Cost-effectiveness analysis of adalimumab and its clinical alternatives in immunemediated inflammatory diseases in Spain

J.A. Schoenenberger Arnaiz[1], C. Crespo Diz[2], J.M. Martínez Sesmero[3], M. Cerezales[4].

1 Hospital Arnau De Vilanova, Hospital Pharmacy, Lleida, Spain; 2 Área Sanitaria Pontevedra-Salnés, Hospital Pharmacy, Pontevedra, Spain; 3 Hospital Clínico San Carlos, Hospital Pharmacy, Madrid, Spain; 4 Axentiva Solutions S.L., Health Economics, Oviedo, Spain.

Background

Immune-mediated inflammatory diseases (IMIDs) present a high burden of illness, as they are chronic conditions with associated co-morbidities and high indirect costs. In Spain, IMIDs prevalence is around 6% and Rheumatoid Arthritis (RA) (1%), is one of the most common among them. The introduction of biological treatments, like adalimumab (ADA), has contributed to improve RA's clinical outcomes. High cost of these biologics used to be a hurdle for their prescription until the appearance of biosimilars. Cost-effectiveness analysis can help in decision-making for this pathology.

Aim and Objective

Our objective was to assess the cost-effectiveness of ADA and its clinical alternatives in RA.

Methodology

All the effectiveness information measured by using ACR (American College of Rheumatology) was gathered through a PICO-S-T strategy including infliximab, etanercept, certolizumab, tocilizumab, golimumab, tofacitinib, and upadacitinib. Two reviewers evaluated the inclusion of the studies and assessed their quality using PRISMA-NMA Checklist.

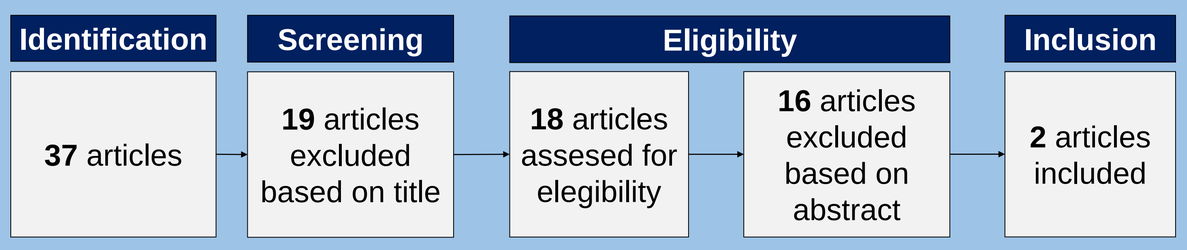

Figure 1. PRISMA flow diagram.

Efficiency score was Cost per Number Needed to Treat (NNT) versus Placebo (PLC). A cost-effectiveness model was built based on meta-analyses (direct or indirect) conducted between 2015-2021, designed from a hospital perspective (only direct costs) and with a 1-year horizon. Cost data (€2021) was obtained from Spanish datasets and literature review. With all this information, a cost-effectiveness analysis between ADA and the suitable alternatives was performed. A probabilistic sensitivity analysis (PSA) was performed.

Article	Study type	Evidence level
Song *et al. 2019*	NMA	84%
Tarp *et al.* 2017	NMA	84%

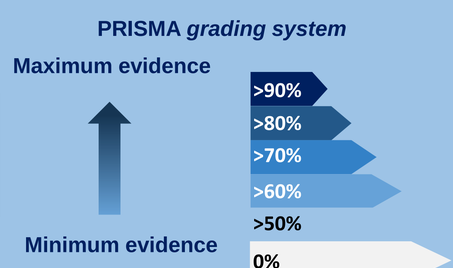

Figure 2. Quality assessment according to PRISMA grading system. NMA, Network meta-analysis.

Results

2 meta-analyses met the inclusion criteria and fulfilled on average 84% of the 32 points on the PRISMA-NMA Checklist items.

Tarp *et al*. 2017, showed no statistically significant difference in NNT between infliximab, ADA, etanercept, certolizumab, tocilizumab, and golimumab for ACR-50. Song *et al*. 2019, showed no significant difference in NNT between ADA, tofacitinib, and upadacitinib for ACR-20.

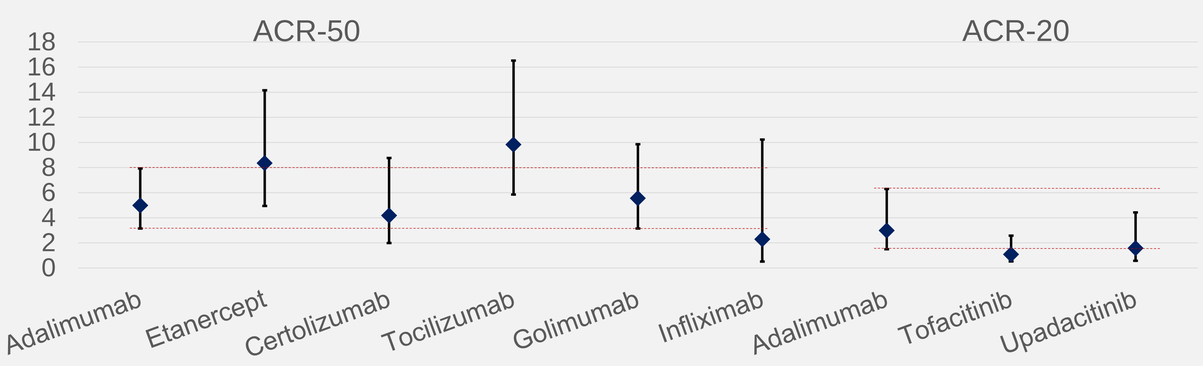

Figure 3. Overall reduction in ACR-50 and ACR-20 of diverse treatments versus placebo; OR (95%CI).

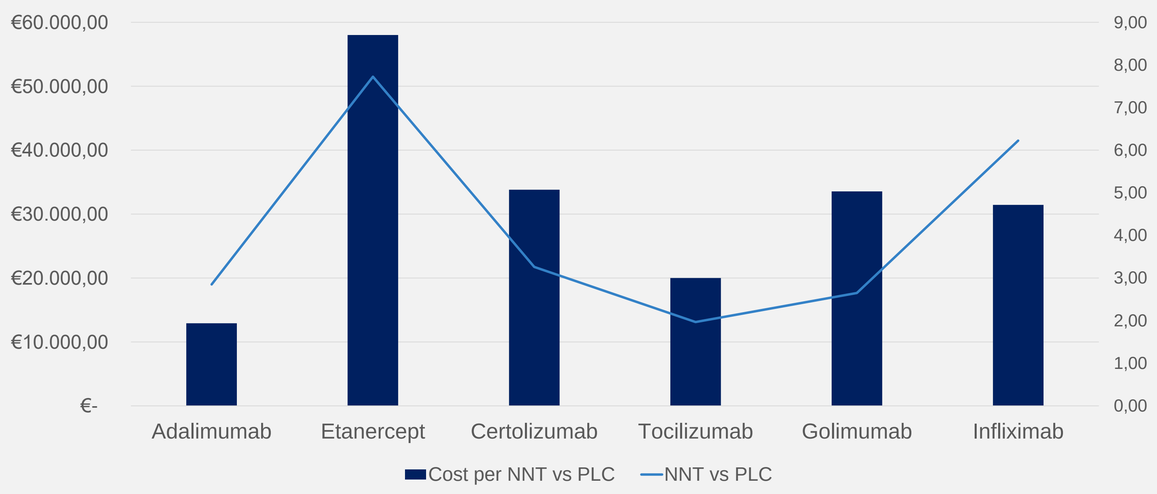

Figure 4. NNT and Cost/NNT for all treatments versus placebo in ACR-50.

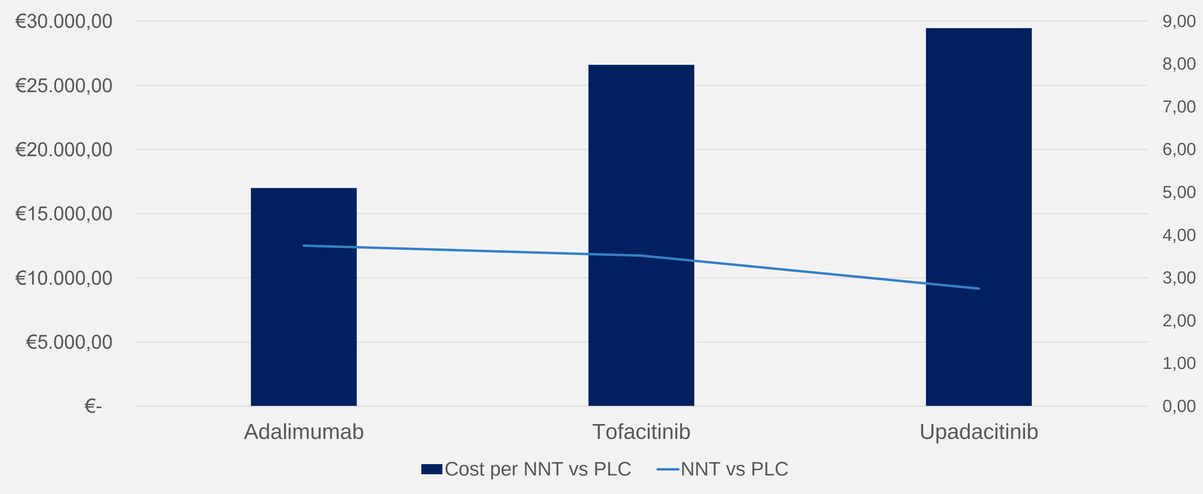

Figure 5. NNT and Cost/NNT for the treatments versus placebo in ACR-20.

Total annual cost was 4,529€ ADA vs 4,650€ - 10,001€ for the other treatments. As no effectiveness difference was seen, a cost minimization analysis was performed. Hence ADA, was the most cost-effective treatment.

Figure 6. Total annual drug cost.

In the PSA, only ADA (63%) and infliximab (37%) performed as the best alternative, with ADA showing the highest probability of being cost-effective.

Conclusions

According to our model, ADA was the most cost-effective option for RA treatment in Spain.

References

Leon L *et al*. Reumatología Clínica. 2018;14(1):4-8.
Song GG *et al*. International Journal of Rheumatic Diseases. 2019;22:1563-1571.
Tarp S *et al*. Seminars in Arthritis and Rheumatism. 2017;46:699-708.

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jas.lleida.ics@gencat.cat