Bimekizumab cost per responder analysis compared to other licensed interleukin inhibitors at week 52 for the treatment of psoriatic arthritis: A United Kingdom perspective

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Objective

This study aimed to compare the cost per responder (CPR) of bimekizumab, a monoclonal IgG1 antibody that selectively inhibits interleukin (IL)-17F in addition to IL-17A, against other approved IL-17A, IL-12/23, and IL-23 inhibitors for the treatment of psoriatic arthritis (PsA) in the UK over a 52-week timeframe.

Background

- PsA is a chronic, systemic, immune-mediated inflammatory disease in which patients experience musculoskeletal symptoms alongside psoriasis-associated skin inflammation[1]
- Bimekizumab, alone or in combination with methotrexate, is indicated for the treatment of active PsA in adults who have had an inadequate response or who have been intolerant to one or more disease-modifying antirheumatic drugs (DMARDs)[2]
- Bimekizumab, a monoclonal IgG1 antibody that selectively inhibits interleukin IL-17F in addition to IL-17A, has demonstrated clinical improvements in both joint and skin efficacy up to 3 years in patients with PsA from the BE OPTIMAL (biologic DMARD-naïve) and BE COMPLETE (prior tumor necrosis factor inhibitor or inadequate responders)[3,4]
- The American College of Rheumatology (ACR50) response reflects a ≥50% improvement across the ACR core set* and is widely regarded as a clinically meaningful indicator of joint response in PsA[5]
- Minimal Disease Activity (MDA) is achieved when ≥5 of 7 targets† are met. It captures a multidomain disease control and is endorsed as a treat-to-target goal in routine practice[6]

Methods and Analysis

- A 52-week CPR model was developed, incorporating both induction and maintenance treatment periods. In the absence of head-to-head trials and a common comparator arm, unanchored matching adjusted indirect comparisons (MAICs) were used to estimate long-term comparative efficacy between bimekizumab and other licensed IL inhibitors[7]
- The MAIC analyses were conducted in accordance with the National Institute for Health and Care Excellence Decision Support Unit Technical Support Document 18 for a robust population adjusted indirect treatment comparison[8]
  - MAIC results at Week 52 were consistent with the previously conducted network meta-analyses at Week 16, with bimekizumab showing better comparative results on more stringent treatment targets and superiority against other IL inhibitors
- The analysis included approved IL inhibitor biologics; anti-IL17A/IL17F (bimekizumab), anti-IL17As (ixekizumab and secukinumab), anti-IL12/23 (ustekinumab), and anti-IL23s (guselkumab and risankizumab) **(Tables 1 and 2)**
- The CPR tool included the ACR score and the MDA outcome measures to assess treatment outcomes in biologic-naïve and biologic-experienced patients with PsA **(Tables 1 and 2)**
- Drug costs and dose recommendations were based on the NHS list prices outlined in the British National Formulary (BNF) 2025 without considering any potential local or national discounts that could be available. The model applied combined regimens for secukinumab and ustekinumab in the biologic-naïve and biologic-experienced population, based on dual dose ratios[9-16]
- For each pairwise comparison (PwC), the CPR was calculated by dividing the cost per patient over 52 weeks by the corresponding clinical response rates
- The CPR tool used response rates from the MAIC analyses, which were based on individual patient data from the trials of one treatment matched with the baseline summary statistics reported in trials of another treatment

Results

- Bimekizumab demonstrated the lowest cost per response across all IL inhibitors in both biologic-naïve and biologic-experienced PsA populations
- For ACR50 response, bimekizumab vs. guselkumab PwC achieved the most favourable CPR result in biologic-naïve (£30,348) and biologic-experienced (£34,161) populations. Risankizumab had the highest CPR in both populations (£46,121 and £91,966 respectively) **(Figure 1)**
- For MDA response, bimekizumab vs. secukinumab PwC showed the most favourable CPR at £33,870, while guselkumab had the highest at £58,065 among biologic-naïve patients. Among biologic-experienced patients, bimekizumab vs. guselkumab PwC achieved the lowest CPR at £40,775 per responder, whereas secukinumab had the highest CPR at £109,394 **(Figure 2)**

Summary of cost per responder results in biologic-naïve and biologic-experienced PsA population

As per the analysis, bimekizumab demonstrated the lowest cost per response for both ACR50 and MDA outcomes across IL-inhibitors in biologic-naïve and biologic-experienced PsA populations

PsA biologic-naïve patients		PsA biologic-experienced patients	
ACR50	Bimekizumab is ranked 1st against 5 treatments	ACR50	Bimekizumab is ranked 1st against 5 treatments
MDA	Bimekizumab is ranked 1st against 3 treatments	MDA	Bimekizumab is ranked 1st against 4 treatments

Table 1 Response rates at Week 52 in biologic-naïve patients with PsA

Interleukin inhibitor biologic treatments	ACR50 response probability at Week 52 (%)	MDA response probability at Week 52 (%)	Annual cost per patient based on list price
Bimekizumab 160 mg Q4W	53.75	50.49	£17,101
Secukinumab combined dose‡	50.92	38.51	£16,223
Bimekizumab 160 mg Q4W	54.48	NA	£17,101
Ixekizumab 160 mg for 1 dose then 80 mg Q4W	50.47	NA	£16,875
Bimekizumab 160 mg Q4W	54.11	NA	£17,101
Ustekinumab combined dose§	30.67	NA	£11,593
Bimekizumab 160 mg Q4W	56.35	48.14	£17,101
Guselkumab 100 mg Week 0 and 4 then 100 mg Q8W	48.40	31.00	£18,000
Bimekizumab 160 mg Q4W	53.75	44.99	£17,101
Risankizumab 150 mg Week 0 and 4 then 150 mg Q12W	43.27	37.89	£19,957

Table 2 Response rates at Week 52 in biologic-experienced patients with PsA

Interleukin inhibitor biologic treatments	ACR50 response probability at Week 52 (%)	MDA response probability at Week 52 (%)	Annual cost per patient based on list price
Bimekizumab 160 mg Q4W	47.82	40.54	£17,101
Secukinumab 300 mg weekly for 5 doses then Q4W	24.82	17.76	£20,719
Bimekizumab 160 mg Q4W	47.47	37.99	£17,101
Ixekizumab 160 mg for 1 dose then 80 mg Q4W	41.80	34.43	£16,875
Bimekizumab 160 mg Q4W	48.74	NA	£17,101
Ustekinumab combined dose§	17.13	NA	£11,593
Bimekizumab 160 mg Q4W	50.06	41.94	£17,101
Guselkumab 100 mg Week 0 and 4 then 100 mg Q8W	39.15	26.98	£18,000
Bimekizumab 160 mg Q4W	45.77	36.12	£17,101
Risankizumab 150 mg Week 0 and 4 then 150 mg Q12W	21.70	18.87	£19,957

NA – Data unavailable.
Cost per patient includes Week 52 dose.
‡ The recommended dose for secukinumab is 150 mg weekly for 5 doses then Q4W or 300 mg weekly for 5 doses then Q4W for patients with concomitant plaque psoriasis.
§ The recommended dose for ustekinumab is 45 mg week 0, 4 then Q12W for patients ≤100 kg or increased to 90 mg for patients >100 kg. The ratio for ustekinumab is based on NICE TA180. The manufacturer's base-case analysis assumed a weighted average of weight-based dosing whereby 80% of people received ustekinumab 45 mg and 20% of people received ustekinumab 90 mg.

Figure 1 Cost per ACR50-responder at Week 52 in biologic-naïve and biologic-experienced patients with PsA

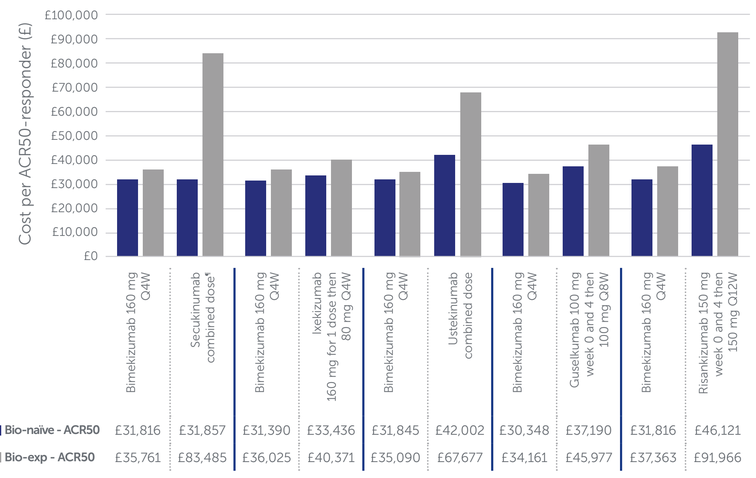
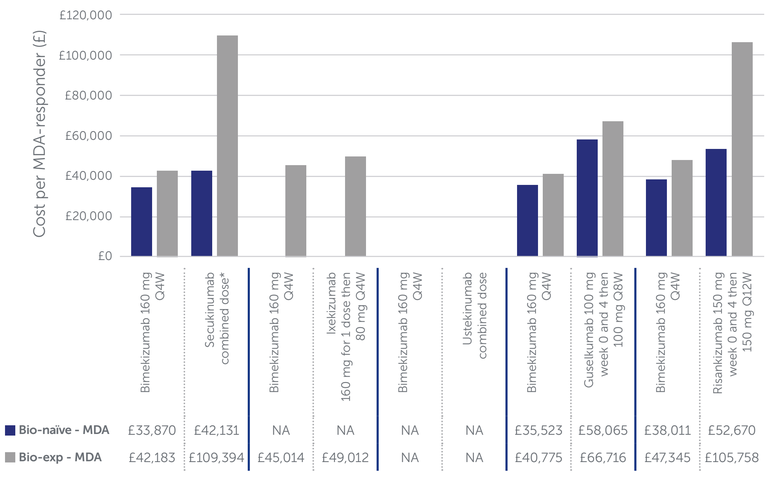


Figure 2 Cost per MDA-responder at Week 52 in biologic-naïve and biologic-experienced patients with PsA



¶ Biologic-naïve: The recommended dose for secukinumab is 150 mg weekly for 5 doses then Q4W or 300 mg weekly for 5 doses then Q4W for patients with concomitant plaque psoriasis.
Biologic-experienced: The recommended dose for secukinumab is 300 mg weekly for 5 doses then Q4W.
NA – Data unavailable.

Conclusions

Bimekizumab consistently demonstrated the lowest cost per response for both ACR50 and MDA outcomes across IL inhibitors in biologic-naïve and biologic-experienced PsA populations over a 52-week period, supporting its potential as a cost-effective treatment option in UK clinical practice

Limitations

- Cost calculations are based on the NHS list price and include the Week 52 dose for all treatments
- Costs relating to drug administration and monitoring are not taken into account
- The BNF indicates that secukinumab should be dosed monthly[17]; this model assumes that one month is equivalent to 4 weeks
- Escalated doses are modelled to occur at the earliest possible interval based on the selected ratio for simplicity

* Tender/swollen joint counts, patient and physician global assessments, pain, function, and acute-phase reactants.
† TJC ≤1, SJC ≤1, PASI ≤1 or BSA ≤3%, patient pain VAS ≤15, patient global VAS ≤20, HAQ-DI ≤0.5, tender entheses ≤1.
ACR: American College of Rheumatology; BNF: British national formulary; BSA, body surface area; CPR: cost per responder; DMARD: disease-modifying antirheumatic drug; HAQ-DI: health assessment questionnaire disability index; IgG1: Immunoglobulin G1; IL: interleukin; MAIC: matching adjusted indirect comparison; MDA: minimal disease activity; NHS: National Health Service; PASI: Psoriasis Area and Severity Index; PsA: psoriatic arthritis; PwC: pairwise comparison; Q4W: every 4 weeks; Q8W: every 8 weeks; Q12W: every 12 weeks, SJC: swollen joint count; TJC: tender joint count; VAS: visual analogue scale.

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