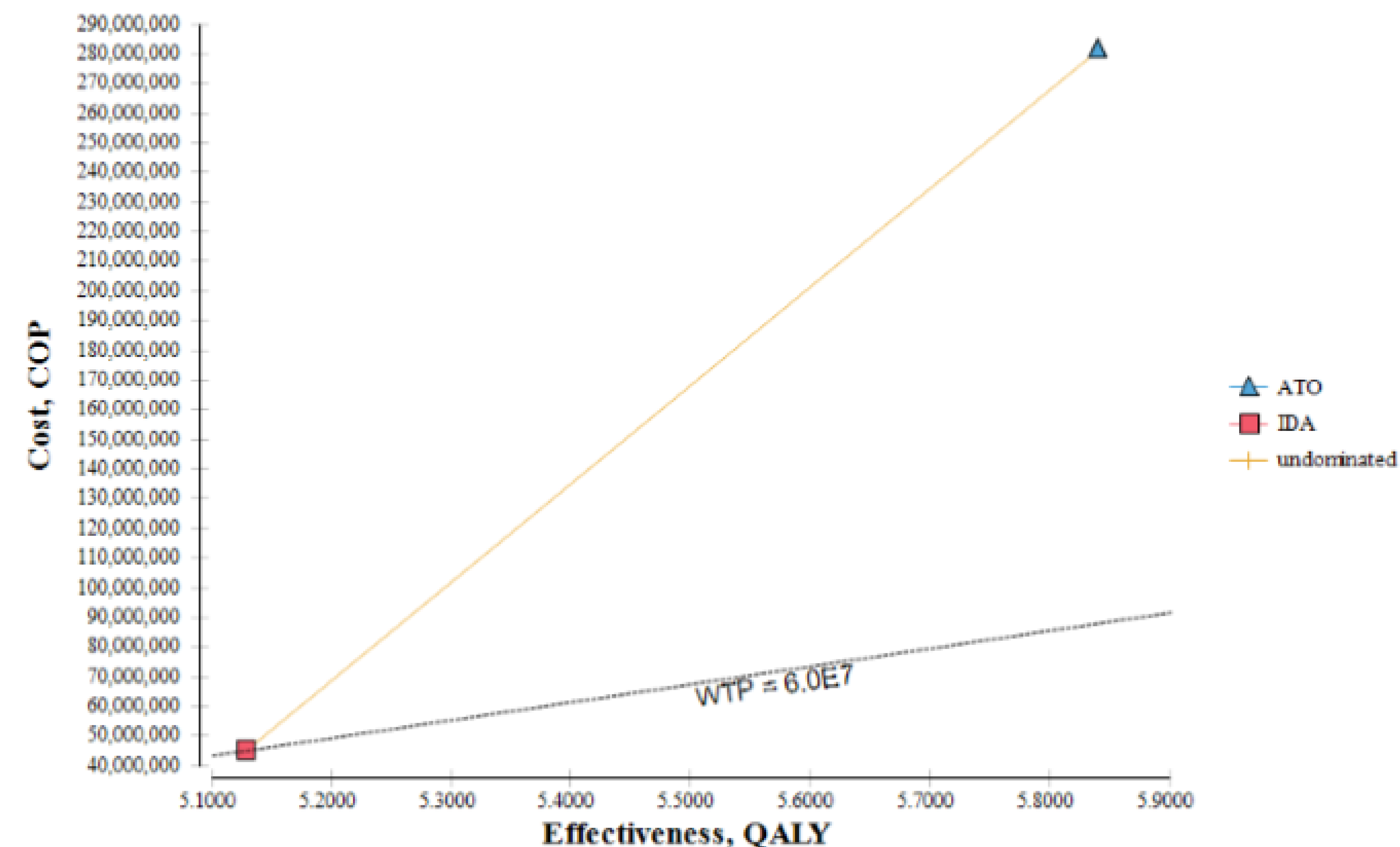


Figure 1. Willingness to pay (WTP) cost-effectiveness analysis of first line treatment strategies for acute promyelocytic leukemia in Colombia

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