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Drug Survival of Biologics for Psoriasis in Canada: Real-World Patterns and Implications

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Biologic therapies have transformed psoriasis management, and real-world data are essential for understanding long-term treatment success. Drug survival—how long patients remain on biologics—varies across drug classes and is generally higher in biologic-naïve patients. Canadian studies demonstrate that biologics from the interleukin (IL)-12/23, IL-17 and IL-23 classes exhibit longer persistence rates. However, drug survival alone is not a comprehensive measure of efficacy, because it may not account for dose modifications or interval adjustments that frequently occur in clinical practice. As drug survival reflects the duration of time on a single therapy, it may not adequately capture the rate at which patients switch between biologic treatments. The switch rate captures how often patients change biologics within classes or to a different class, reflecting treatment modification due to inefficacy or side effects. Although Canadian data on biologic switch rates are limited, U.S. findings show that IL-23 inhibitors have the lowest rates. Collectively, the evaluation of drug survival, therapeutic modifications, and switch rates in real-world settings offers a comprehensive framework to inform dermatological clinical practice in Canada.

Introduction

Psoriasis is a chronic, systemic inflammatory disease that significantly impairs quality of life.[1] The advent of biologic therapies targeting key immunologic pathways, including tumour necrosis factor-alpha (TNF-α), interleukin (IL)-12/23, IL-17, and IL-23 has revolutionized the management of psoriasis.[1,2] However, randomized controlled trials often include highly selected populations and have limited durations. Thus, drug survival, which is the length of time a patient remains on a biologic in real-world practice, serves as a valuable proxy for long-term effectiveness, safety, tolerability, patient satisfaction, and healthcare access.[2,3] Understanding trends in drug survival, therapeutic modifications, and drug switch rates in Canadian practice can guide treatment selection, counselling, and health economic planning.[4] This review summarizes Canadian data on drug survival and treatment changes among psoriasis biologics.

Canadian Real-World Data on Psoriasis Biologic Drug Survival

Several Canadian real-world studies have evaluated drug survival across biologic classes. A multicenter retrospective review (2005–2014) of 398 patients reported 5-year drug survival rates of approximately 75% for ustekinumab, 51% for adalimumab, 42% for etanercept, and 38% for infliximab (**Table 1**).[5] Ustekinumab showed significantly higher drug survival compared to the TNF-α biologics.[5] Another long-term study reported that approximately 60% of patients remained on either ustekinumab or adalimumab after 11 years, likely reflecting that they were among the first approved for the treatment of psoriasis in Canada and the resulting availability of longer-term data.[4]

Four IL-17 inhibitors are approved in Canada for the management of psoriasis: ixekizumab (IL-17A), secukinumab (IL-17A), brodalumab (IL-17RA), and bimekizumab (IL-17A and IL-17F). Canadian patient support program data (2016–2020) for ixekizumab showed 1- and 2-year drug survival rates of 90.4% and 85.6%, respectively.[6] Patient support program data from the PURE registry for secukinumab showed 1-, 2-, and 5-year survival rates of 82.4%, 70.7%, and 53%, respectively.[7] Patient support program data for brodalumab showed 1-year drug survival of 73.4% and 2-year drug survival rates of 65.3%.[8] Canadian multicenter data for bimekizumab demonstrated persistence of 84% at 8.5 months and 77.1% at 2 years.[9,10] Secukinumab has the most extensive drug survival data, with follow-up extending up to 5 years; however, the PURE study includes both Canadian and Latin American patients, whereas the data for the other IL-17 inhibitors reviewed in this manuscript are exclusively from Canadian cohorts.[7] Drug survival rates for IL-17 biologics are summarized in **Table 1**.

Three IL-23 inhibitors—risankizumab, guselkumab, and tildrakizumab—are approved in Canada for psoriasis management A single-centre study found risankizumab had an 86% survival rate at 260 days,[11] while Italian data reported 90.7% at 36 months.[12] Guselkumab showed 80% survival at 1 year and 67% at 2 years across two Canadian centres.[13] Recent Canadian patient support program data for tildrakizumab showed 88% 1-year survival (summarized in **Table 1**).[14] As a newer class, IL-23 inhibitors have comparatively limited drug survival data available from Canadian cohorts; however, global studies demonstrate that IL-23 biologics exhibit the most favourable drug survival compared to other biologic classes.[3]

The decision to stop or switch to a different biologic is often multifactorial. Many factors impact drug survival, including lack of efficacy, adverse events, patient decision, and co-morbid psoriatic arthritis being more commonly reported.[4,8]

Patient Factors Impacting Psoriasis Biologic Drug Survival

The drug survival studies reviewed in this manuscript highlight that biologic-naïve psoriasis patients show higher drug survival rates than biologic-experienced patients. While the exact mechanisms for this are not clear, several hypotheses have been proposed.[7,15,16] First, biologic-naïve psoriasis patients may have more intact or unmodified immune pathways, fewer anti-drug antibodies, and less disease chronicity, leading to early and sustained responses.[15] In addition, younger age, individuals with a lower

Biologic	Class	Health Canada Approval Date	1-year DS	2-year DS	5-year DS	Refs
Ustekinumab	IL-12/23	2006			75%	5
Adalimumab	TNF-α	2008			51%	5
Etanercept	TNF-α	2004			42%	5
Infliximab	TNF-α	2001			38%	5
Bimekizumab	IL-17	2022	84% (8.5 mo)	85.6%		9,10
Broadalumab	IL-17	2018	73.4%	65.3%		8
Ixekizumab	IL-17	2016	90.4%	85.6%		6
Secukinumab	IL-17	2015	82.4%	70.7%	53%	7
Risankizumab	IL-23	2020	86% (260 days)			12
Tildrakizumab	IL-23	2018	88%			14
Guselkumab	IL-23	2017	80%	67%		13

Table 1. Drug survival data for the different biologics approved in Canada are shown; *courtesy of Trang Vu, MD, Ph.D, FRCPC, FAAD.*

body mass index, and non-smoking status were the other factors identified with better biologic responses.[16] Thus, previous biologic use, older age, obesity, and smoking may negatively impact the effectiveness of biologic agents. These insights can guide clinicians in tailoring treatment plans to maximize efficacy based on individual patient characteristics.[16]

Biologic Dosing and Interval Changes

Drug survival measures how long a patient remains on a biologic but may not capture important treatment modifications such as dose escalation or shortened dosing intervals. These adjustments often reflect partial response or waning efficacy. Consequently, relying soley on drug survival may overestimate real-world effectiveness by overlooking nuanced changes in dosing required to maintain disease control.

The Canadian study by Gooderham et al. (2005–2019) analyzed long-term treatment patterns in 1,149 moderate-to-severe psoriasis patients across 13 centres. It found that approximately 50%–60% of patients underwent a treatment change, including biologic switching, dose escalation, or interval adjustments. Dose optimization—such as increasing the dose or shortening dosing intervals—was associated with significantly longer drug survival, particularly for etanercept and infliximab, where median survival extended from approximately 21–28 months without adjustment to 55–61 months with dose optimization. Detailed analysis of treatment change was limited for adalimumab, guselkumab, ixekizumab, secukinumab, and ustekinumab because patients were undergoing treatment during the time of analysis. In a single-centre study of psoriasis patients on guselkumab, 11.2% reported an interval adjustment.[4] Canadian real-world data from the PURE registry shows that approximately 15.4% of psoriasis patients on secukinumab underwent dose escalation due to inadequate response. Up-dosing regimens, such as increasing the dose or shortening intervals, led to improved disease control in over half of these patients after 15 months, with half maintaining the adjusted regimen for more than a year without new safety concerns. Patients requiring secukinumab up-dosing tended to have higher body weight. These findings support dose optimization as a viable strategy for enhancing treatment effectiveness in Canadian clinical practice.[7] Although dose interval shortening and dose escalation have been observed anecdotally with all biologics, supporting data for the other agents remain unavailable.

Psoriasis Biologic Switch Rates

A related and equally important concept to drug survival is the switch rate. Switch rate refers to the proportion of patients who change from one biologic to another, indicating treatment modification. In contrast, drug survival offers a broader assessment of real-world therapeutic performance over time by measuring how long a patient remains on a therapy, encompassing effectiveness, tolerability, and adherence. High switch rates may indicate suboptimal biologic outcomes and serve as a useful metric to help guide treatment selection.

No Canadian study has compared real-world biologic switch rates for all currently available psoriasis biologic therapies. However, this important question has been assessed in a United States retrospective cohort analysis.[17] The study included 7,997 patients with plaque psoriasis treated with IL-23 inhibitors (36.1%), TNF-alpha inhibitors (28.6%), IL-17 inhibitors (23.2%) and IL-12/23 inhibitors (12.1%). Importantly, the study excluded psoriatic arthritis and ankylosing spondylitis. This study assessed the switch rate, which they defined as the proportion of patients who switched to a new targeted therapy (e.g., biologic, apremilast) within 24 months. Overall, switch rates were 14.4% at 12 months and 26.0% at 24 months. Significant differences emerged between biologic classes. IL-23 inhibitors had the lowest switch rates–6.4% at 12 months and 12.7% at 24 months–whereas TNF inhibitors had the highest, at 24.8% and 39.1% over the same time points. After adjusting for patient characteristics, IL-23 inhibitors remained associated with the lowest risk of switching. Patients on TNF inhibitors were 4.2 times more likely to switch compared to IL-23 users, while those on IL-17 and IL-12/23 inhibitors were 2.4 and 2.2 times more likely, respectively, to switch. Among patients switched, most transitioned to newer-generation therapies, with 35.2% switching to IL-17 inhibitors and 37.4% to IL-23 inhibitors.[17] These findings highlight the persistence of IL-23 inhibitors in clinical practice and the growing preference for newer biologic classes when switching is necessary.

Conclusion

While randomized controlled trials remain essential for establishing efficacy and safety, real-world drug survival data provide practical insights into long-term effectiveness, tolerability, and adherence. Canadian evidence reveals promising 2-year data for most biologic classes (**Table 1**). In real-world settings, many patients require dose adjustments for their biologics, such as up-dosing and interval shortening, which can extend drug survival of a biologic and maintain efficacy. However, Canadian data on switch rates are sparse, and reliance on international data may not reflect unique Canadian healthcare factors affecting biologic use, such as access, funding, or prescribing patterns.

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