INDUCTION COST PER RESPONDER OF BRODALUMAB COMPARED WITH OTHER BIOLOGIC THERAPIES FOR PATIENTS WITH MODERATE TO SEVERE PLAQUE PSORIASIS IN CANADA

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BACKGROUND

- Psoriasis is a chronic immune-mediated skin disease affecting 3% of the Canadian population, with plaque psoriasis (PsO) being the most common subtype[1-2].
- The Psoriasis Area Severity Index (PASI) is a validated instrument to assess disease severity. PASI scores of 75, 90, and 100 indicate a 75%, 90%, and 100% reduction in PASI score compared with baseline[2].
- While biologic therapies have significantly improved the management of PsO[3] (e.g., superior skin clearance and quality of life), their increasing utilization and high cost pose a significant economic burden to healthcare systems[4].
- It is thus important for payers to consider the cost-effectiveness of biologic and subsequent entry biologic (SEB) therapies when making decisions about reimbursement.

OBJECTIVES

To estimate the cost per responder (CpR) of brodalumab compared with approved biologic and subsequent entry biologic (SEB) agents in achieving reductions in the Psoriasis Area and Severity Index (PASI) score at the end of the induction period of therapy for adult patients with moderate-to-severe plaque psoriasis in Canada.

METHODS

Model Overview

- The CpR for induction period was estimated as the drug acquisition costs during the induction period multiplied by the number needed to treat (NNT) for achieving PASI 75, 90, or 100 with the currently approved biologic and SEB agents in Canada.

Drug Acquisition Cost During Induction Period	X	Number needed to treat (NNT)

- From a literature review, the NNT were obtained from a published network meta-analysis evaluating relative effects for improvement from baseline (PASI 75/90/100) across treatments for PsO at the end of the induction period (10 to 16 weeks)[5].
- Canadian costs ($CAD) of treatments were estimated based on Health Canada approved dosing regimens and Ontario wholesale unit prices obtained from the DeltaPA IQVIA database(6) in June 2024.
- The primary analysis was the CpR for PASI 100, with PASI 75 and 90 as secondary analyses. Sensitivity analyses were performed from the perspective of provincial public drug plans (Quebec, Alberta, British Columbia), using available unit prices from respective provincial formularies or DeltaPA IQVIA in June 2024.

RESULTS

Primary and Secondary Analyses

- Drug acquisition costs for the induction period (showed in Table 1) resulted with adalimumab SEB having the lowest costs ($4,713), compared to bimekizumab having the highest costs ($16,250).

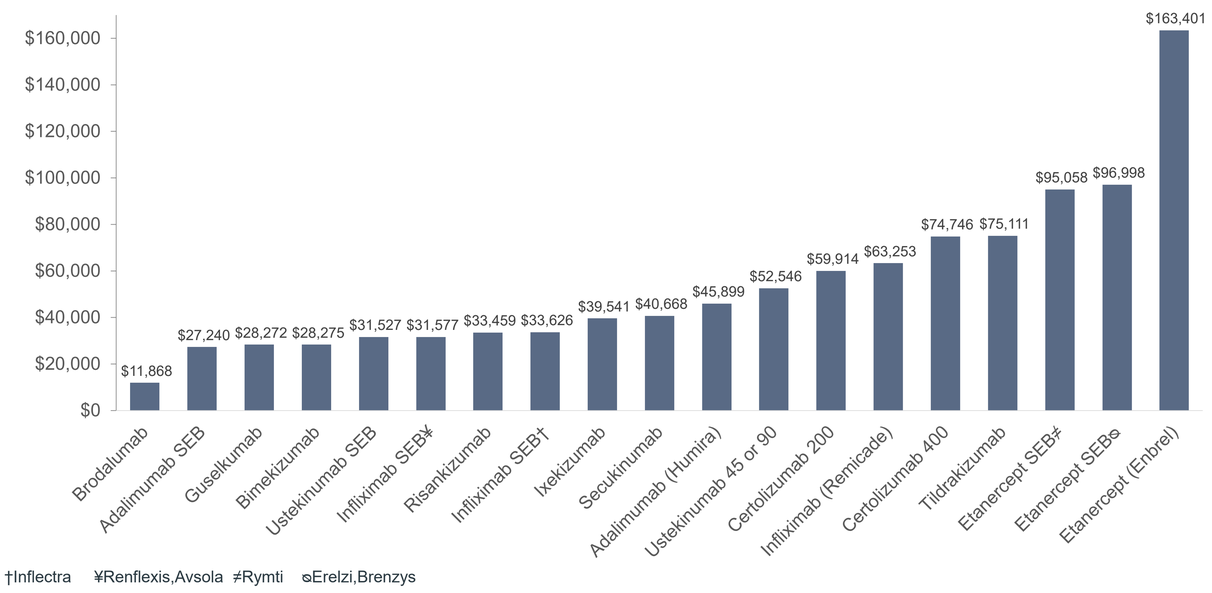
Table 1. Cost of biologic treatment during the induction period (Base Case)

Drug Name	Induction Period (weeks)	Number of Doses in the Induction Period	Unit Price ($)	Induction Cost ($)
Adalimumab	16	10	794	7,941
Adalimumab SEB	16	10	471	4,713
Bimekizumab	16	10	1,625	16,250
Brodalumab	12	8	645	5,160
Certolizumab 200	16	12	694	8,333
Certolizumab 400	16	18	694	12,499
Etanercept	12	24	406	9,744
Etanercept SEBʓ	12	24	241	5,784
Etanercept SEB≠	12	24	236	5,668
Guselkumab	16	3	3,060	9,179
Infliximab*	10	15	988	14,813
Infliximab SEB*†	10	15	525	7,875
Infliximab SEB*¥	10	15	493	7,395
Ixekizumab	12	8	1,865	14,921
Risankizumab	16	3	4,935	14,805
Secukinumab	12	14	934	13,077
Tildrakizumab	12	2	4,935	9,870
Ustekinumab 45 or 90	12	2	4,593	9,186
Ustekinumab SEB	12	2	2,756	5,512

*Assuming average weight of patient as 90 kg;
†Inflectra ¥Renflexis,Avsola ≠Rymti ʓErelzi,Brenzys

- Results for the primary analysis for CpR PASI 100 were as follows: brodalumab $11,868; adalimumab SEB $27,240; guselkumab $28,272; bimekizumab $28,275; ustekinumab SEB $31,527; infliximab SEB $31,577-33,626; risankizumab $33,459; ixekizumab $39,541; secukinumab $40,668, adalimumab innovator $45,899; ustekinumab innovator $52,546; certolizumab 200 $59,914; infliximab innovator $63,253; certolizumab 400 $74,746; tildrakizumab $75,111; etanercept SEB $95,058-$96,998; etanercept innovator $163,401 (Figure 1).
- Results for the secondary analysis for CpR PASI 90 were as follows: brodalumab $7,327; adalimumab SEB 10,792; ustekinumab SEB $12,677; guselkumab $13,952; infliximab SEB $14,124-15,041; adalimumab innovator $18,185; bimekizumab $19,825; risankizumab $20,727; certolizumab 200 $20,832; Ustekinumab 45 or 90 $21,128; secukinumab $21,184; ixekizumab $21,636; etanercept SEB $26,131-26,664; certolizumab 400 $26,749; tildrakizumab $27,636; infliximab innovator $28,294; etanercept innovator $44,918 (figure not shown).
- Results for the secondary analysis for CpR PASI 75 were as follows: brodalumab $6,347; adalimumab SEB $7,352; ustekinumab SEB $8,378; infliximab SEB $10,057-10,710; guselkumab $11,382; adalimumab innovator $12,388; etanercept SEB $12,527-12,783; certolizumab 200 $12,749; Ustekinumab 45 or 90 $13,963; secukinumab $16,738; tildrakizumab $17,273; certolizumab 400 $17,499; Risankizumab $17,618; ixekizumab $17,905; bimekizumab $18,850; infliximab innovator $20,146; etanercept innovator $21,533 (figure not shown).

Figure 1. Cost per Responder achieving PASI 100



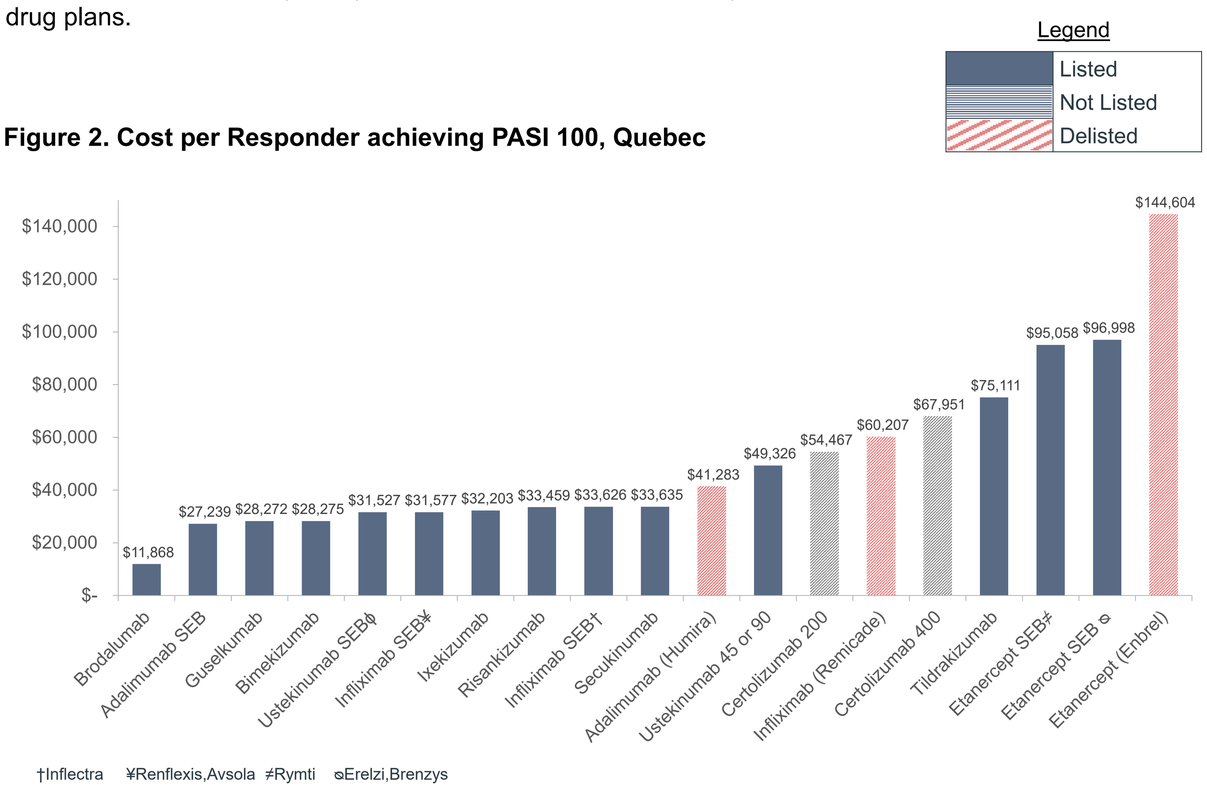
†Inflectra ¥Renflexis,Avsola ≠Rymti ʓErelzi,Brenzys

RESULTS (continued)

Sensitivity Analysis

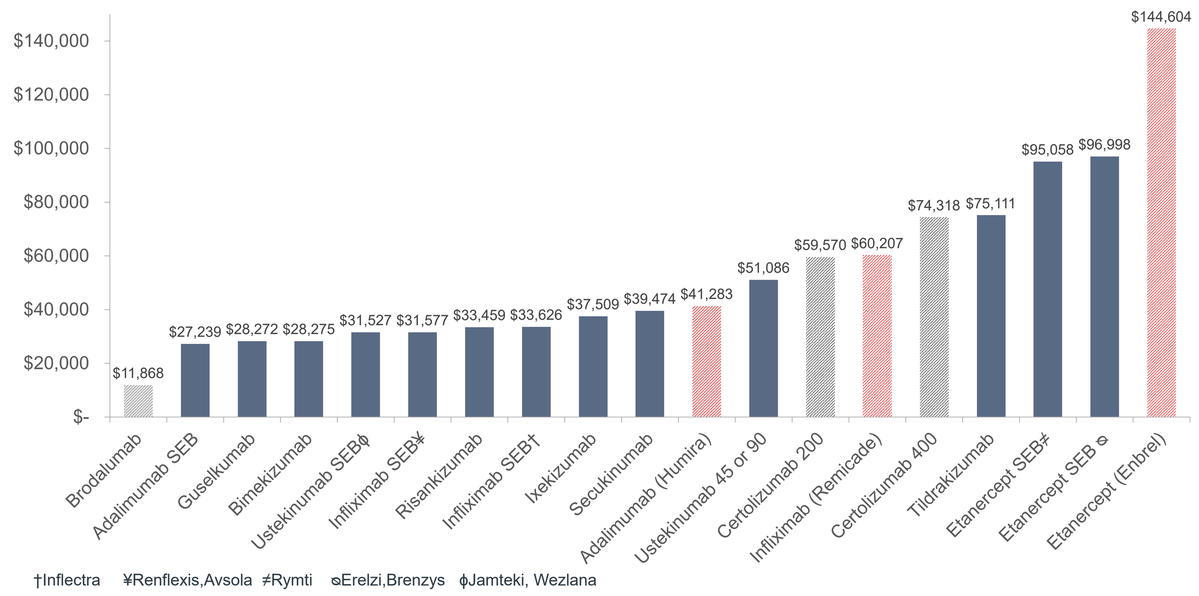
- Compared to the primary analysis reflecting the private sector (that assumed all agents were covered), the sensitivity analysis from the public plans perspective showed differences in CpR ranges due to the implementation of biosimilar substitution policies and differences in drug listings across jurisdictions.
- In Quebec, the range of CpR PASI 100 was smaller than the primary analysis. While brodalumab remained the agent with the lowest cost, the high end of the range decreased to $96,998 as a result of etanercept innovator being delisted. In addition, certolizumab 200 and 400 were not listed, whereas adalimumab and infliximab innovators were delisted (Figure 2).
- In Alberta, the range of CpR PASI 100 was smaller, the low end increased to $27,239 because brodalumab is not listed and the high end decreased to $96,998 due to the delisting of etanercept innovator. In addition, certolizumab 200 and 400 were not listed, whereas adalimumab and infliximab innovators were delisted (Figure 3).
- In British Columbia, the range of CpR PASI 100 was smaller, the low end increased to $27,239 because brodalumab is not listed and the high end decreased to $99,769 due to the delisting of etanercept innovator. In addition, certolizumab 200 and 400, tildrakizumab and guselkumab were not listed, whereas adalimumab and infliximab innovators were delisted (Figure 4).
- Existing confidential Product Listing Agreements (PLAs) between provinces and manufacturers are not reflected in the sensitivity analysis and as such, the results may not represent the actual costs to public drug plans.

Figure 2. Cost per Responder achieving PASI 100, Quebec



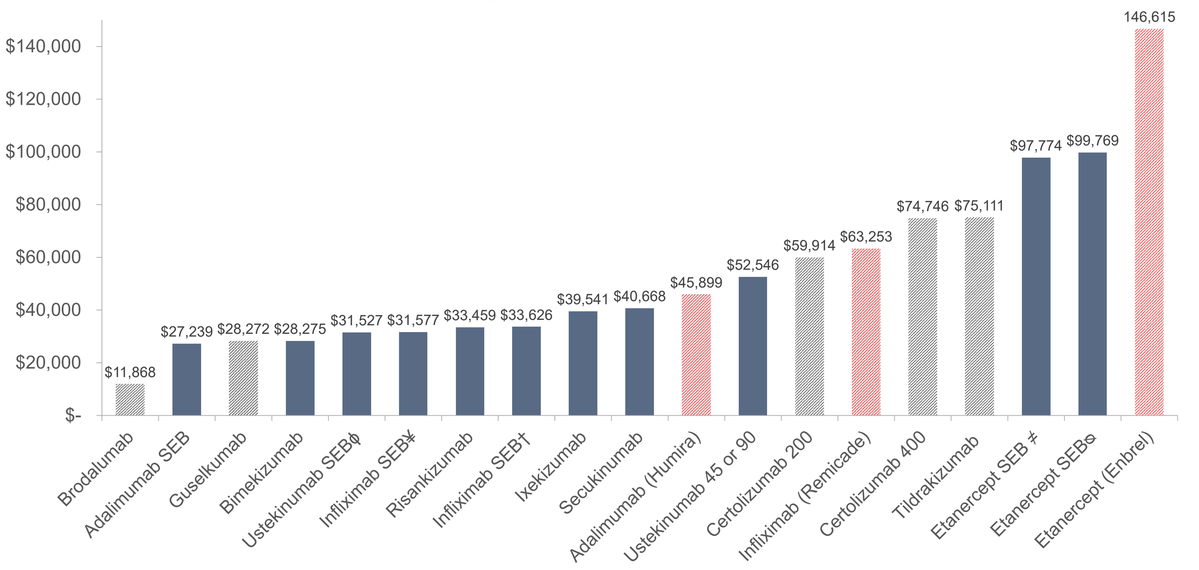
†Inflectra ¥Renflexis,Avsola ≠Rymti ʓErelzi,Brenzys ϕJamteki, Wezlana

Figure 3. Cost per Responder achieving PASI 100, Alberta



†Inflectra ¥Renflexis,Avsola ≠Rymti ʓErelzi,Brenzys ϕJamteki, Wezlana, Steqeyma

Figure 4. Cost per Responder achieving PASI 100, British Columbia



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CONCLUSIONS

- These results demonstrate that brodalumab has the lowest induction CpR across all PASI outcomes compared to other biologic therapies, including subsequent entry biologics in Canada, in addition to having the lowest CpR for PASI 100 in Quebec, Alberta and British Columbia from a provincial public drug plan perspective.
- PASI response rate is an important attribute for dermatologists when determining biologic treatment[7] and this analysis demonstrates that brodalumab provides the best value for money for patients, prescribers and payers.

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