

**The Hospital for Sick Children
Technology Assessment at SickKids (TASK)**

EXECUTIVE SUMMARY

**A COST-UTILITY ANALYSIS OF BIOSIMILAR INFLIXIMAB COMPARED TO
REFERENCE INFLIXIMAB IN ADULT SWITCH PATIENTS WITH CROHN'S DISEASE: A
CANADIAN ANALYSIS**

Authors:

Avery Hughes, MSc

Child Health Evaluative Sciences, The Hospital for Sick Children, Toronto, Canada
Health Policy, Management and Evaluation, University of Toronto, Toronto, Canada

John Marshall, MD, MSc

Professor and Director of the Division of Gastroenterology, Department of Medicine, McMaster
University, Hamilton, Ontario, Canada

Myla E. Moretti, MSc, PhD

Senior Research Associate, Ontario Child Health Support Unit and the Clinical Trials Unit, The Hospital
for Sick Children, Toronto, Ontario, Canada
Assistant Professor, Institute for Health Policy, Management and Evaluation, University of Toronto,
Toronto, Ontario Canada

Wendy J. Ungar, MSc, PhD

Senior Scientist, Child Health Evaluative Sciences, The Hospital for Sick Children, Toronto, Canada
Professor, Institute for Health Policy, Management and Evaluation, University of Toronto, Toronto,
Canada

Report No. 2019-02

Date: February 27, 2019

Available at: <https://lab.research.sickkids.ca/task/reports-theses/>

Acknowledgements:

This research was supported by the Hospital for Sick Children's Research Training Centre, the Ontario Graduate Scholarship Program and the Institute of Health Policy, Management and Evaluation. To my thesis committee members, Dr. Myla Moretti and Dr. John Marshall, thank you for providing your perspective and feedback. I am also thankful to MORSE Consulting, who provided financial support to attend conferences during my studies.

Executive Summary

Background

Biologics, such as infliximab, are an important treatment option for patients with moderate-to-severe Crohn's Disease (CD), but their costs are often high. The introduction of lower-cost biosimilars offers a unique opportunity to address affordability concerns. Due to the complexity of these products, stakeholders have identified a need for evidence regarding the cost-effectiveness of switching patients from reference biologics to biosimilars.

Purpose

To assess the incremental cost of maintenance treatment for adults with CD who have been switched from reference infliximab to biosimilar infliximab compared with those who have been maintained on reference infliximab per quality adjusted life year (QALY) gained from the healthcare system perspective.

Methods

A probabilistic cohort Markov decision model with eight-week cycle lengths was constructed to estimate the incremental costs and effects of switching to biosimilar infliximab over a five-year time horizon. Clinical inputs were obtained from NOR-SWITCH and other published pivotal trials. Costs were obtained from Canadian sources. A total of 10,000 simulations were run. Sensitivity analysis was used to test the robustness of the results to variations in uncertain parameters.

Results

In the reference case, total costs for switching to biosimilar infliximab were \$50,191 (standard deviation [SD]: \$4,771) and 3.06 (SD: 0.38) QALYs. Costs for maintaining treatment with reference infliximab were \$96,385 (SD: \$6,834) and 3.19 (SD: 0.35) QALYs. The intervention was associated with incremental costs of -\$46,194 (95% Confidence Interval [CI]: -\$42,420 to -\$50,455) and a loss in quality adjusted life-years of -0.13 (95% CI: -0.16 to -0.07). Eighty-three percent of the simulations were in the south-west quadrant with incremental cost savings and an incremental loss of effectiveness.

Conclusions

Biosimilar infliximab is associated with incremental savings when CD patients on maintenance therapy are switched from reference infliximab. However, decision makers must also account for an incremental loss of effectiveness with biosimilars in accordance with the NOR-SWITCH subgroup analysis. Further evidence regarding switching to biosimilar treatments for CD patients will be integral as jurisdictions work to develop effective reimbursement policies for biosimilars.