INDUCTION COST PER RESPONDER OF BIOLOGIC THERAPIES FOR 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 currently approved biologic and SEB agents in achieving reductions in the PASI scores at the end of the induction period of therapy for adult patients with moderate-to-severe plaque psoriasis in Canada.

METHODS

- 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 December 2022.
- The primary analysis was the CpR for PASI 90, with PASI 75 and 100 as secondary analyses. Sensitivity analyses were performed from the perspective of provincial public drug plans (Ontario, Quebec, British Columbia), using available unit prices from respective provincial formularies

RESULTS

Primary and Secondary Analyses

- Drug acquisition costs for the induction period (as showed in figure 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 ($)	Induction Costs ($)
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	665	7,974
Certolizumab 400	16	18	665	11,961
Etanercept	12	24	406	9,744
Etanercept SEB	12	24	241	5,784
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	1,670	13,364
Risankizumab	16	3	4,935	14,805
Secukinumab	12	14	840	11,760
Tildrakizumab	12	2	4,935	9,870
Ustekinumab 45 or 90	12	2	4,593	9,186

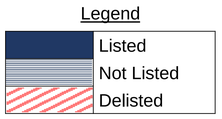
*Assuming average weight of patient as 90 kg;
†Inflectra ¥Renflexis,Avsola

RESULTS (CONTINUED)

- Results for the primary analysis for CpR PASI 90 were as follows: brodalumab $7,327; adalimumab SEB $10,792; guselkumab $13,952; infliximab SEB $14,124-$15,041; adalimumab innovator $18,185; secukinumab $19,051; ixekizumab $19,377; bimekizumab $19,825; certolizumab 200 $19,935; risankizumab $20,727; ustekinumab $21,128; certolizumab 400 $25,597; etanercept SEB $26,664; tildrakizumab $27,636; infliximab innovator $28,294; etanercept innovator $44,918 (Figure 1).
- Brodalumab ($6,347; $11,868) and etanercept innovator ($21,533; $163,401) consistently represented the lowest and highest CpR for secondary analyses using PASI 75 and 100 respectively (figures not shown).

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 (bimekizumab not included as under review at the time of the analysis).
- In Ontario, the range of CpR PASI 90 remained the same as the primary analysis; however, infliximab innovator was delisted, while guselkumab and certolizumab 200 and 400 were not listed (Figure 2).
- In Quebec, the range of CpR PASI 90 was smaller than the primary analysis. While brodalumab remained the agent with the lowest cost, the high end of the range decreased to $26,664 as a result of tildrakizumab not being listed as well as the delisting of etanercept and infliximab innovators. In addition, guselkumab, certolizumab 200 and 400 were not listed, whereas adalimumab innovator was delisted. (Figure 3).
- In British Columbia, the range of CpR PASI 90 was smaller, the low end increased to $10,765 because brodalumab is not listed and the high end decreased to $27,358 due to tildrakizumab not being listed and the delisting of infliximab and etanercept innovators. In addition, guselkumab, certolizumab 200 and 400 were not listed, whereas adalimumab innovator was 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.



†Inflectra ; ¥Renflexis, Avsola

Figure 1. Cost per Responder achieving PASI 90

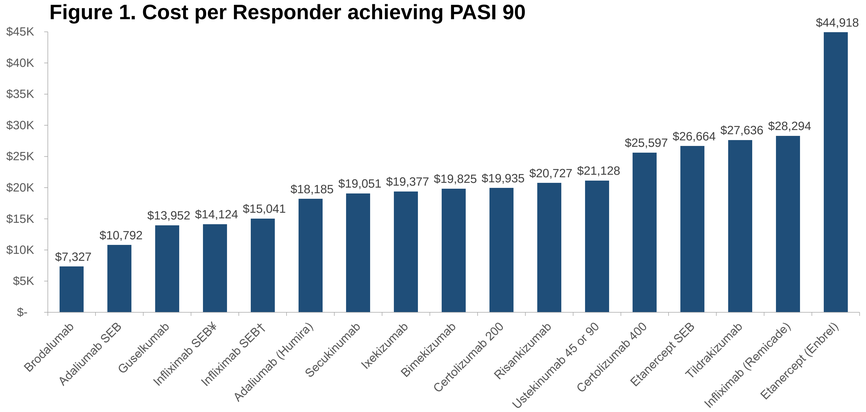


Figure 3. Cost per Responder achieving PASI 90, Quebec

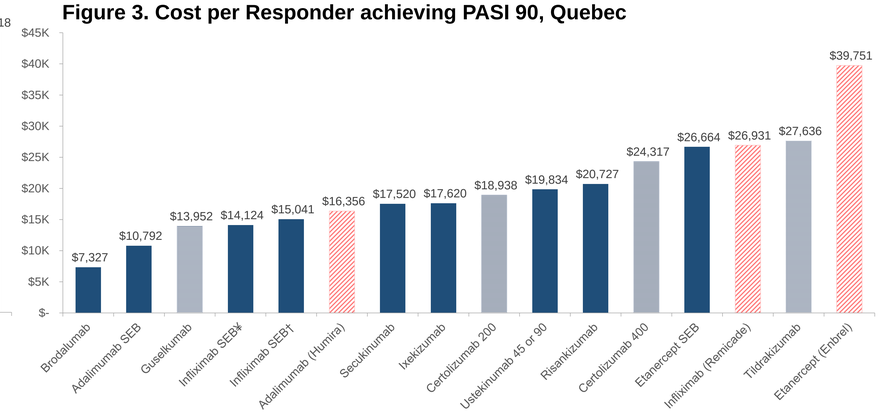


Figure 2. Cost per Responder achieving PASI 90, Ontario

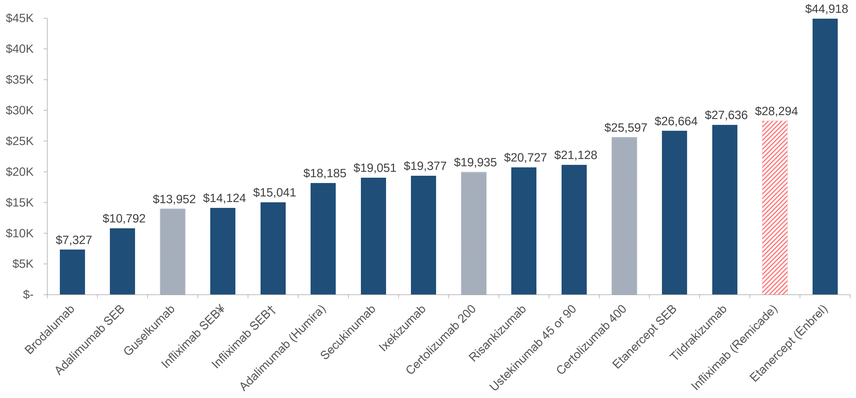
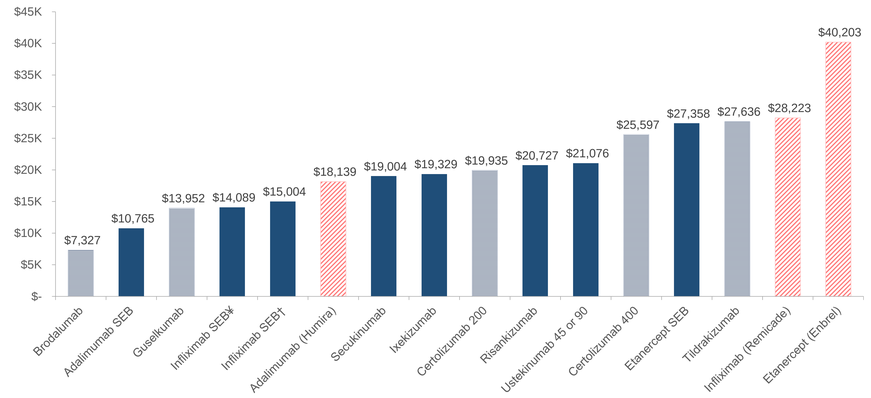


Figure 4. Cost per Responder achieving PASI 90, British Columbia



CONCLUSION

- Despite the availability of various biologic and SEB therapies for plaque psoriasis in Canada, the range of CpR estimates (as of December 2022) varies significantly, with brodalumab having the lowest CpR across all PASI scores during the induction period. Using therapies with more favorable CpR may translate into cost-saving opportunities.

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