Cost per Responder analysis of Bimekizumab compared with IL-17A, IL-12/23 and IL-23 inhibitors in the Treatment of Psoriatic Arthritis in Sweden

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Objective

To assess the cost per responder of bimekizumab, a recently approved selective inhibitor of interleukin (IL)-17F and IL-17A, by prior biologic exposure, against other approved IL-17A, IL-23/12 or IL-23 inhibitors for psoriatic arthritis (PsA) in Sweden.

Introduction

- Bimekizumab is a humanized monoclonal IgG1 antibody that acts by selectively inhibiting IL-17F in addition to IL-17A.
- BE OPTIMAL (NCT03895203)[1] and BE COMPLETE (NCT03896581)[2] demonstrated the efficacy and safety of treatment with subcutaneous bimekizumab 160 mg every 4 weeks (Q4W) in patients with PsA who were naïve to biologic disease-modifying anti-rheumatic drugs (biologic-naïve) or had prior inadequate response or intolerance to one or two previous tumor necrosis factor inhibitors (TNFi-exp), respectively.

Materials and Methods

A cost per responder model was developed based on the patient populations in the BE OPTIMAL and BE COMPLETE trials.

- Treatments included were bimekizumab 160 mg Q4W, guselkumab 100 mg Q4W, ixekizumab 80 mg Q4W, risankizumab 150 mg Q12W (every 12 weeks), secukinumab 150 mg Q4W and ustekinumab 45 mg/90 mg Q12W.
- Efficacy outcomes assessed were American College of Rheumatology (ACR) 50, Psoriasis Area and Severity Index (PASI) 100 (complete response) and Minimal Disease Activity (MDA) at 16 weeks.
- Drug acquisition costs (pharmacy retail prices) were obtained from TLV's price database[3] (February 2023) and used to calculate the total drug cost per patient over 16 weeks.
- Response rates derived from a network meta-analysis (NMA)[4] were used to calculate number-needed-to-treat (NNT) which were multiplied with total cost per patient for each intervention to obtain cost per response. Some data were not captured for certain drugs and populations in the NMA.
- Costs were converted from Swedish Krona (SEK) to Euro (EUR) at a rate of 1:0.088, based on April 2023 rates[5].

Results

ACR50:

- For ACR50, bimekizumab had the lowest cost per response (8.025€ for biologic-naïve and 7.327€ for TNFi-exp) whereas the highest cost per response was guselkumab for biologic-naïve (29.082€) and ustekinumab 45 mg for TNFi-exp (32.786€) (**Figure 1**).

PASI100:

- For PASI100, bimekizumab had the lowest cost for both subgroups (7.171€ and 5.811€), whereas the highest cost was secukinumab for biologic-naïve (18.925€) and ixekizumab for TNFi-exp (26.659€) (**Figure 2**).

MDA:

- For MDA, bimekizumab had the lowest cost (8.869€ and 7.660€ respectively), whereas the highest cost was guselkumab for biologic-naïve (30.293€) and risankizumab for TNFi-exp (25.757€) (**Figure 3**).

Conclusions

Treatment with bimekizumab for PsA at Week 16 is consistently associated with the lowest cost per response in Sweden versus IL-17A, IL-23/12 or IL-23 inhibitors for ACR50, PASI100 and MDA, regardless of prior biologic exposure.

Summary of Cost-Per-Responder Results

As per the analysis, bimekizumab demonstrated the lowest cost of treatment:

Biologic-naïve			
ACR50	Amongst 7 treatments	**PASI 100**	Amongst 4 treatments
MDA	Amongst 5 treatments		

TNFi-exp			
ACR50	Amongst 7 treatments	**PASI 100**	Amongst 3 treatments
MDA	Amongst 5 treatments		

Limitations

- Where data were not captured for certain drugs and population subgroups in the NMA, cost-per-responder results could not be calculated.
- There are limited numbers of head-to-head randomized control clinical trials that exist for IL-17A, IL-23/12 or IL-23 inhibitor therapies.

Figure 1 Cost per response (€), ACR50 results (biologic-naïve and TNFi-exp)

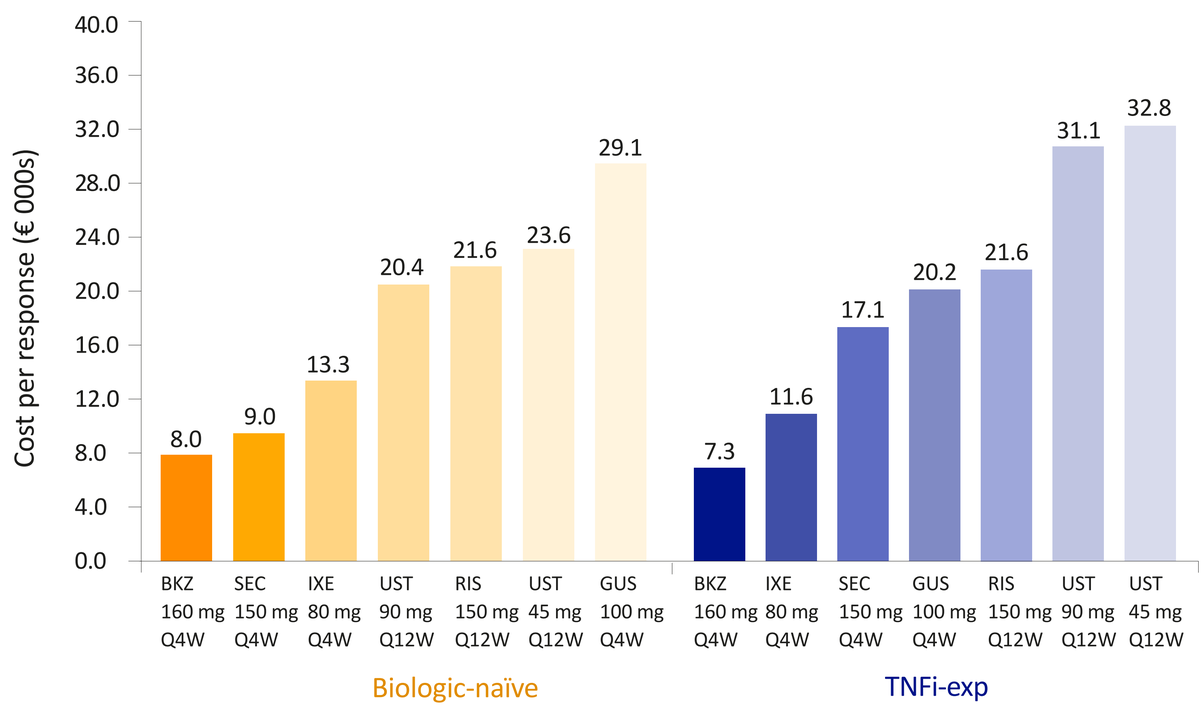
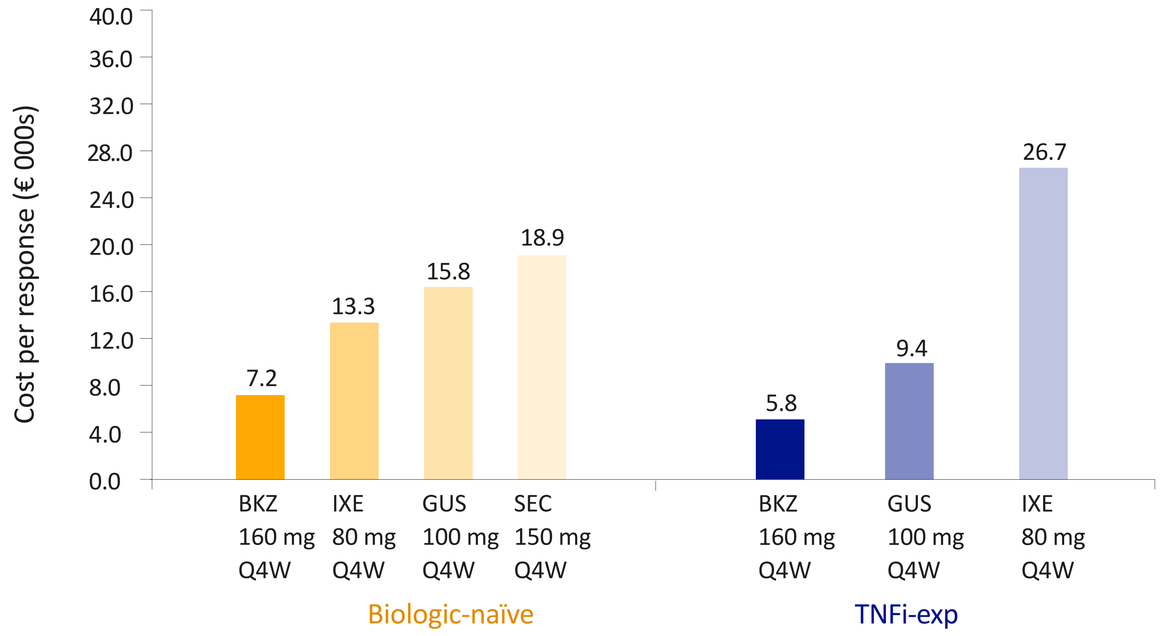
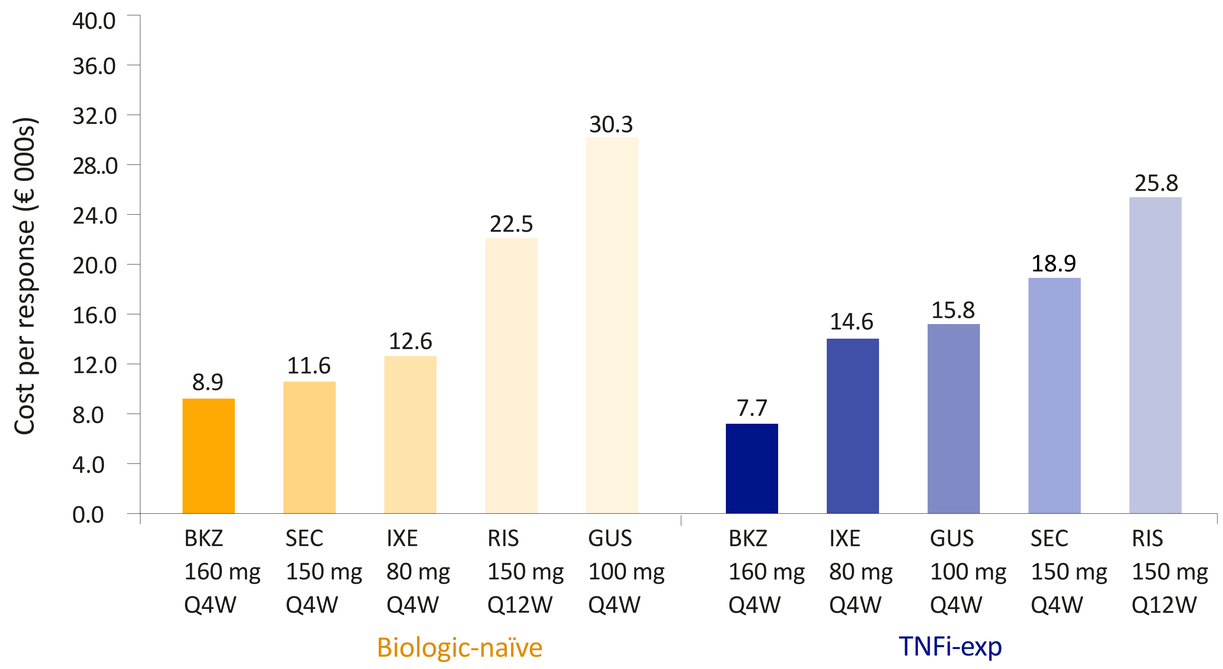


Figure 2 Cost per response (€), PASI100 results (biologic-naïve and TNFi-exp)*



*PASI100 efficacy data for RIS 150 mg Q12W, UST 45 mg Q12W and UST 90 mg Q12W was not available for biologic-naive and TNFi-exp patients. PASI100 efficacy data for SEC 150 mg Q4W were not available for TNFi-exp patients.

Figure 3 Cost per response (€), MDA results (biologic-naïve and TNFi-exp)*



*MDA efficacy data for UST 45 mg Q12W and UST 90 mg Q12W were not available.

ACR50: American College of Rheumatology (≥50% improvement from baseline in ACR criteria); **BKZ**: bimekizumab; **EUR**: Euro; **GUS**: guselkumab; **IL**: interleukin; **IXE**: ixekizumab; **MDA**: Minimal Disease Activity; **NNT**: number-needed-to-treat; **PsA**: psoriatic arthritis; **PASI100**: Psoriasis Area and Severity Index (100% improvement from baseline); **Q4W**: every four weeks; **Q12W**: every twelve weeks; **RIS**: risankizumab; **SEC**: secukinumab; **SEK**: Swedish Krona; **TLV**: Tandvårds- och läkemedelsförmånsverket; **TNFi-exp**: tumor necrosis factor inhibitor experienced; **UST**: ustekinumab.

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