COST-EFFECTIVENESS OF OCRELIZUMAB IN FIRST-LINE TREATMENT OF HIGHLY ACTIVE RELAPSING-REMITTING MULTIPLE SCLEROSIS IN CHILE

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INTRODUCTION

Relapsing-remitting multiple sclerosis (MS) represents 80-85% of all cases of multiple sclerosis [1], it affects young people and it is the most common cause of acquired disability in this population [2].

Highly active MS (HAMS) is a phenotype of MS that presents a more severe disease course, with increased lesion load and more frequent relapses, which can lead to increased disability even while being treated with disease-modifying therapies (DMTs) [3].

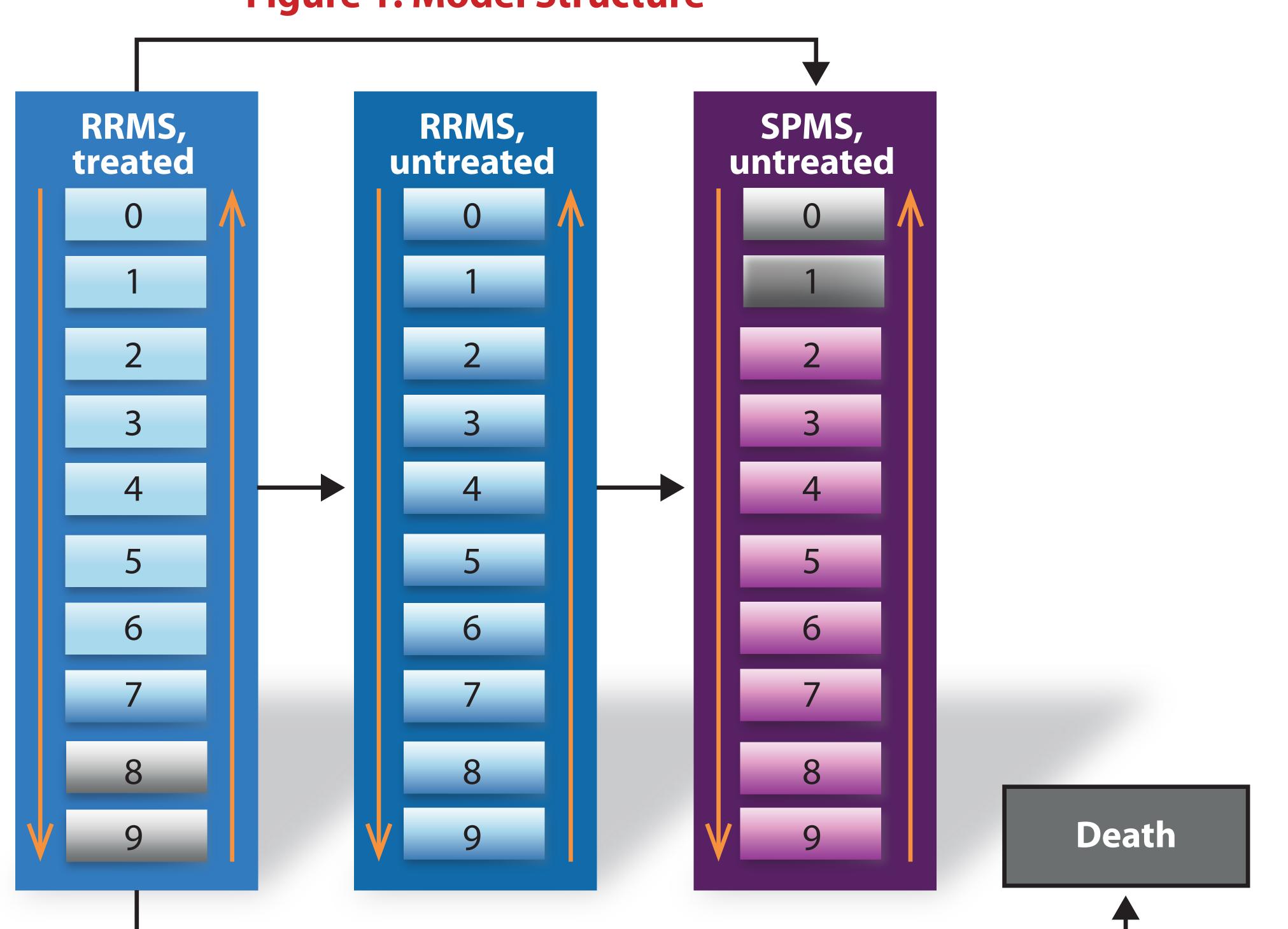
Ocrelizumab is a new relevant pharmacology strategy in the management of patients with HAMS, it reduces the progression of the disease [4] and has been considered by different agencies such as NICE [5] and CADTH [6] for first-line treatment of highly active disease, as well as in the clinical practice guideline of the national health service (NHS) in England [7].

OBJECTIVE

To develop a cost-effectiveness analysis of ocrelizumab versus other first-line treatment alternatives (interferons, dimethyl fumarate, glatiramer acetate, teriflunomide, and fingolimod) for HAMS from the perspective of the Chilean public health system.

METHODS

Figure 1. Model Structure



METHODS

Markov model developed from the Chilean public health system perspective and a lifetime time horizon for patients with HAMS. The cost-effectiveness of ocrelizumab was evaluated against other alternatives used as first-line treatment (Fig 1).

The parameters regarding the effectiveness, safety, and quality of life were used from the data in the reported literature.

The total cost of care was calculated using a micro-costing methodology according to official cost sources in the country in USD (table 1).

The outcome assessed was quality-adjusted life years (QALYs).

The cost-effectiveness threshold of 3 gross domestic product (GDP) per capita per incremental quality-adjusted life year calculated at USD 49.508,4 was considered.

Table 1. Inputs Cost

Annual Cost (USD, 2021)		Source		
Ocrelizumab	\$ 15.985,95			
Teriflunomide 14	\$ 5.283,17			
IFNB-1a SC (Rebif)	\$ 11.560,51			
IFNB-1a (Avonex)	\$ 10.414,38	Calculated by authors, report based in CENABAST, 2022 [8]		
Glatiramer Acetate (Cordoxone)	\$ 2.216,92			
Fingolimod	\$ 3.292,97			
Peginterferon beta-1 ^a (Plegridy)	\$ 5.707,20			
Dimethyl fumarate	\$ 11.185,63			
Annual administration Cost				
Ocrelizumab	\$ 406,72	Calculated by authors, report based in EVC, 2021 [9] - FONASA		
Interferon	\$ 30,94			
Glatiramer Acetate (Cordoxone)	\$ 30,94			
Dimethyl fumarate	\$ 30,94			
Fingolimod	\$ 100,66			
Annual Monitoring Cost				
Ocrelizumab	\$ 588,96	Calculated by authors,		
Interferon	\$ 861,36			
Glatiramer Acetate	\$ 597,04	report based in EVC, 2021		
Dimethyl fumarate	\$ 854,93	[9] - FONASA		
Fingolimod	\$ 1.005,41			

RESULTS

Ocrelizumab was the most effective technology in the First-Line Treatment of HAMS in Chile because it produces 10,367 QALYs compared with the other alternatives (Table 2).

Ocrelizumab was a cost-effective alternative compared to other DMTs with incremental cost-effectiveness ratios (ICERs) from USD 24.601,80 to USD 47.381,10 under the willingness to pay threshold of 3 GDP USD \$ 49.508,4 for the Chilean perspective.

Table 2. Base Case Results

Technology	Total Cost	Qalys	Increment al Cost	Qalys Incremental	ICER
Ocrelizumab	\$ 264.120,17	10,367			
IFNB-1a (Avonex)	\$ 217.428,44	8,470	\$ 46.691,73	1,90	\$ 24.610,80
Dimethyl fumarate	\$ 225.234,41	8,806	\$ 38.885,75	1,56	\$ 24.907,55
Fingolimod	\$ 184.484,97	8,686	\$ 79.635,20	1,68	\$ 47.381,10
Glatiramer Acetate	\$ 178.384,59	8,149	\$ 85.735,57	2,22	\$ 38.655,11
Peginterferonbeta	\$ 189.790,80	8,730	\$ 74.329,37	1,64	\$ 45.417,12
-1a 2W					
IFNB-1a SC	\$ 219.291,51	8,820	\$ 44.828,66	1,55	\$ 28.987,21
Teriflunomide 14	\$ 194.608,10	8,695	\$ 69.512,06	1,67	\$ 41.566,44

CONCLUSION

Ocrelizumab is a cost-effective alternative for treating patients with HAMS in the Chilean setting as first-line treatment.

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