

# An MCDA preference index support for the ICUR analysis between psoriatic arthritis treatments



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## Background

The Canadian Agency for Drugs and Technologies in Health (CADTH) published a report in 2016 presenting a cost-utility analysis (CUA) for five psoriatic arthritis treatments versus placebo.<sup>1</sup> Thereby, the analysis of five incremental cost-utility ratios (ICURs) was required.

The preference index performed as step of the PROMÉTHÉE II multi-criteria decision analysis (MCDA) method implementation can be used to express the preference level of each treatment over each other from the same data used to compute the ICURs.<sup>2,3</sup> By doing so, the preference level of a treatment over another one can be analyzed along with the respective ICUR.

## Objective

This study aims to use the PROMÉTHÉE II's preference index in order to support the ICUR analysis between the five psoriatic arthritis treatments studied by CADTH.

## Methods

The PROMÉTHÉE II's preference index was computed from CADTH CUA data<sup>1</sup> (Table 1) to express the preference level from 0.00% to 100.00% that each psoriatic arthritis treatment holds over placebo. To accomplish this, the following steps have been taken into account:






1. The total cost of each treatment along with quality-adjusted life-year used in the studied CUA formed a set of criteria.
2. It was assigned a weight equal to 50.00% for each criterion, due to in a CUA the incremental cost represents 50.00% of the ratio and the incremental effectiveness the other 50.00%.<sup>4</sup>
3. The studied psoriatic arthritis treatments by CADTH (golimumab, ustekinumab, adalimumab, etanercept, infliximab) along with placebo formed a set of alternatives.

Table 1: Total costs and QALYs of each treatment.

MEASUREMENT	INFLIXIMAB	USTEKINUMAB	ADALIMUMAB	ETANERCEPT	GOLIMUMAB	PLACEBO
Total costs (\$)	196,391	112,268	114,184	132,854	106,084	51,269
Total QALYs	7.48	6.63	6.80	7.31	7.23	5.14

Source: CADTH<sup>1</sup>  
QALYs: quality-adjusted life-years

Table 2: ICUR and preference index of each treatment versus placebo.

MEASUREMENT	INFLIXIMAB	USTEKINUMAB	ADALIMUMAB	ETANERCEPT	GOLIMUMAB
ICUR (\$) versus placebo	61,945	40,958	37,946	37,604	26,264
Preference index over placebo	50.00% 	31.84% 	35.47% 	46.37% 	44.66% 

ICUR: incremental cost-utility ratio.

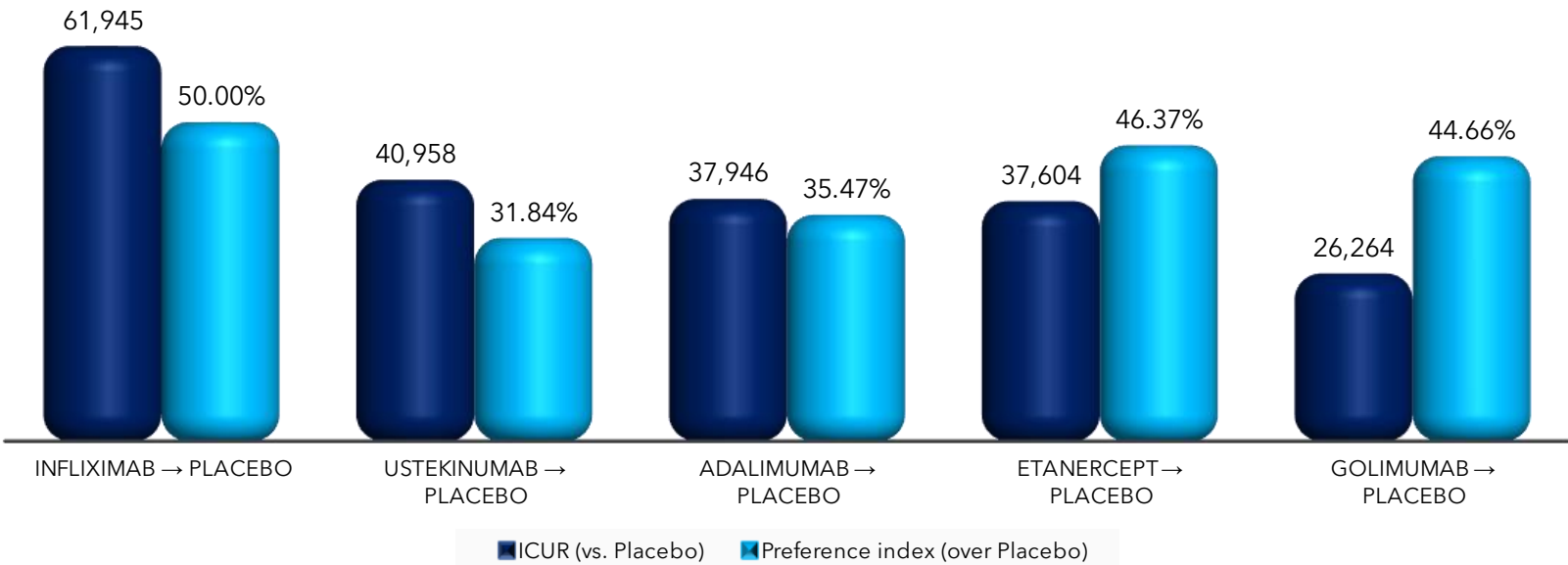


Figure 1: ICUR and preference index of each treatment versus placebo.

## Results

The ICUR computed for each treatment versus placebo by CADTH and the preference index of each treatment over placebo are presented in Table 2 and Figure 1.

Infliximab vs. placebo achieved the highest ICUR (\$61,945) and the highest preference level (50.00%). Golimumab reached an ICUR equal to \$26,264 and 44.66% preference index. The distance between those ICURs is bigger than the distance between the preferences.

Ustekinumab and adalimumab reached an ICUR bigger than golimumab (\$40,958, \$37,946, respectively), but a smaller preference level over placebo (31.84%, 35.47%). Despite the ustekinumab ICUR is bigger than adalimumab ICUR, its preference level is smaller.

An ICUR equal to \$37,604 and 46.37% preference level was computed for etanercept. Comparing etanercept and infliximab results, the distance between their ICURs is notoriously bigger than the distance between preferences.

## Conclusion

The MCDA approach here proposed generated a preference index from CADTH CUA data for five psoriatic arthritis treatments over placebo. This can assist the decision makers to analyze and compare ICURs.

## References

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