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A Matching-Adjusted Indirect Comparison of the Efficacy of Bimekizumab and Ixekizumab at 52 Weeks for the Treatment of Radiographic Axial Spondyloarthritis

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Objective

This matching-adjusted indirect comparison (MAIC) analysis assessed the relative efficacy of bimekizumab versus ixekizumab in patients with radiographic axial spondyloarthritis (r-axSpA) at Week 52.

Background

- Bimekizumab, a monoclonal IgG1 antibody that selectively inhibits interleukin (IL)-17F in addition to IL-17A, has demonstrated consistent and sustained efficacy to Week 52 across the full spectrum of axSpA.[1,2]
- A previous network meta-analysis established similar relative efficacy for Assessment of SpondyloArthritis international Society (ASAS) outcomes at Weeks 12–16 with subcutaneous bimekizumab 160 mg every four weeks (Q4W), versus subcutaneous ixekizumab 80 mg Q4W, an IL-17A-only inhibitor, in patients with r-axSpA (i.e. ankylosing spondylitis[3]).[4]

Methods

- Individual patient data from BE MOBILE 2 (bimekizumab 160 mg; NCT03928743; n=220) were matched to pooled summary data from COAST-V and COAST-W (ixekizumab 80 mg following starting dose at Week 0; NCT02696785, NCT02696798; n=195) (**Table 1**).
- COAST-V and COAST-W trials were conducted in TNFi-naive and TNFi-experienced patients, respectively; 16.7% of patients in BE MOBILE 2 were TNFi-experienced (**Table 1**).
- To adjust for cross-trial differences, patients from BE MOBILE 2 were reweighted to match baseline characteristics in the ixekizumab trials. The target population is therefore that of the COAST-V/COAST-W trials.
- Weights, determined by propensity score, were based on age, sex, ethnicity, previous TNFi exposure, weight, time from diagnosis and baseline ASDAS and BASFI.
- These were identified as important effect modifiers and prognostic factors by clinician consensus and literature review, but are limited to those characteristics reported by the COAST trials.
- 52-week outcomes were recalculated for ASAS20, ASAS40, BASDAI50 and BASDAI change from baseline as pre-specified outcomes for this MAIC.
- Odds ratios (OR) or mean differences (MD) were estimated alongside 95% confidence intervals (CI) based on robust sandwich estimates of the standard error. Effective sample size (ESS) was estimated to assess the overlap between BE MOBILE 2 and COAST-V/COAST-W trial populations.
- These analyses followed the MAIC methodology described by Signorovitch et al.,[5] in accordance with the NICE Decision Support Unit Technical Support Document 18.[6]

Results

- With bimekizumab (ESS=45), patients may have a significantly greater likelihood of achieving ASAS20 (p=0.023), ASAS40 (p=0.035), BASDAI50 (p=0.025), and of achieving greater reductions from baseline in BASDAI (p=0.042) than with ixekizumab at Week 52 (**Figure 1**, **Figure 2** and **Table 2**).

Limitations

- The reduced ESS for bimekizumab following reweighting (ESS=45, reduced from N=220 [20.5%]) indicates limited overlap between trial populations, likely due to the higher number of patients with previous TNFi exposure included for ixekizumab.
- An unanchored MAIC analysis does not utilise a common control arm or randomisation to balance effect modifiers and prognostic factors, and bias can result from unreported but important characteristics.

Conclusions

Patients with r-axSpA treated with bimekizumab 160 mg Q4W may have a significantly greater likelihood of long-term response in ASAS and BASDAI outcomes versus ixekizumab 80 mg Q4W at Week 52, but analyses were limited by poor overlap in trial populations and potential bias from unreported effect modifiers and prognostic factors.

Methodology Summary

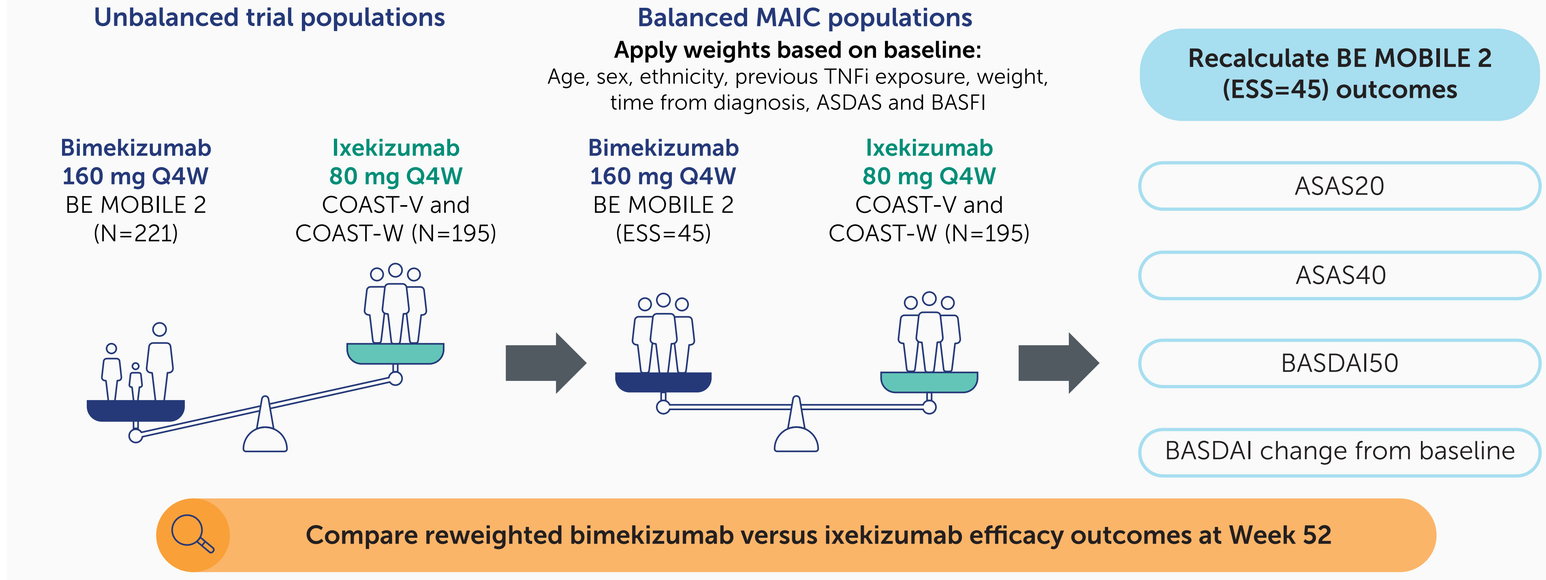
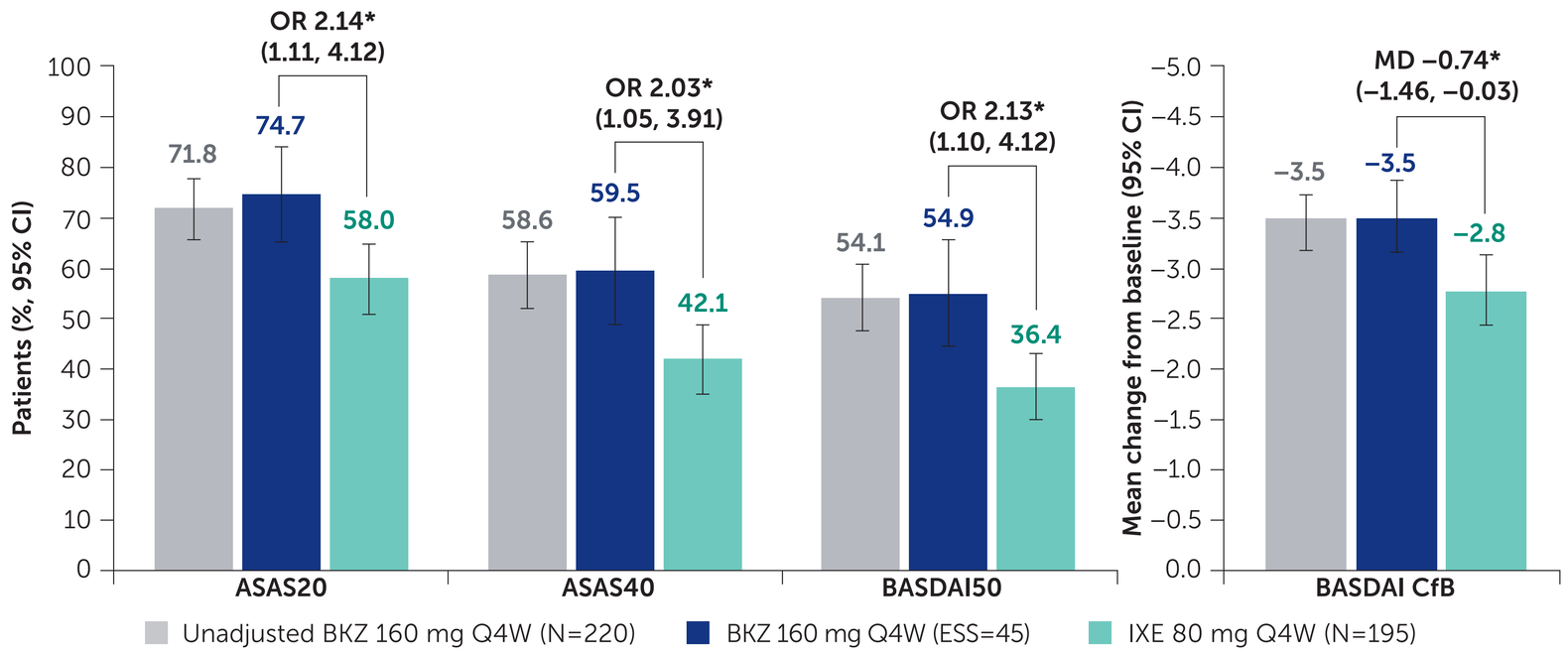


Table 1 Baseline characteristics of patients with r-axSpA in relevant BKZ and IXE randomised controlled trials

Trial	Unadjusted BE MOBILE 2	Adjusted BE MOBILE 2	Unadjusted COAST-V	Unadjusted COAST-W
Treatment	**BKZ 160 mg Q4W**	**BKZ 160 mg Q4W**	**IXE 80 mg Q4W**	**IXE 80 mg Q4W**
N	221	45	81	114
Age, years, mean (SD)	41.0 (12.1)	44.7 (12.9)	41.0 (12.1)	47.4 (13.4)
Male, %	72.4	81.5	84	79.8
White, %	80.1	73.7	64	80.5
Previous TNFi exposure, %	16.7	58.5	0	100
Weight, kg, mean (SD)	80.0 (19.1)	82.2 (18.1)	77.6 (14.7)	85.5 (20.2)
Time from diagnosis, years, mean (SD)	6.7 (8.3)	9.4 (8.6)	8.3 (9.6)	10.1 (7.8)
ASDAS, mean (SD)	3.7 (0.8)	4.0 (0.8)	3.7 (0.7)	4.2 (0.9)
BASFI, mean (SD)	5.3 (2.2)	6.9 (1.8)	6.1 (1.8)	7.4 (1.8)

Only matching variables are reported. Unadjusted values reported as presented in the published trial manuscripts.

Figure 1 Adjusted outcomes for BKZ vs IXE at Week 52

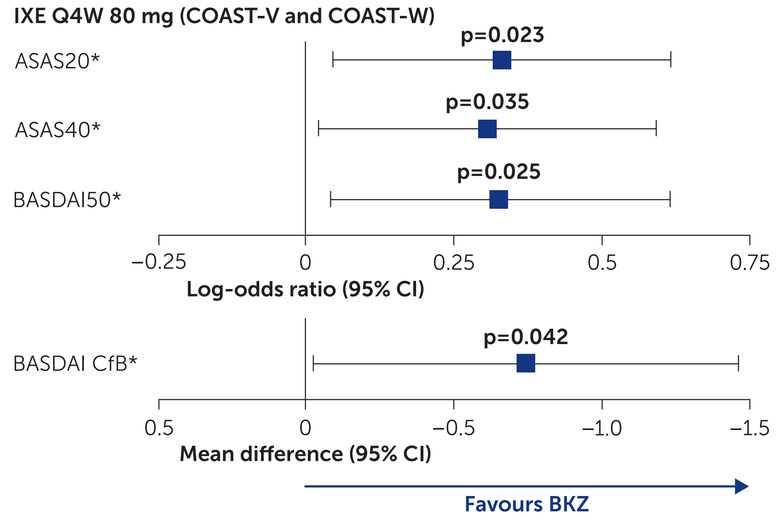


*Statistically significant difference (p<0.05 between BKZ and IXE). Error bars represent 95% CI.

Table 2 Unadjusted response rates for IXE at Week 52

	Unadjusted COAST-V	Unadjusted COAST-W
Treatment	**IXE 80 mg Q4W**	**IXE 80 mg Q4W**
N	81	114
ASAS20, % (95% CI)	65.4 (54.9, 76.0)	52.6 (43.4, 61.9)
ASAS40, % (95% CI)	53.1 (42.1, 64.1)	34.2 (25.4, 43.0)
BASDAI50, % (95% CI)	49.4 (38.3, 60.4)	27.2 (18.9, 35.5)
BASDAI CfB, mean (95% CI)	–3.3 (–3.9, –2.8)	–2.4 (–2.9, –2.0)

Figure 2 Odds ratios for relevant outcomes for BKZ vs IXE at Week 52



*Statistically significant difference (p<0.05 between BKZ and IXE). Vertical lines show log-odds ratio of 0 (i.e. identical effects of IXE) for ASAS20, ASAS40 and BASDAI50 outcomes and a mean difference of 0 for BASDAI CfB. Error bars represent 95% CI.

ASAS: Assessment of SpondyloArthritis international Society; **ASAS20/40:** ASAS ≥20/40% improvement; **ASDAS:** Ankylosing Spondylitis Disease Activity Score; **axSpA:** axial spondyloarthritis; **BASDAI:** Bath Ankylosing Spondylitis Disease Activity Index; **BASDAI50:** ≥50% improvement in BASDAI; **BASFI:** Bath Ankylosing Spondylitis Functional Index; **BKZ:** bimekizumab; **CfB:** change from baseline; **CI:** confidence interval; **ESS:** effective sample size; **IL:** interleukin; **IXE:** ixekizumab; **MAIC:** matching-adjusted indirect comparison; **MD:** mean difference; **NICE:** National Institute of Health and Care Excellence; **OR:** odds ratio; **Q4W:** every 4 weeks; **r-axSpA:** radiographic axial spondyloarthritis; **SD:** standard deviation; **TNFi:** tumour necrosis factor inhibitor.

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References: [1]Baraliakos X et al. Ann Rheum Dis 2023:ard-2023-224803; [2]van der Heijde D et al. Ann Rheum Dis 2023;82:515–26; [3]Boel A et al. Ann Rheum Dis 2019;78:1545–9; [4]Deodhar A et al. Value Health 2023;26:S406; [5]Signorovitch J.E et al. Value Health 2012;15:940–7; [6]NICE DSU 2016; Technical Support Document 18. **Author Contributions:** Substantial contributions to study conception/design, or acquisition/analysis/interpretation of data: **HT**, **KG**, **MFM**, **VT**, **DW**, **WPM**; Drafting of the publication, or reviewing it critically for important intellectual content: **HT**, **KG**, **MFM**, **VT**, **DW**, **WPM**; Final approval of the publication: **HT**, **KG**, **MFM**, **VT**, **DW**, **WPM**. **Author Disclosures:** **HT:** Shareholder of Clifton Insight which has received consulting fees from Argenx, Bayer, BMS, Daiichi-Sankyo, Eisai, Lundbeck, Novartis, Pfizer, Roche, and UCB Pharma. **KG:** Speakers bureau from AbbVie, Eli Lilly, Novartis, and UCB Pharma; consultant of AbbVie, Eli Lilly, Novartis, and UCB Pharma; grant/research support from AbbVie, Gilead, Eli Lilly, Novartis, and UCB Pharma. **MFM:** Employee of UCB Pharma. **VT**, **DW:** Employee and stockholder of UCB Pharma. **WPM:** Honoraria/consulting fees from AbbVie, BMS, Boehringer-Ingelheim, Celgene, Eli Lilly, Galapagos, Janssen, Novartis, Pfizer, and UCB Pharma; research grants from AbbVie, Pfizer, and UCB Pharma; educational grants from AbbVie, Janssen, Novartis, and Pfizer; Chief Medical Officer for CARE Arthritis. **Acknowledgements:** We would like to thank the patients and their caregivers in addition to all the investigators and their teams who contributed to this study. The authors acknowledge Celia Menckeberg, PhD, UCB Pharma, Breda, The Netherlands, for publication coordination, Evelyn Turner, BSc, Costello Medical, Cambridge, UK, for medical writing and editorial assistance, and the Creative team at Costello Medical for design support. This study was funded by UCB Pharma. All costs associated with development of this poster were funded by UCB Pharma.

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