Avacopan in the treatment of ANCA-associated vasculitis: a cost-utility analysis in Portugal

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MENDES D[1,2], ALVES C[1,2], FIGUEIREDO D[3], COSTA B[1], PENEDONES A[1,2], RAMÍREZ DE ARELLANO A[4], BATEL MARQUES F[1,2]
[1]Clevidence, Porto Salvo, Portugal. [2]Laboratory of Social Pharmacy and Public Health, Faculty of Pharmacy, University of Coimbra, Portugal. [3]Center for Research and Development in Mathematics and Applications, University of Aveiro, Aveiro, Portugal. [4]CSL Vifor, Zürich, Switzerland

INTRODUCTION

- Granulomatosis with polyangiitis (GPA) and microscopic polyangiitis (MPA) are two forms of anti-neutrophil cytoplasmic autoantibody associated vasculitis (AAV), impacting patient morbidity, mortality, and quality of life.[1-6]
- Current standard of care is associated to high rate of relapse, glucocorticoids (GCs) related infections and complications and rapid disease progression.[4,7-12]
- Avacopan (AVA) is a selective antagonist of the human C5a receptor (C5aR1 or CD88), competitively inhibiting its interaction with C5a. This blockade reduces the pro-inflammatory effects of C5a, including neutrophil activation, migration to inflammation sites, and increased vascular permeability.[13]

OBJECTIVE

- This study is a cost- utility analysis of using AVA (rather than high-dose GCs) in combination with rituximab (RTX) or cyclophosphamide (CYC) regimen in the treatment of adults with severe, active GPA or MPA from the perspective of the Portuguese National Health Service (NHS).

METHODS

- A Markov model contemplating 9 health states (HS) (active disease, remission (n=3), relapse (n=3), end-stage renal disease [ESRD], death) simulated the AAV course, namely induction and maintenance phases to induce remission and prevent relapses, respectively (Figure 1).
- Transition probabilities between HS were calculated using data from the ADVOCATE trial ('active disease', 'remission' and 'relapse') and other real-world evidence sources ('ESRD' and 'death').[4,14-23]
- Utilities from ADVOCATE were used to estimate quality-adjusted life years (QALYs).
- The characteristics of the population and the use of resources were elicited by an expert panel.[14]
- Costs (e.g., drugs, disease monitoring, adverse events) were collected from Portuguese official sources and literature.[24-26]
- Costs and benefits were discounted at a 4% annual rate over a lifetime horizon.[27]
- Deterministic (DSA) and probabilistic sensitivity analyses (PSA) were performed.

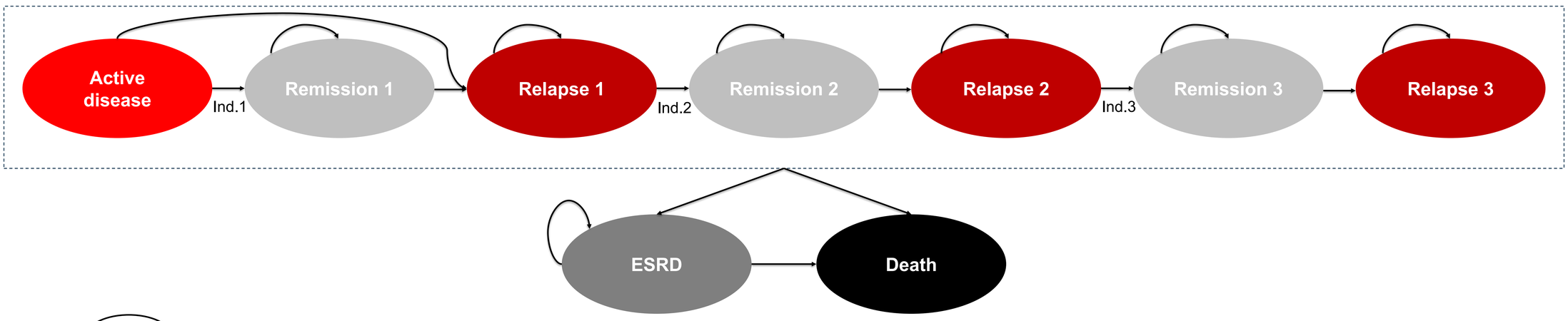

Figure 1. Model structure. The cycle length is four weeks. A year is 13 cycles in the model. Lifetime: 40 years from model start. Mean age at start is 64 years.

RESULTS

Base case

- The use of avacopan generated +0.273 life-years (LYs) and +0.337 QALYs at an additional cost of €34,416 compared to glucocorticoids (both in combination with an RTX [58.3% of patients] or CYC [41.7% of patients] regimen) (Table 1).
- The ICER for that comparison was estimated at €102,036 per QALY gained.

Table 1. Base-case results.

	AVA+CYC vs. CYC+GCs	AVA+RTX vs. RTX+GCs	AVA+CYC/RTX vs. CYC/RTX+GCs
Δ Costs	34 494 €	34 213 €	**34 416 €**
Δ LY	0,273	0,276	**0,273**
Δ QALYs	0,337	0,339	**0,337**
ICER	102 268 €	100 960 €	**102 036 €**

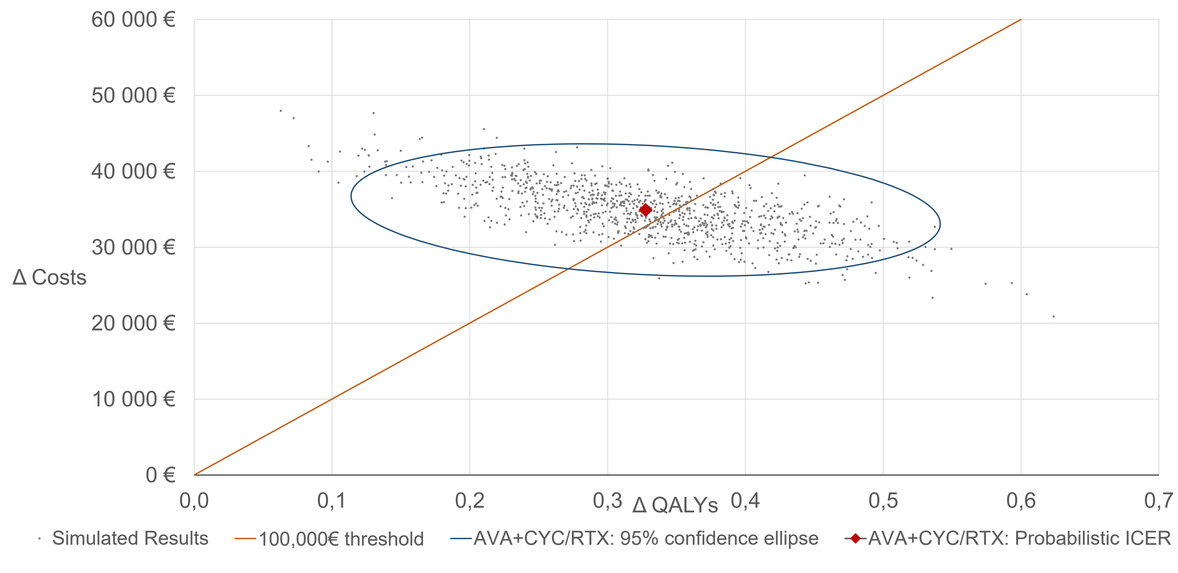

Figure 3. Probabilistic sensitivity analysis (1000 simulations): cost-effectiveness plane.

Sensitivity analyses

- The model results were robust according to DSA (Figure 2) and PSA (Figure 3).

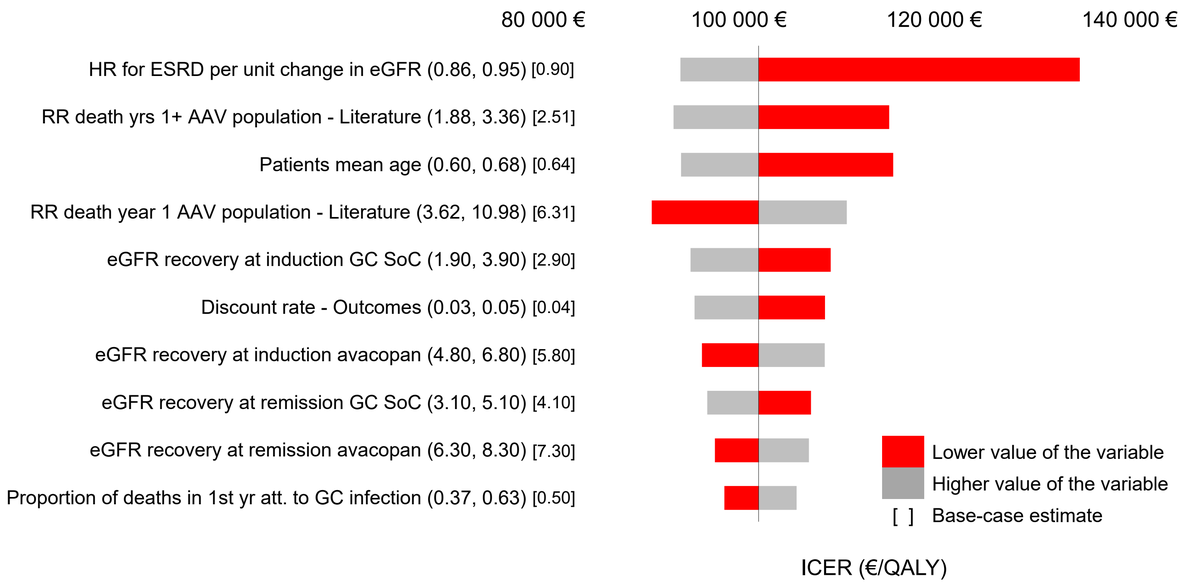

Figure 2. Deterministic sensitivity analysis: one-way sensibility analysis.

List of abbreviations: AAV, anti-neutrophil cytoplasmic autoantibody associated vasculitis; AEs, adverse events; AVA, avacopan; CYC, cyclophosphamide; DSA, deterministic sensitivity analyses; eGFR, estimated glomerular filtration rate; ESRD, end-stage renal disease; GCs, glucocorticoids; GPA, granulomatosis with polyangiitis; HR, hazard ratio; HS, health states; ICER, incremental cost-effectiveness ratio; LYs, life-years; MPA, microscopic polyangiitis; NHS, National Health Service; PSA, probabilistic sensitivity analyses; QALYs, quality-adjusted life years; RR, relative risk; RTX, rituximab; SoC, standard of care.

CONCLUSION

Avacopan + CYC/RTX higher drug costs are substantially offset by the reduction of relapses, GCs-related infections and complications along with the slowing down of progression to ESRD, resulting in higher LYs, QALYs and in a cost-effective treatment for Portuguese healthcare system.

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