COST UTILITY ANALYSIS OF OCRELIZUMAB VERSUS FINGOLIMOD IN RELAPSING REMITTING MULTIPLE SCLEROSIS PATIENTS IN EGYPT FROM PAYOR PERSPECTIVE

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ABSTRACT

OBJECTIVES: The aim of this study is to compare cost utility of Ocrelizimuab versus Fingolimod in relapsing-remitting multiple sclerosis (RRMS) from Ministry of Health payor perspective in Egypt.

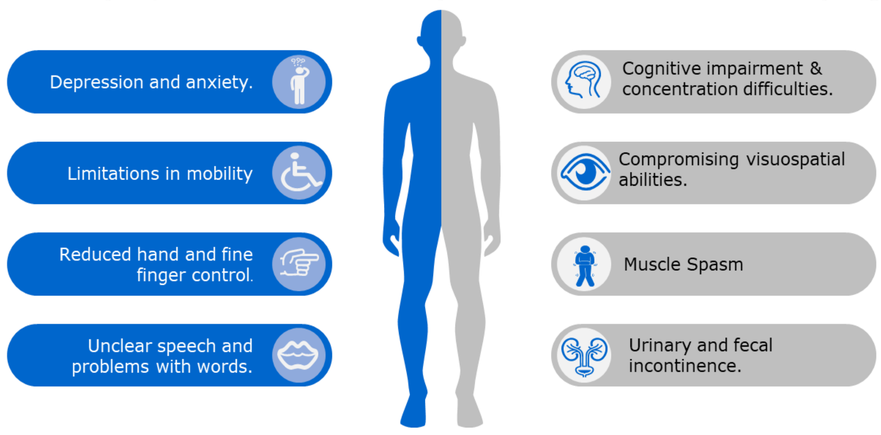
METHODS :A lifetime Markov model was developed with a cycle length of one year. Each health state in the model is associated with a utility and a cost and both are discounted with a 3.5% rate according to Egyptian guidelines. Clinical inputs were driven from the network meta-analysis (NMA), the two main clinical findings over which the health states were chosen are the occurrence of relapses and the disability progression over time. utility values for each health state were taken from published literature. Direct medical treatment costs were collected from MoH perspective.

RESULTS: Ocrelizumab led to an expected gain of 1.57 QALYs versus Fingolimod at an incremental cost of 156,509 EGP presenting an incremental cost-effectiveness ratio (ICER) of 99,656 EGP/QALY. The results of one way sensitivity analysis revealed that the key parameters with greatest impact on the ICER value are ocrelizumab annual cost followed by the discounting rate and From the cost-effectiveness acceptability curves (CEAC) it can be seen that at a willingness to pay off 145,000 EGP per QALY, the probability of ocrelizumab of being cost-effective is 98.6 % and the probability of fingolimod for being cost-effective at the same threshold is 1.40%.

CONCLUSIONS: Ocrelizumab is cost-effective versus Fingolimod in patients with RRMS from MoH perspective which is below the accepted willingness to pay threshold in Egypt which is 3 times GDP/CAPITA equivalent to 145,000 EGP/QALY.

INTRODUCTION

Multiple Sclerosis (MS) is a chronic immune-mediated inflammatory disease of the central nervous system that affects the brain and spinal cord, causing demyelination, axonal loss, and progressive neuronal degeneration. MS can present with a variety of symptoms, with severity and disease course varying[1].



Relapsing-remitting multiple sclerosis (RRMS) is a type of MS that has remission and relapse phases**.** RRMS affects approximately 85/100 MS patients[1], and the current therapeutic strategy aims to reduce the risk of relapses and, potentially, disability progression.

Egypt has one of the highest rates of MS patients in the MENA region, with an estimated prevalence of

65 Person per 100,000 people[2]

Ocrelizumab, a disease-modifying treatment (DMT), is a novel humanized monoclonal antibody that targets CD-20 + B Cells[3].It is currently approved for RRMS, Secondary Progressive MS, and is the only DMT approved for Primary Progressive MS (PPMS)

OBJECTIVES

This study compares the cost-utility of Ocrelizimuab with Fingolimod. in relapsing-remitting multiple sclerosis (RRMS) from Ministry of Health payor perspective in Egypt.

METHODOLOGY

Data and information were gathered from four different sources:

1. **Systematic review** of literature found in the online public domains to collect data concerned with MS Epidemiology, Pathophysiology, Burden of MS (Economic ,Social and Clinical burden) and Treatment Evolution of MS worldwide and in Egypt.

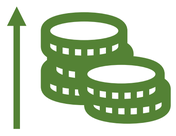
2. **MS Cost of Illness Study**: A survey conducted on 142 Egyptian patients from different governorates in 2018 to estimate the burden of MS on the Egyptian society, from patient's and government's perspectives. A prevalence-based probabilistic model was used to calculate the aggregate measure of the economic impact associated with MS disease. This study was a bottom-up approach using patient reported outcome cross-sectional technique combining the different MS related costs from societal perspective for patients in Egypt.

3. **Experts Review**: Gathering the feedback from Neurologists representing different entities in Egypt to highlight current situation in Egypt and fulfil knowledge gap in collected data.

RESULTS

Over a lifetime time horizon, the results of the model revealed that

Ocrelizumab 300mg Vial



is a cost-effective option Vs.

Fingolimod

Ocrelizumab led to an expected gain of **1.57 QALYs** versus Fingolimod at an incremental cost of **156,509 EGP** presenting an incremental cost-effectiveness ratio (ICER) of **99,656 EGP/QALY**. The result indicates that ICER value was below the accepted willingness to pay threshold in Egypt which is 3 times GDP/CAPITA which is **145,000 EGP/QALY**.[6]

Interventions	Total costs	Total QALYs	Incremental costs	Incremental QALYs	ICER	Result
Ocrelizumab	1,441,317	10.400	156,509	1.570	99,656	Cost-effective
Fingolimod	1,284,807	8.830				

Constructive engagement with patients is necessary to support adherence to treatment. Patients with MS and their caregivers have an urgent need for information, and they look to both physicians and nonclinical stakeholders to provide it.

A survey found that **emotional support** was an important unmet need of patients with MS in USA, which provides an example of support that can be delivered by stakeholders other than the physician in the healthcare team.

CONCLUSION

MS is a chronic, progressive immune mediated inflammatory disease that affects the central nervous system[1] .It is characterized by a wide range of physical and mental symptoms that decrease the overall wellbeing and quality of life in patients of different ages. Ocrelizumab, the first and only humanized monoclonal antibody, approved to treat MS in all of its forms. It's the first MS treatment that targets CD20+ B cells, which play a key part in the disease's pathogenesis [4] .Ocrelizumab, without a doubt, has a substantial role in lowering the annual rate of relapses and slowing disease progression [5].The study demonstrated the clinical efficacy of Ocrelizumab when used by the Egyptian Ministry of Health, with an ICER of **99,656 EGP/QALY,** which was lower than the Egyptian threshold, and outperformed Fingolimod by **1.57 QALYS gains.**

Footnotes:
References:1- Kanavos P, Tinelli M, Efthymiadou O, Visintin E, Grimaccia F, Mossman J. Towards Better Outcomes in Multiple Sclerosis by Addressing Policy Change: The International Multiple Sclerosis Study (IMPrESS).; 2016.Available atIMPreESS
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