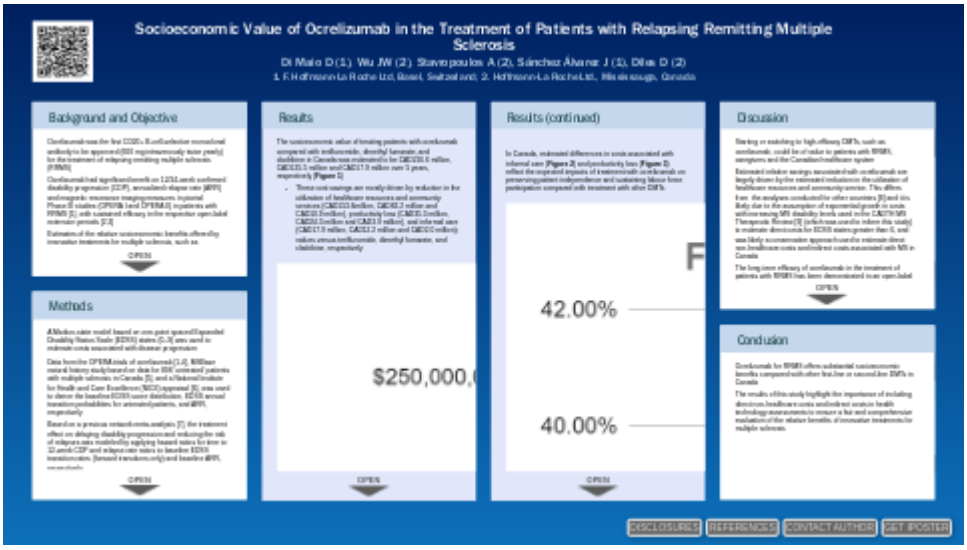
Socioeconomic Value of Ocrelizumab in the Treatment of Patients with Relapsing Remitting Multiple Sclerosis



Di Maio D (1), Wu JW (2), Stavropoulos A (2), Sánchez Álvarez J (1), Diles D (2)

1. F. Hoffmann-La Roche Ltd, Basel, Switzerland; 2. Hoffmann-La Roche Ltd., Mississauga, Canada

PRESENTED AT:

BACKGROUND AND OBJECTIVE

Ocrelizumab was the first CD20+ B-cell-selective monoclonal antibody to be approved (600 mg intravenously twice yearly) for the treatment of relapsing remitting multiple sclerosis (RRMS)

Ocrelizumab had significant benefit on 12/24-week confirmed disability progression (CDP), annualized relapse rate (ARR) and magnetic resonance imaging measures in pivotal Phase III studies (OPERA I and OPERA II) in patients with RRMS [1], with sustained efficacy in the respective open-label extension periods [2,3]

Estimates of the relative socioeconomic benefits offered by innovative treatments for multiple sclerosis, such as ocrelizumab, can inform the evaluations and decision-making of health technology assessment agencies and other healthcare stakeholders

Objective

To assess the socioeconomic value of ocrelizumab in RRMS compared with teriflunomide, dimethyl fumarate, and cladribine in Canada

METHODS

A Markov-state model based on one-point spaced Expanded Disability Status Scale (EDSS) states (0–9) was used to estimate costs associated with disease progression

Data from the OPERA trials of ocrelizumab [1,4], MSBase natural history study based on data for 898 ‘untreated’ patients with multiple sclerosis in Canada [5], and a National Institute for Health and Care Excellence (NICE) appraisal [6], was used to derive the baseline EDSS score distribution, EDSS annual transition probabilities for untreated patients, and ARR, respectively

Based on a previous network meta-analysis [7], the treatment effect on delaying disability progression and reducing the risk of relapses was modeled by applying hazard ratios for time to 12-week CDP and relapse rate ratios to baseline EDSS transition rates (forward transitions only) and baseline ARR, respectively

Socioeconomic benefits included savings in direct healthcare (including outpatient care and costs of relapse) and non-healthcare costs (including community services and financial support), as well as indirect costs (including informal care and work productivity)

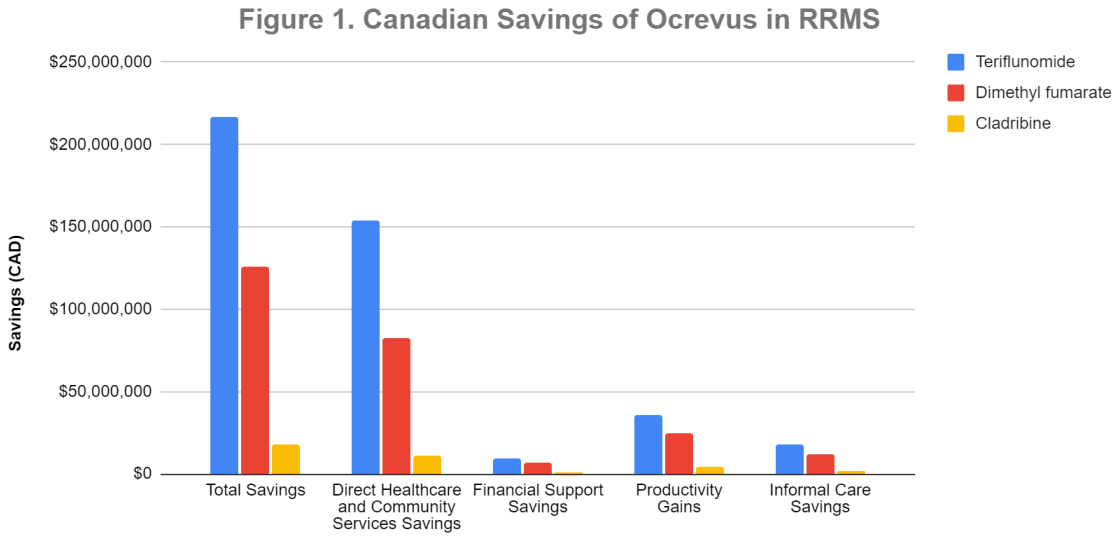
Drug costs were not included in the analysis to enable a focus on treatment benefits

For more details on the methods used and assumptions made, please refer to the supplemental information available via the QR code on this poster

RESULTS

The socioeconomic value of treating patients with ocrelizumab compared with teriflunomide, dimethyl fumarate, and cladribine in Canada was estimated to be CAD216.6 million, CAD125.5 million and CAD17.9 million over 5 years, respectively (**Figure 1**)

- These cost savings are mostly driven by reduction in the utilization of healthcare resources and community services (CAD153.6million, CAD82.2 million and CAD10.9 million), productivity loss (CAD35.3 million, CAD24.3 million and CAD3.9 million), and informal care (CAD17.9 million, CAD12.2 million and CAD2.0 million); values versus teriflunomide, dimethyl fumarate, and cladribine, respectively



RESULTS (CONTINUED)

In Canada, estimated differences in costs associated with informal care (**Figure 2**) and productivity loss (**Figure 3**) reflect the expected impacts of treatment with ocrelizumab on preserving patient independence and sustaining labour force participation compared with treatment with other DMTs

Figure 2. Proportion of RRMS Patients Requiring Informal Care

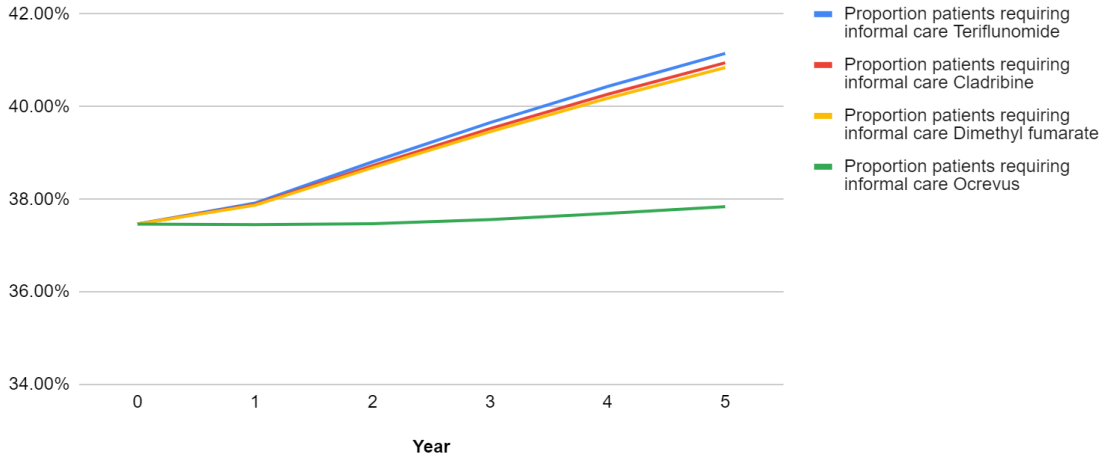
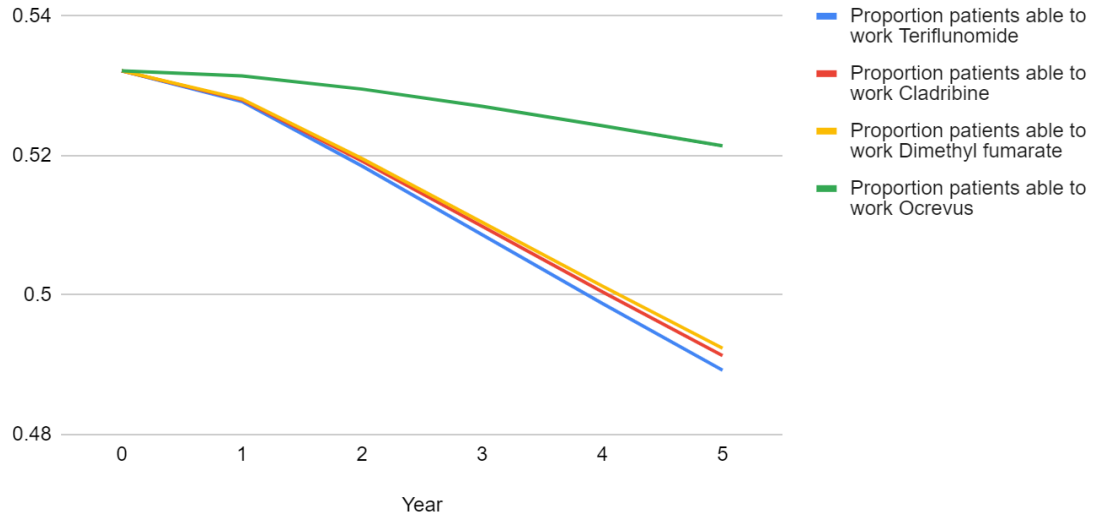


Figure 3. Proportion of RRMS patients able to work



DISCUSSION

Starting or switching to high-efficacy DMTs, such as ocrelizumab, could be of value to patients with RRMS, caregivers and the Canadian healthcare system

Estimated relative savings associated with ocrelizumab are largely driven by the estimated reduction in the utilization of healthcare resources and community service. This differs from the analyses conducted for other countries [8] and it is likely due to the assumption of exponential growth in costs with increasing MS disability levels used in the CADTH MS Therapeutic Review [9] (which was used to inform this study) to estimate direct costs for EDSS states greater than 6, and was likely a conservative approach used to estimate direct non-healthcare costs and indirect costs associated with MS in Canada

The long-term efficacy of ocrelizumab in the treatment of patients with RRMS has been demonstrated in an open-label extension of the OPERA trials [2], suggesting that long-term treatment with ocrelizumab will be associated with sustained socioeconomic benefit

- The long-term socioeconomic benefits of DMTs for which such data are not available remain less certain

Limitations of this study include:

- Mortality was not modeled; however, given that multiple sclerosis has only a small effect on life expectancy and that the time horizon of the analysis was relatively short (5 years), the impact of mortality on differential costs would be small

- Treatment discontinuation was not modeled because we did not seek to test complex hypothetical scenarios associated with different treatment sequences

Drug costs were not included because:

- Our objective was not to conduct a full cost–benefit analysis, but to instead compare the socioeconomic value of different treatments and show a direct relationship with treatment efficacy

- Net DMT prices are confidential and therefore drug costs could not be calculated accurately

CONCLUSION

Ocrelizumab for RRMS offers substantial socioeconomic benefits compared with other first-line or second-line DMTs in Canada

The results of this study highlight the importance of including direct non-healthcare costs and indirect costs in health technology assessments to ensure a fair and comprehensive evaluation of the relative benefits of innovative treatments for multiple sclerosis

DISCLOSURES

Funding for the conduct of this study and medical writing support was provided by F. Hoffmann-La Roche Ltd and all authors are employees of Hoffmann-La Roche Ltd.

REFERENCES

1. CHauser SL, et al. New England Journal of Medicine 2017;376:221-34.
2. Hauser SL, et al. Neurology 2020;95:e1854-e67.
3. Wolinsky JS, et al. The Lancet Neurology 2020;19:998-1009.
4. Evidence Review Group Report commissioned by the NIHR HTA Programme on behalf of NICE (Accessed April 22, 2021, at https://eprints.soton.ac.uk/438090/1/Ocrelizumab_ERG_Report.pdf.)
5. Palace J, et al. BMJ open 2014;4.
6. Fingolimod for the Treatment of RelapsingRemitting Multiple Sclerosis in Adults. (Accessed April 22, 2021, at https://www.nice.org.uk/guidance/TA254/documents/manufacturer-submission-from-novartis2.)
7. McCool R, et al. Multiple sclerosis and related disorders 2019;29:55-61.
8. Di Maio D, et al. ISPOR EU 2020; Value in Health; 23; Supplement 2: S631.
9. CADTH Therapeutic Review: Comparative Clinical and Cost-Effectiveness of Drug Therapies for Relapsing-Remitting Multiple Sclerosis. (Accessed March 26, 2021, at https://www.cadth.ca/media/pdf/TR0004_RRMS_ScienceReport_e.pdf.)