

# Cost-Effectiveness of Ofatumumab in Treatment of Relapsing Multiple Sclerosis in Türkiye

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## INTRODUCTION

Multiple Sclerosis (MS) is a neurological disease characterized by areas of demyelination within the central nervous system. The disease affects mainly the young and middle-aged population at their most productive ages. Relapsing forms of the disease involves a flare of MS symptoms such as stiffness and/or spasms, dizziness, visual problems, speech issues, bladder problems and cognitive dysfunction. There are drugs available in the market that can be used at different lines of the disease. Ofatumumab is an anti-CD20 monoclonal antibody therapy and its efficacy and safety profile are assessed in clinical studies (MIRROR, ASCLEPIOS I and II).

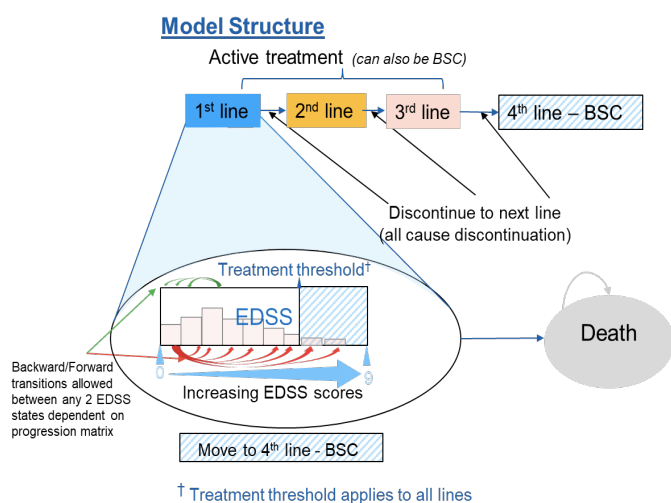
## OBJECTIVES

The objective of this study is to evaluate the cost-effectiveness of ofatumumab against ocrelizumab and natalizumab for the treatment of Relapsing MS (RMS).

## METHODS

A discrete time, cohort Markov model based on 10 EDSS scores was constructed (Figure 1). All patients start the therapy with the first line treatment. EDSS health states determined the HRQoL, costs, relapses and mortality rates. The model population was aligned to the population in ASCLEPIOS I & II trials. A network meta-analysis was conducted as there is no direct comparison trial with ofatumumab and selected comparators. The key clinical outcomes were time to 3 and 6 months confirmed disability, worsening on EDSS and annualized relapse rates. Only direct costs were included in the model as per the requirements of the Social Security Institution (SSI). Costs were estimated based on expert views of resources used for each EDSS state, adverse event and relapse. A questionnaire was designed covering the type, patient ratio and frequency of resources used at all EDSS states, for treatment of adverse events and for relapsing patients. Relapse costs were calculated both for relapses requiring outpatient treatment and hospitalization. The SSI's price tariff and reimbursement guidelines were used in determining the cost of treatment. Both costs and outcomes were discounted by 3%. ICER was calculated as the incremental cost per incremental life years (LY) as required by the SSI.

Figure 1: Model Structure



## RESULTS

Selected clinical data used in the model are presented in tables 1 & 2

Table 1: Relapse Rates by Treatment

Treatment	Relapse Rate
Ofatumumab	0.30
Natalizumab	0.31
Ocrelizumab	0.33

SE: 0.005  
ASCLEPIOS I&II, Polman et al, 2006, Hauser et al, 2017

Cost data were collected from the health resource utilization questionnaire. SSI prices were used in calculations (Tables 3-6). All prices are as of 06.03.2023.

Table 3: Cost of Treatment by EDSS

EDSS	Cost (TRY)
EDSS 0	68,470
EDSS 1	78,407
EDSS 2	105,075
EDSS 3	127,323
EDSS 4	153,026
EDSS 5	155,368
EDSS 6	67,295
EDSS 7	29,139
EDSS 8	18,626
EDSS 9	14,765

Table 2: Adverse Event Probabilities

Treatment	Severity	Annual Probability
Ofatumumab <sup>1</sup>	Non-serious	51.62%
	Serious	3.75%
Natalizumab <sup>2</sup>	Non-serious	54.04%
	Serious	10.81%
Ocrelizumab <sup>3</sup>	Non-serious	54.34%
	Serious	3.82%

<sup>1</sup>ASCLEPIOS I&II, <sup>2</sup>Polman et al, 2006, <sup>3</sup>Hauser et al, 2017

Table 4: Cost of Relapse

	Cost (TRY)
Without hospitalization	1,845
With hospitalization	10,044

TRY: Turkish Lira

Table 5: Annual Cost of Drugs (TRY)

	Year 1	Year 2+
Ofatumumab	166,050	132,840
Natalizumab	205,220	205,220
Ocrelizumab	135,092	135,092

Table 6: Cost and Effectiveness Data Used in the Model

	Ofatumumab	Natalizumab	Ocrelizumab
Drug costs (TRY)	896,455	1,269,972	852,687
Admin & monitoring costs (TRY)	450	3,929	4,589
Health state costs (TRY)	1,820,087	1,807,868	1,808,222
Adverse event costs (TRY)	6	17	6
Relapse costs (TRY)	5,059	5,161	5,184
Total Costs (TRY)	2,722,059	3,086,947	2,670,690
Life years	23.07	23.07	23.07
QALYs	12.32	12.15	12.15

Table 7: Cost-Effectiveness Analysis Results- Ofatumumab vs Natalizumab

	Cost (TRY)	Incremental Cost (TRY)	Life Years	ICER
Ofatumumab	2,722,059	-364,889	23.07	Dominant
Natalizumab	3,086,947		23.07	

Table 8: Cost-Effectiveness Analysis Results- Ofatumumab vs Ocrelizumab

	Cost (TRY)	Incremental Cost (TRY)	Life Years	ICER
Ofatumumab	2,722,059	51,368	23.07	51,368
Ocrelizumab	2,670,690		23.07	

Ofatumumab was dominant in its comparison with natalizumab and provided same duration of life years (23.07) with lower costs (2,722,059 TRY vs 3,086,947 TRY). The ICER was 51,368 TRY for the comparison between ofatumumab and ocrelizumab. Both products provided same life years (23.07) with incremental cost of 51,368TRY (2,722,059 TRY vs. 2,670,690). Türkiye does not have a published threshold value to be used in these decisions. The GDP per capita was stated as 9,485\$ (179,645 TRY, Central Bank exchange rate of 6.03.2023 1\$=18,94 TRY) in 2022 by the government's Medium Term Plan. When the GDP per capita values are used, the incremental cost is lower than the GDP per capita. Sensitivity analyses indicated that the results were robust.

## CONCLUSION

Ofatumumab dominated natalizumab in the cost-effectiveness analysis. The ICER for ofatumumab vs ocrelizumab was lower than the GDP per capita. It can be concluded that ofatumumab is a cost-effective option in treatment of RMS in Türkiye.

### References

Hauser, S. L. et al (2017) Ocrelizumab versus Interferon Beta-1a in Relapsing Multiple Sclerosis. *New England Journal of Medicine*, 376(3), pp. 221-234.  
Polman, C. H. et al (2006) A randomized, placebo-controlled trial of natalizumab for relapsing multiple sclerosis. *N Engl J Med*, 354(9), pp. 899-910.

\*This study was supported by Novartis Türkiye