

CADTH TECHNOLOGY REVIEW: OPTIMAL USE 360 REPORT

Utilization of Innovator Biologics and Biosimilars for Chronic Inflammatory Diseases in Canada: A Provincial Perspective

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Background

Chronic inflammatory diseases are a group of related disorders characterized by an altered immune response resulting in long-lasting inflammation that can affect specific organs or organ systems.^{1,2} These include rheumatic conditions such as ankylosing spondylitis, psoriasis, psoriatic arthritis, and rheumatoid arthritis, as well as inflammatory bowel disease (IBD), which includes Crohn disease and ulcerative colitis.^{2,3} These conditions are associated with a significant burden of illness, as many patients experience pain and progressive disability, leading to impaired physical functioning and diminished health-related quality of life.⁴⁻⁶ Additionally, persons diagnosed with inflammatory rheumatic conditions or IBD are at increased risk for developing comorbid conditions, including mental illness such as anxiety and depression.^{7,8} Loss of ability to work is also common, as these conditions disproportionately affect the working age population, and long-term treatment costs associated with the chronic nature of disease jointly contribute to an important socioeconomic burden.⁹⁻¹² It is estimated that between 5% and 7% of persons living in Western countries are diagnosed with immune-mediated conditions causing chronic inflammation, and that the prevalence of these conditions will continue to rise in the absence of curative therapies or interventions that prevent the development of disease.^{1,2}

Although the etiology of chronic inflammatory diseases is not known and there is no cure, advances in therapy including the availability of biological medicines has significantly improved the ability to achieve disease control in this patient population.^{2,3} Unlike small chemically derived pharmaceuticals, biologic drugs are large, complex molecules produced from living organisms.¹³ Timely and targeted care with biologic drugs has been shown to produce superior clinical outcomes compared with standard care in persons diagnosed with chronic inflammatory diseases, including improvements in health-related quality of life and work-related productivity.^{2,3,14-18} Growing evidence and recognition of the effectiveness of biologics has led to their increased use and prescribing; however, the high market price of biologic drugs compared with small molecule pharmaceuticals and reliance on their long-term use to treat chronic illness has also resulted in growing health care expenditures.^{19,20} In Canada, biologic drugs account for the highest proportion of public drug spending,²¹ which poses a significant burden on public health care payers who endeavour to contain costs in light of limited budgets. Notwithstanding the significant clinical benefit for patients with chronic inflammatory diseases, the high costs of biological medicines combined with their expanded use will threaten the sustainability of public drug programs.

Patent expiration for costly biologic drugs (henceforth referred to as innovator biologics) has prompted the development and approval of biosimilars — therapeutic products based on the same biological template.²² Biosimilars are lower cost alternatives to existing innovator biologic drugs (also commonly termed as originator or reference biologics). Many biosimilars have been authorized for sale in Canada on the basis that they are highly similar to their innovator biologic in terms of structure, quality, safety, and efficacy, and can be used with the same therapeutic aim as the innovator product.^{13,22} The efficacy and safety of biosimilars has been well-documented.²³⁻²⁸ Marketing authorization of a biosimilar drug in Canada is based on a rigorous regulatory review that considers the totality of evidence from structural, functional, non-clinical, and clinical studies.²⁹ The availability of biosimilars offers an opportunity to decrease spending on costly innovator biologics and to reduce overall health care expenditures while also ensuring that there are no clinically meaningful differences in patient outcomes. However, the full breadth of potential savings that may be realized by the adoption of biosimilars in place of innovator biologics has not yet been achieved.

Policy Issue

Innovator biologics and biosimilars are an important part of the Canadian pharmaceutical market. According to the Patented Medicine Prices Review Board, these drugs accounted for almost one-third of total prescription drug sales in 2018.³⁰ The Canadian Institute for Health Information further noted that innovator biologics and biosimilars accounted for almost one-quarter of total spending by Canadian public drug programs in 2018; of these medications, the largest proportion of program spending was attributed to tumour necrosis factor inhibitors used in the treatment of inflammatory rheumatic conditions and IBD.²¹ Yet, innovator biologics and biosimilars represented only a small portion of total prescription drug claims reimbursed by public drug plans.²¹ This difference reflects the high costs of innovator biologic drugs compared with other publicly reimbursed medicines in Canada and the significant economic burden of these medications on Canadian public payer budgets.

Eighteen biosimilars have been approved by Health Canada since 2009.²⁹ Of these, two biosimilar drugs are currently reimbursed for the treatment of chronic inflammatory diseases: etanercept and infliximab. Although the availability of biosimilar agents may alleviate the strain placed on payers' budgets by costly innovator biologics, the rate at which potential savings are currently realized appears suboptimal.^{21,30} As a result, several biosimilar policies have recently been introduced by public drug programs in Canada to encourage the responsible uptake of biosimilars. These include: the British Columbia (BC) government's *Biosimilars Initiative*,³¹ a controlled switching policy framework launched in May 2019 to mandate the use of selected biosimilar drugs; Manitoba's *Tiered Biologics Reimbursement Policy*³² introduced in the Summer of 2018, which requires cost-effective innovator biologics and biosimilars to be used first; and most recently, the *Alberta Biosimilars Initiative*,³³ which takes effect in the summer of 2020 and resembles a combination of British Columbia's switching policy and Manitoba's tiering policy. As other provinces and territories across Canada consider similar reimbursement strategies, a better understanding of the current and future utilization of biosimilars in key clinical areas may provide valuable insight to advancing this work. Accordingly, the adoption of evidence-informed, targeted policies for managing the uptake of biosimilars may allow decision-makers to generate the savings required to pay for new innovative treatments coming to market and to ensure the long-term sustainability of public drug programs.

Policy Questions

1. What is the current and future uptake of biosimilars for inflammatory rheumatic conditions and IBD?
2. What are the potential cost implications relating to the future use of biosimilars for inflammatory rheumatic conditions and IBD?

Purpose of This Report

To address the policy questions, CADTH collaborated with independent researchers at the Ontario Drug Policy Research Network (ODPRN). This study was conducted using linked population-level information from data sets housed at ICES to examine trends in utilization and spending of publicly reimbursed innovator biologics and biosimilars indicated for inflammatory rheumatic conditions and IBD, and to explore differences in the uptake of biosimilars by a patient's medical indication and by the drug type from the perspective of a large, government-sponsored drug program. The purpose of this CADTH Technology

Review: Optimal Use 360 Report is to summarize the major findings from this study and to discuss possible implications for decision-makers. Medical conditions currently of interest to policy-makers in Canada and that were included in this assessment comprise inflammatory rheumatic conditions and IBD. Rheumatic conditions were defined as rheumatoid arthritis, psoriatic arthritis, and psoriasis, and IBD represented Crohn disease and ulcerative colitis in the ODPRN analysis.

Summary of Findings

Major findings from the study conducted by the ODPRN and relating to the policy questions are subsequently summarized. This study explored the overall use and public spending on innovator biologics and biosimilars in Ontario, as well as the uptake of these medications among persons diagnosed with rheumatic conditions and IBD. The report published by the ODPRN is available [here](#).

Methods

A drug utilization analysis of publicly funded innovator biologics and biosimilars in Ontario between January 1, 2010 and June 30, 2019 was conducted. This analysis reported trends in utilization and costs of all available innovator biologics and biosimilars in Ontario during the study period. The analysis was also restricted to three drugs indicated for inflammatory rheumatic conditions and IBD: adalimumab, etanercept, and infliximab. All three drugs are approved by Health Canada for the treatment of rheumatic conditions; adalimumab and infliximab are also approved for the treatment of IBD. In Ontario, all three drugs including the available biosimilars are reimbursed as Limited Use products through the Ontario Drug Benefit (ODB) formulary, except for innovator infliximab (Remicade), which is listed under the Exceptional Access Program. Etanercept and infliximab are of special interest to Canadian policy-makers, as the innovator products (Enbrel and Remicade, respectively) currently have marketed biosimilars. Adalimumab was used as a “negative control” in the analysis, as it is the most commonly used innovator biologic drug among persons diagnosed with rheumatic conditions and IBD, and its biosimilar drug has been approved but is not currently marketed.

To conduct this analysis, data sourced from the ODB database were used. Information relating to individual-level claims for all innovator biologic and biosimilar prescriptions dispensed to ODB beneficiaries was retrieved, and this information was linked to validated health administrative databases housed at ICES. Specifically, three ICES databases were used to determine past diagnoses of rheumatic conditions and IBD: the Ontario Rheumatoid Arthritis Database,³⁴ the Ontario Psoriasis and Psoriatic Arthritis data sets,³⁵ and the Ontario Crohn’s and Colitis Cohort database.³⁶ Utilization was defined as the number of persons who received a prescription for a publicly funded innovator biologic or biosimilar drug per calendar quarter, and expenditure was defined as the total costs of a drug per quarter (based on the publicly available list price of medications) including markups, dispensing, and deductible fees. The total number of users per quarter and the total drug costs per quarter in Canadian dollars were reported; all analyses were stratified by drug type and by patient medical indication (i.e., rheumatic conditions or IBD). In instances where users received more than one innovator biologic or biosimilar drug, or had a diagnosis of a rheumatic condition and IBD, these individuals were counted in each category; therefore, subgroups based on drug type or by medical indication were not mutually exclusive.

A cross-sectional study was conducted to describe the current trends in innovator biologic and biosimilar utilization and spending from the first calendar quarter (Q1) of 2010 to the second calendar quarter (Q2) of 2019. Future utilization and costs were predicted using Holt-Winters' exponential smoothing models. This statistical method is commonly used in time series forecasting, as it allows adjustments for current trends and seasonality. This approach also places less weighting on distant data points, allowing the statistical model to adjust to shifting trends to calculate projections. The best-fitting model was selected to forecast the total utilization and spending from the third calendar quarter (Q3) of 2019 up to Q2 of 2022, using trends from the previous nine years (from January 2010 to June 2019).

Results

Overall, the drug utilization analysis conducted by the ODPRN³⁷ revealed that, by the end of the study period (June 2019), users of innovator or biosimilar adalimumab, etanercept, and infliximab for rheumatic conditions and IBD (N = 12,178) made up 10.1% of all innovator and biosimilar biologic users in Ontario (N = 120,247), and the number of adalimumab, etanercept, and infliximab users has grown by 133.1% since January 2010 (5,225 users at the start of the study period). Total spending associated with these innovator biologics and biosimilars for rheumatic conditions and IBD also increased during the study period — from \$29.1 million in Q1-2010 to \$76.1 million in Q2-2019 — representing a growth of 161.5% in quarterly expenditure. Approximately 52.4% of users of adalimumab, etanercept, and infliximab in Q2-2019 used these drugs for the treatment of rheumatic conditions, while 35.5% was attributable to the management of IBD; the specific purpose for the use of these innovator biologics and biosimilars could not be determined for 12.1% of the observed population in Q2-2019 because of methodological limitations of the data sets used. Based on the forecasting of current trends, the quarterly utilization of innovator or biosimilar adalimumab, etanercept, and infliximab for rheumatic conditions and IBD is expected to rise by another 40.4% by Q2-2022 (approximately 14,287 users), and the proportion of users who receive these drugs for rheumatic conditions compared with IBD is expected to remain stable.

The utilization of biosimilars indicated for rheumatic conditions and IBD has steadily increased since the listing of the first infliximab (Inflectra) and etanercept (Brenzys) biosimilars on the ODB Formulary in Q1-2016 and Q3-2017, respectively. Increased numbers of biosimilar users resulted in a decrease in the use of innovator biologics for which a biosimilar was available. Namely, the number of users of innovator infliximab dropped by 6.8% between Q2-2016 and Q2-2019, and the number of users of innovator etanercept decreased by 13.3% between Q3-2017 and Q2-2019. Conversely, the number of users of innovator adalimumab, for which a biosimilar product is not currently marketed, increased by 25.8% between Q3-2017 and Q2-2019. By the end of the study period (Q2-2019), users of etanercept and infliximab biosimilar drugs (N = 1,196) represented 16.7% of all innovator and biosimilar etanercept and infliximab users (N = 7,158) and 27.8% of all biosimilar users in Ontario (N = 4,300). Based on the forecasting of current trends, it is estimated that 35.1% (N = 2,717) of all innovator and biosimilar etanercept and infliximab users will be treated with biosimilars by Q2-2022, and that biosimilar etanercept and infliximab users will make up approximately 38.8% of all biosimilar users in Ontario in Q2-2022 (N = 2,717 of 6,995).

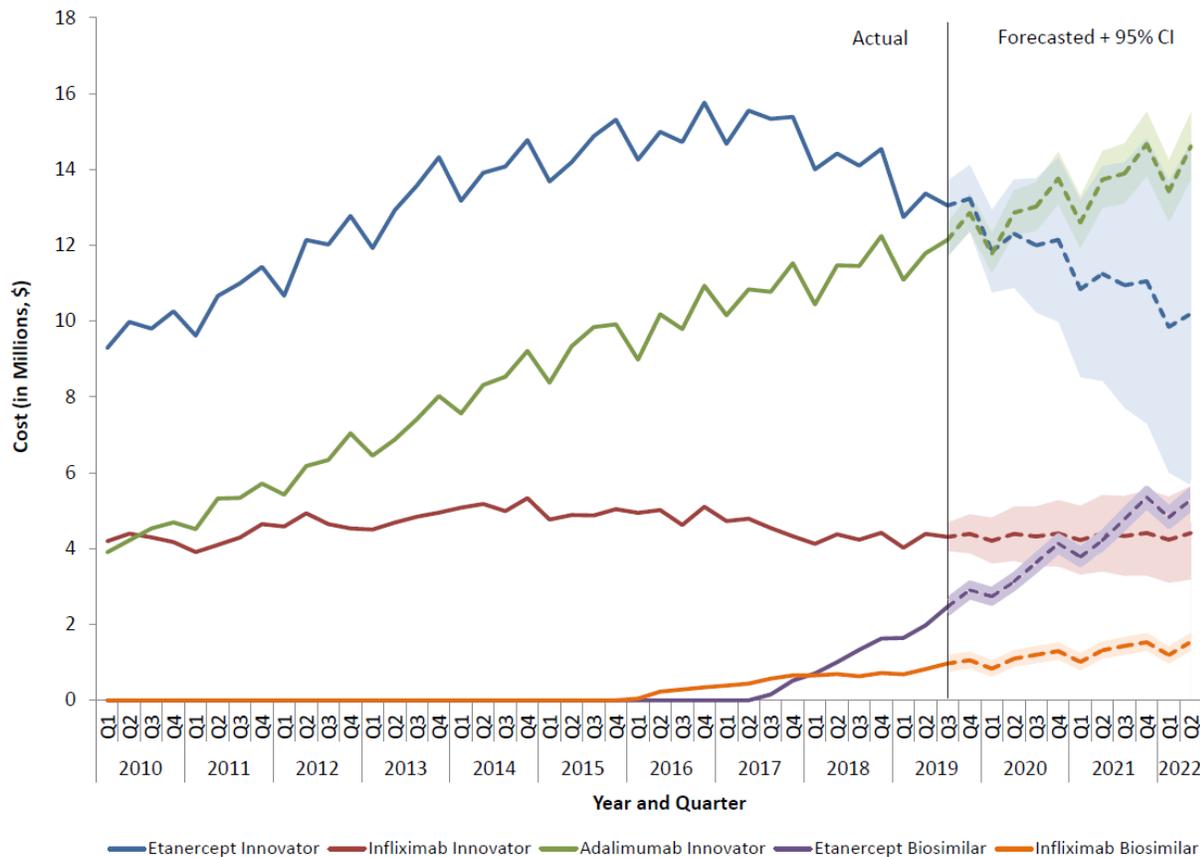
Utilization and Costs of Innovator Biologics and Associated Biosimilars for Rheumatic Conditions

Among users of innovator biologics and biosimilars for rheumatic conditions, the total number of persons who used innovator or biosimilar etanercept increased by 58.1% from January 2010 to June 2019, while the total number of persons who used innovator or biosimilar infliximab increased by 10.6% during the same time period. The introduction of the first etanercept biosimilar (Brenzys) on the ODB Formulary in Q3-2017 and a subsequent biosimilar in Q1-2018 (Erelzi) resulted in a rapid increase in users of etanercept biosimilars, from 2.6% of all etanercept users receiving a biosimilar in Q3-2017 to 20.2% biosimilar use in Q2-2019. The utilization of etanercept biosimilars was associated with a total cost of \$2.0 million in Q2-2019, representing 12.9% of total innovator and biosimilar etanercept spending for rheumatic conditions. Based on the forecasting of current trends, the total number of etanercept biosimilar users is expected to reach 1,666 persons by Q2-2022, representing an expected cost of \$5.3 million and 35.8% of total innovator and biosimilar etanercept market shares for rheumatic conditions. Similarly, the formulary listing of the first infliximab biosimilar (Inflectra) in Q1-2016 and a subsequent biosimilar in Q3-2018 (Renflexis) resulted in an increase of infliximab biosimilar users, from 6.7% to 26.6% of all infliximab users receiving a biosimilar in Q2-2016 and Q2-2019, respectively. This utilization was associated with a total cost of \$822,263 for infliximab biosimilars in Q2-2019, representing 15.8% of total innovator and biosimilar infliximab spending for rheumatic conditions. Based on the forecasting of current trends, the total number of infliximab biosimilar users is expected to reach 220 by Q2-2022, representing an expected cost of \$1.5 million and 28.2% of total innovator and biosimilar infliximab market shares for rheumatic conditions.

Since the beginning of 2016, the rise in biosimilar use for rheumatic conditions has effectively led to decreased spending on innovator biologics. Specifically, the total costs associated with innovator etanercept decreased by 13.1% (from \$15.3 million in Q3-2017 to \$13.3 million in Q2-2019) and the total costs relating to innovator infliximab dropped by 12.0% (from \$5.0 million in Q2-2016 to \$4.4 million in Q2-2019). On the contrary, the total number of persons who used innovator adalimumab for rheumatic conditions increased by 166.5% during the study period, and this use was associated with a 202.6% growth in quarterly spending, from \$3.9 million in Q1-2010 to \$11.8 million in Q2-2019.

Figure 1 presents the overall trends in quarterly spending on innovator biologics and associated biosimilars for rheumatic conditions from 2010 to 2022.

Figure 1: Total Quarterly Costs of Innovator Biologics and Biosimilars Indicated for Rheumatic Conditions in Ontario, Forecasted Q3-2019 to Q2-2022



CI = confidence interval; Q = quarter.

Source: [ODPRN, 2020](#).³⁷ Reprinted with permission from the ODPRN.

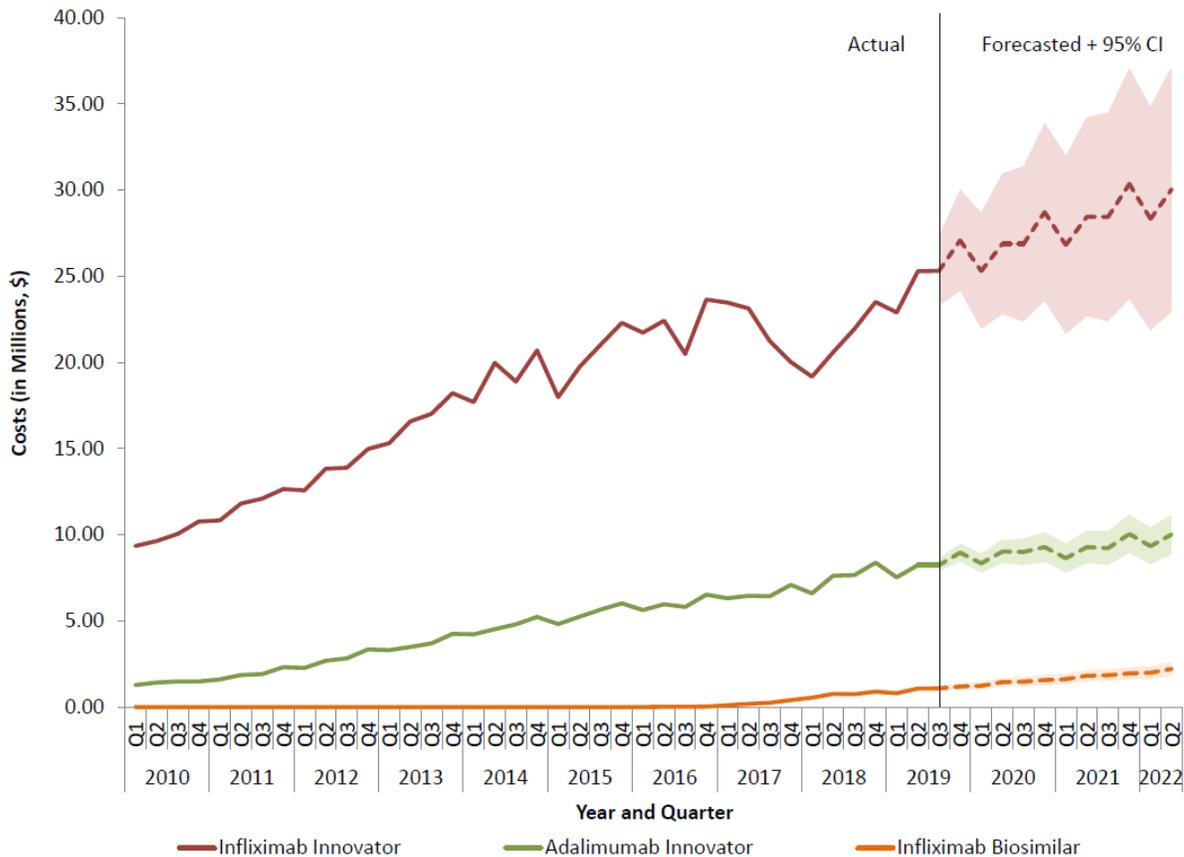
Utilization and Costs of Innovator Biologics and Associated Biosimilars for Inflammatory Bowel Disease

Among users of innovator biologics and biosimilars for IBD, the total number of persons who used innovator or biosimilar infliximab increased by 127.3% from January 2010 to June 2019. The introduction of infliximab biosimilars in Q1-2016 and Q3-2018 (Inflectra and Renflexis, respectively) on the ODB Formulary resulted in an increase in users of infliximab biosimilars, from 0.1% to 6.9% of all infliximab users receiving a biosimilar in Q2-2016 and Q2-2019, respectively. The utilization of infliximab biosimilars was associated with a total cost of \$1.1 million in Q2-2019, representing 4.1% of total innovator and biosimilar infliximab spending for IBD. Based on the forecasting of current trends, the total number of infliximab biosimilar users is expected to reach 362 persons by Q2-2022, representing an expected cost of \$2.2 million and 7.0% of total innovator and biosimilar infliximab market shares for IBD.

Although the uptake of biosimilars for rheumatic conditions resulted in decreased spending on innovator biologics, the total spending associated with innovator infliximab nonetheless increased by 12.9% among persons diagnosed with IBD (from \$22.4 million in Q2-2016 to \$25.3 million in Q2-2019) despite the expanded use of infliximab biosimilars in this patient population. Conversely, the total number of persons who used innovator adalimumab for IBD increased by 534.5% during the study period, and this use was associated with a 530.7% increased growth in quarterly spending, from \$1.3 million in Q1-2010 to \$8.2 million in Q2-2019.

Figure 2 presents the overall trends in quarterly spending on innovator biologics and associated biosimilars for IBD from 2010 to 2022.

Figure 2: Total Quarterly Costs of Innovator and Biosimilar Biologics Indicated for Inflammatory Bowel Disease in Ontario, Forecasted Q3-2019 to Q2-2022



CI = confidence interval; Q = quarter.

Source: [ODPRN, 2020](#).³⁷ Reprinted with permission from the ODPRN.

Limitations

This study³⁷ has several limitations and therefore findings should be interpreted in the context of the study design and the data used. First, diagnoses of medical conditions relied on administrative databases. Therefore, some misclassification of diagnoses is possible despite previous validation efforts for case ascertainment and reasonable sensitivity and specificity of the selected databases. Second, drug pricing data were based on claims submitted by pharmacies to the Ontario government and may not reflect the actual price of these medications once confidential purchase agreements are accounted for. Some costs may therefore be overestimated. Third, predictions regarding future utilization and spending on innovator biologics and biosimilars were based on time series forecasting using current trends and do not account for any potential policy shift that might influence the uptake of these drugs — particularly biosimilars — in the future. Finally, results of this study are based on patterns of use and spending observed within a single government-sponsored drug program and may not extend to other Canadian provinces or territories owing to differences in clinical practice, demographics, reimbursement policies, or other factors.

Conclusions and Implications for Decision-Making

Overall, the number of individuals receiving publicly funded innovator or biosimilar adalimumab, etanercept, and infliximab for rheumatic conditions and IBD in Ontario has grown considerably since 2010. Public drug plan spending associated with these medications has also experienced consistent and significant growth during this time period, and expenditures are expected to rise over the course of the next two years based on the forecasting of trends from the previous nine years. The introduction of etanercept and infliximab biosimilars in 2016-2017 has resulted in their expanded use among persons diagnosed with rheumatic conditions and IBD in Ontario; yet, the number of biosimilar users comprises a modest portion of total users of innovator biologics for which a biosimilar option is available, especially among those diagnosed with IBD. Several factors may explain the limited uptake of biosimilars for IBD compared with biosimilar use for rheumatic conditions. These may include the fewer number of available biosimilars for treating IBD compared to biosimilar options for rheumatic disease; potential differences in the number of annual incident cases of IBD compared to certain rheumatic conditions (e.g., rheumatoid arthritis); or, variability in patient and clinician preferences and attitudes regarding biosimilars across clinical areas, such as a lack of patient awareness or knowledge about biosimilars and apprehension or discomfort from clinicians to prescribe biosimilars for patients diagnosed with IBD.³⁸⁻⁴⁰ Although the specific reasons that may explain the apparent imbalance in biosimilar uptake between IBD and rheumatic conditions may warrant further study, it is not likely that this variation is due to differences in the effectiveness or safety of innovator biologics compared to biosimilars based on recent comparative analyses of drug effects using real-world data.^{27,28,41}

Despite the restricted uptake of infliximab biosimilars among persons diagnosed with IBD in Ontario, the ODPRN analysis revealed that the introduction and expanded use of biosimilar drugs for inflammatory rheumatic conditions appears to have reduced the total quarterly spending on innovator biologics and biosimilars in this patient population, even with increasing numbers of users of these drugs over time. This is in direct contrast to increased spending during the same time period for adalimumab, which does not currently have a marketed biosimilar drug. Thus, the potential for biosimilars to curb the total spending on all

biologic medicines and to mitigate the strain placed on public payer budgets by costly innovator biologics appears promising. Still, further validation studies may be required to determine if similar trends and associated savings may be realized by other publicly funded drug programs in Canada or for other medical conditions for which biosimilar drugs are currently marketed (e.g., within endocrinology, dermatology, ophthalmology). Future research that considers the potential budget impact of alternative policies for reimbursing biosimilar drugs may also be valuable for policy-makers.

As increasing numbers of biosimilar drugs become approved for use in Canada, appropriate formulary management strategies to control both utilization and costs of innovator biologics and biosimilars alike will become increasingly important. Conventional formulary-based policies, such as drug restrictions through prior authorization (e.g., Exceptional Access Program listing of innovator infliximab versus Limited Use listing of innovator etanercept in Ontario), have been effective at facilitating access to medications for a subset of patients based on clinical need and therapeutic rationale; however, these policies may not be useful in promoting the uptake of specific medications such as biosimilars in order to generate savings within constrained budgets. Indeed, findings from the study conducted by the ODPRN showed that the relative uptake of etanercept and infliximab biosimilars did not differ significantly even though different drug benefit policies were enforced for etanercept and infliximab innovator products.³⁷ Therefore, policy-makers may need to consider more complex cost-containment mechanisms or strategies to optimize the benefits associated with biosimilar drugs alongside innovator biologics. Several possible approaches have been previously discussed.^{42,43} These may include:

- *Mandate controlled substitution of innovator biologics for biosimilars with prescriber assistance:* Payers may require that all persons currently being treated with an innovator biologic drug switch to a corresponding biosimilar agent. Controlled switching (also sometime referred to as non-medical switching) may be implemented within a defined time period and in consultation with the prescriber. In cases where switching may not be appropriate because of medical reasons, payers may adopt an exceptions policy and provide coverage for innovator biologics. This approach is likely to generate maximum savings for payers, as most existing and newly diagnosed persons would be treated with biosimilars. A controlled switch mechanism may also result in higher switching rates and greater expenditure reductions compared to an approach where prescriber-led switching is encouraged; yet, switching of innovator biologic drugs for available biosimilars may lead to resistance or confusion where prescribers or patients are less supportive of the use of biosimilars or where there are concerns regarding interchangeability.
- *Reimburse biosimilars for newly diagnosed persons, only:* Payers may provide coverage for available biosimilars for persons who have not previously received biological therapy, while persons who are already being treated with an innovator biologic drug may remain on that treatment if their disease is stable and does not require further intervention. This preferential reimbursement mechanism is expected to reduce expenditures on costly biologic drugs by enforcing biosimilar use among treatment-naïve persons. However, it may take a long time for payers to realize the maximum possible savings associated with biosimilar uptake given the markedly higher proportion of existing users of innovator biologics compared to biosimilar new-starts.

- *Provide access to either innovator or biosimilar biologics using tiered reimbursement:* Payers may consider providing coverage for innovator biologics only after failure of one or more biosimilar agents. Using this approach, payers would arrange available biological medicines into various groups or “tiers” according to their relative value for money, with the most cost-effective options classified in the first reimbursement tier (tier 1).⁴⁴ As an example, according to this reimbursement strategy, prescribers would be required to use one or more drugs from tier 1 (biosimilars or innovator biologics for which no biosimilar is available); after failure of one or more therapies from tier 1, prescribers may then use a tier 2 product (innovator biologics for which no biosimilar is available), and so on for any subsequent tiers. This strategy is expected to result in expenditure reductions by promoting the use of biosimilars among newly diagnosed patients, and for existing patients for whom previous biological therapy has failed. However, the magnitude of savings that may be realized by using this approach is uncertain, as prescriber choice for the use of one therapy over another may vary and existing users of innovator biologics may not be required to switch to a biosimilar drug if their treatment is providing the expected benefit and their disease has not evolved.
- *Use prescribing quotas to incentivize use of biosimilars:* Payers may implement quota arrangements that require prescribers to use a specific proportion of biosimilars when prescribing a biological medicine.⁴⁵ For example, payers may require that prescribers achieve a biosimilar utilization rate at least equal to the number of newly diagnosed patients, or that the number of biosimilar prescriptions meet a minimum percentage of all biologic drug prescriptions (e.g., at least 60% of all prescribed biologic medicines).⁴⁶ Some form of non-medical switching may be required depending on established targets. Prescribing quotas may also be linked to financial rewards for prescribers who meet their targets or to financial penalties when quotas are not respected.⁴⁵ Whereas this approach may increase biosimilar prescriptions and generate savings resulting from the use of lower cost therapies, prescription monitoring is required to verify adherence to predefined prescribing targets.⁴⁷
- *Provide access to biosimilars using tendering procedures:* Payers may consider using competitive bidding processes to grant access to and to promote the expanded use of biosimilars.⁴⁵ These bidding processes or tendering arrangements may include single (national) tenders or multiple tenders, with one or more winners. Successful bidders are generally awarded market entry based on low price or other criteria.^{45,48} Although tendering may be effective at securing the supply of biosimilars and result in significant savings for payers, the outcome of these contracting arrangements may also pose important risks to payers and prescribers alike (e.g., the risk of supply shortage and reduced prescribing choice in case of single-winner tenders; the risk of ongoing switches in case of multiple-winner tenders).⁴⁸ Additionally, the tendering approach inherently involves controlled switching for patients not currently on the brand with the winning bid. Therefore, payers must carefully consider the design of their tendering arrangements to balance the effectiveness of tenders for the long-term sustainability of publicly reimbursed biological medicines.

Given the potential for cost savings for the government resulting from the expanded use of biosimilar drugs and the limited success of traditional formulary-based policies in curtailing spending on biologic drugs, consideration for the aforementioned formulary management strategies may be required to ensure the responsible uptake of biosimilars and generate the savings needed to pay for new innovative medicines. Indeed, recent policies regarding biosimilar drugs introduced by public drug programs in British Columbia,³¹ Manitoba,³² and Alberta³³ have adopted one or more features from these formulary management strategies. For example, the Alberta Biosimilars Initiative³³ consists of a controlled switching framework, as well as a tiered reimbursement policy. Therefore, while the proposed strategies and their associated cost implications may have been presented as discrete options, none are mutually exclusive from one another and there may be other options available for policy-makers. Assembling a balanced mix of cost-containment mechanisms will require ongoing engagement and collaboration with multiple stakeholders, including sponsors, researchers, and regulators, as well as patients and prescribers. The experience of persons who use biological medicines to better understand their perspective related to the potential impact of changes to their medication should not be overlooked.

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