COST-EFFECTIVENESS OF FIRST-LINE BIOLOGICS FOR THE MANAGEMENT OF MODERATE-TO-SEVERE ULCERATIVE COLITIS

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Background: Ulcerative colitis (UC) is a relapsing and remitting condition, characterized by inflammation and ulceration in the colon and rectum. Biologic therapies have shown to be effective in inducing and maintaining remission in patients with UC, however there is no general consensus regarding which biologics should be used as first-line therapy for patients with UC. In order to decide which biologics should be used, the cost of the drugs needs to be taken into consideration. Infliximab, adalimumab, vedolizumab and golimumab are commonly used biologics for UC, however it is unknown which biologic is more cost-effective as first-line therapy for patients with moderate-to-severe disease.

Aims: The aim of our study was to compare the cost-effectiveness of the commonly used biologics (infliximab, adalimumab, vedolizumab, golimumab) for the management of moderate-to-severe ulcerative colitis.

Methods: A Markov model was constructed to simulate the clinical disease course of UC patients after initiating each biologic. Drug costs were obtained from the Alberta Health Drug Benefit List, and the remaining costs were determined from the CIHI Patient Cost Estimator. Transition probabilities were obtained from a review of the literature, and loss of response and complication rates for infliximab, adalimumab, vedolizumab and golimumab were obtained from the ACT, ULTRA, GEMINI, and PURSUIT trials, respectively. Previously published utility values were used to assess patient’s quality of life in each disease state. Our main analysis used a time horizon of 1 year due to the lack of long-term data on these therapies. Probabilistic sensitivity analysis was performed to characterize uncertainty related to all input parameters.

Results: Infliximab costs $31,405 per patient and yields 0.53 quality-adjusted life years (QALYs) using a 1-year time horizon. Adalimumab costs $25,191 per patient and yields 0.50 QALYs. Vedolizumab costs $30,338 per patient and yields 0.46 QALYs. Lastly, Golimumab costs $27,086 per patient and yields 0.51 QALYs. At a willingness-to-pay (WTP) threshold of $50,000 per QALY, probabilistic sensitivity analysis revealed that infliximab, adalimumab, vedolizumab, and golimumab had a 43%, 32%, 11%, and 14% probability of being cost-effective, respectively.

Conclusions: Infliximab and adalimumab have a greater probability of being cost-effective as first-line therapies for patients with ulcerative colitis compared to vedolizumab and golimumab.
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