Bimekizumab: Matching-Adjusted Indirect Comparison (MAIC) to Establish 1-year Comparative Efficacy in Moderate-to-Severe Hidradenitis Suppurativa (HS)

Acceptance Code: CO72

Haley B. Naik,[1] Thrasyvoulos Tzellos,[2] Vincent Piguet,[3] Leah Davis,[4] Michael Frank Mørup,[5] Vanessa Taieb,[6] Sandeep Kiri,[7] Isobel Munro,[8] Victoria Shodimu,[8] Brian Kirby[9]

Objective

To assess the comparative long-term efficacy of bimekizumab (BKZ) at Week 48–52 compared with the approved biologic therapies secukinumab (SEC) and adalimumab (ADA) in patients with moderate-to-severe HS.

Background

- BKZ, a monoclonal IgG1 antibody, is a selective inhibitor of IL-17F in addition to IL-17A, that has recently demonstrated significant improvement in efficacy outcomes vs placebo for the treatment of moderate-to-severe HS.[1-3]
- Due to the lack of head-to-head trials and lack of comparative data beyond Week 16, a SLR and MAIC were conducted to assess the 1-year (Week 48–52) relative efficacy of BKZ vs approved biologic therapies for HS.

Methods

Systematic literature review

- A SLR was conducted in accordance with PRISMA guidelines[4] (July 2024) to identify RCT evidence on the efficacy of the following approved biologic therapies for treating adult patients with HS:
  - BKZ: 320mg Q2W up to Week 16, then Q4W [Q2W/Q4W]
  - SEC: 300mg Q2W; or 300mg Q4W
  - ADA: 40mg QW.

Matching-adjusted indirect comparison

- A standard NMA at Week 48 was not possible due to treatment switching and the absence of a common comparator, necessitating the use of an unanchored MAIC approach.
- Outcomes of interest are outlined in **Table 1**.
- Individual patient data for BKZ trials were combined and subsequently weighted, to match aggregated baseline characteristics of trials for SEC and ADA.
- Weights were determined using a propensity score model, accounting for key treatment effect modifiers and prognostic factors, listed in **Table 2 & Table 3**.
- Outcome imputation methods (OC or LOCF) were aligned with comparator trials' published results to reduce indirect comparison bias.
- OR or MD were estimated alongside 95% CI based on robust sandwich estimates of the standard error.

Results

Systematic literature review

- Six RCTs were identified which reported outcomes of interest for the MAIC for BKZ at Week 48 (BE HEARD I, BE HEARD II)[1,2], and SEC at Week 52 (SUNSHINE, SUNRISE)[5] and ADA at Week 48 (PIONEER I, PIONEER II).[6,7]
  - Note, after Week 16 in BE HEARD I, BE HEARD II, SUNRISE, and SUNSHINE, and after Week 12 in PIONEER I, all placebo receiving patients switched to open-label active treatment.
  - Across the identified studies, patients were predominantly naïve to biologic treatment (**Table 2 & Table 3**).

Matching-adjusted indirect comparison

- Baseline characteristics (the variables accounted for in the propensity score model) were well balanced post-matching (**Table 2 & Table 3**).
  - The BKZ ESS post-matching was 72-77% of the original sample size in pooled SEC trials and 48-82% of the original sample size for ADA
- Compared with the approved doses for SEC, patients treated with BKZ Q2W/Q4W demonstrated significantly greater odds of achieving all outcomes assessing clinical response (ORs for HiSCR50 [p <0.001], HiSCR75 [p<0.001], HiSCR90 [p=0.002]) and MDs for % CFB improvement in AN (p<0.001) and CFB improvement in DT-count (Q2W: p=0.004; Q4W: p=0.015) at Week 48–52.
- Overall, comparisons favoured BKZ Q2W/Q4W vs ADA QW at Week 48, with statistically significant results for HiSCR50 (p=0.004), % CFB in AN (p<0.001), and % CFB in DT (p=0.048). The results also suggest that patients receiving BKZ Q2W/Q4W treatment may have a higher likelihood of achieving HiSCR75 and HiSCR90 responses.

Limitations

- An unanchored MAIC analysis does not use a common control arm, therefore randomisation cannot be assumed and unreported trial differences may introduce bias.
- ADA trials were older and conducted in a different treatment landscape than the more recent BKZ and SEC trials.

Conclusion

Despite the limitations of MAIC, our analysis estimated that at Week 48–52 patients with HS treated with bimekizumab (BKZ) had a higher likelihood of achieving HiSCR50 compared with those treated with adalimumab (ADA) and secukinumab (SEC), and higher likelihood of achieving HiSCR75/90 compared with SEC. BKZ showed greater improvements in AN count and DT count compared with SEC and ADA.

Methodology summary

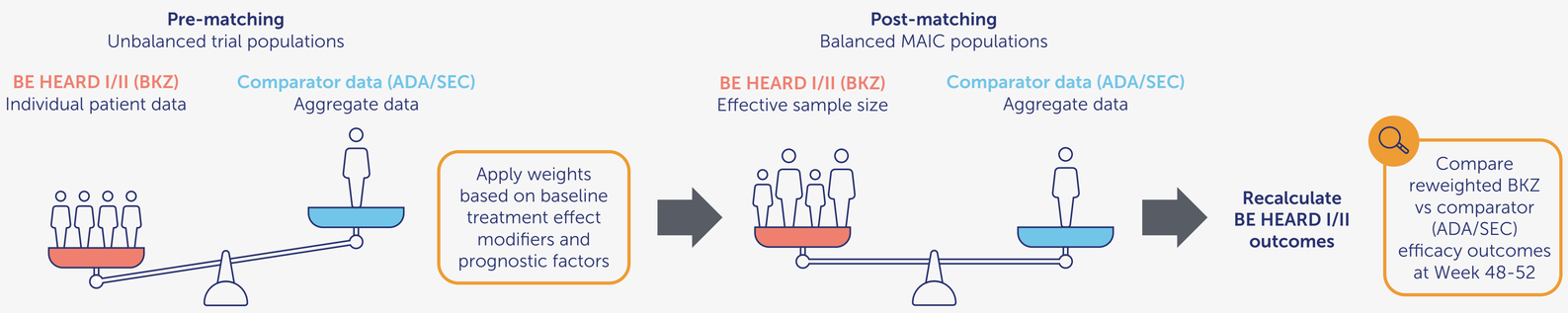


Table 1 MAIC outcomes of interest

Binary	Continuous
• Hidradenitis Suppurativa Clinical Response (HiSCR[1]): – ≥50% improvement in HiSCR (HiSCR50) – ≥75% improvement in HiSCR (HiSCR75) – ≥90% improvement in HiSCR (HiSCR90)	• Percentage (%) change from baseline (CFB) in AN count • CFB and % CFB in DT count

[1]Proportion of patients achieving percentage reduction in the total abscess and inflammatory nodules (AN) count with no increase from baseline in abscess or draining tunnel (DT) count.

Table 2 Pooled baseline characteristics in BE HEARD I/II before and after matching to SUNRISE and SUNSHINE

Characteristics	SUNRISE + SUNSHINE SEC Q2W	BE HEARD I + BE HEARD II BKZ Q2W/Q4W		SUNRISE + SUNSHINE SEC Q4W	BE HEARD I + BE HEARD II BKZ Q2W/Q4W	
		Pre-matching	Post-matching		Pre-matching	Post-matching
N/ESS[1]	361	211	163	360	211	151
Age, mean (SD)	37.20 (12.01)	36.98 (12.36)	37.20 (12.01)	35.60 (11.55)	36.98 (12.36)	35.60 (11.55)
BMI, mean (SD)	32.25 (7.85)	32.67 (7.85)	32.35 (7.85)	32.40 (7.70)	32.67 (7.85)	32.40 (7.70)
Duration of HS, mean (SD)	7.25 (7.52)	8.23 (7.62)	7.25 (7.52)	7.40 (7.60)	8.23 (7.62)	7.40 (7.60)
AN count, mean (SD)	13.40 (9.75)	17.12 (16.72)	13.40 (9.75)	12.95 (8.60)	17.12 (16.72)	12.95 (8.60)
DT count, mean (SD)	2.95 (3.50)	3.78 (4.43)	2.95 (3.50)	2.50 (3.50)	3.78 (4.43)	2.50 (3.50)
Male, n (%)	162 (45.0%)	86 (40.6%)	74 (45.0%)	157 (43.5%)	86 (40.6%)	66 (43.5%)
White, n (%)	278 (77.0%)	168 (79.7%)	126 (77.0%)	284 (79.0%)	168 (79.7%)	119 (79.0%)
Smoking (%)	193 (53.5%)	97 (46.1%)	87 (53.5%)	185 (51.5%)	97 (46.1%)	78 (51.5%)
Hurley III, n (%)	153 (42.5%)	95 (45.0%)	69 (42.5%)	131 (36.5%)	95 (45.0%)	55 (36.5%)
Prior biologics, n (%)	79 (22.0%)	41 (19.2%)	36 (22.0%)	81 (22.5%)	41 (19.2%)	34 (22.5%)
Concomitant antibiotics, n (%)	43 (12.0%)	20 (9.6%)	20 (12.0%)	47 (13.0%)	20 (9.6%)	20 (13.0%)
US Region, n (%)	55 (15.2%)	63 (29.9%)	21 (15.2%)	55 (15.2%)	63 (29.9%)	23 (15.2%)

[1]Pre-matching for CFB DT: N=168, ESS=130; with identical baseline characteristics to SEC baseline characteristics after matching.

Table 3 Pooled baseline characteristics in BE HEARD I/II before and after matching to PIONEER

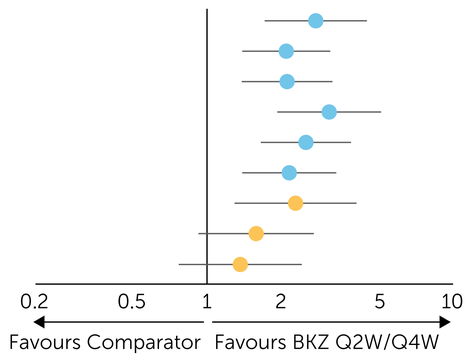
Characteristics	PIONEER I + PIONEER II ADA QW	BE HEARD I + BE HEARD II BKZ Q2W/Q4W	
		Pre-matching	Post-matching
N/ESS[1]	316	292	140
Age, mean (SD)	35.53 (10.39)	37.02 (12.36)	35.53 (10.40)
BMI, mean (SD)	32.12 (7.50)	32.72 (7.85)	32.12 (7.50)
AN count, mean (SD)	12.44 (10.12)	17.24 (16.80)	12.45 (10.11)
DT count, mean (SD)	3.77 (4.66)	3.79 (4.43)	3.78 (4.67)
hsCRP, mean (SD)	16.69 (21.67)	17.52 (24.79)	16.70 (21.67)
Male, n (%)	117 (37.0%)	118 (40.4%)	52 (37.0%)
White, n (%)	259 (82.0%)	233 (79.8%)	114 (82.0%)
Smoking, n (%)	186 (58.9%)	134 (45.9%)	82 (58.9%)
Hurley III, n (%)	150 (47.5%)	132 (45.2%)	66 (47.5%)
Prior biologics, n (%)	0 (0.0%)	56 (19.2%)	0 (0.0%)
US Region, n (%)	122 (38.5%)	87 (29.8%)	54 (38.5%)

[1]Pre-matching for % CFB in AN: N=211, ESS=172; and for % CFB in DT: N=168, ESS=137.

Figure 2 Matching-adjusted comparison of BKZ vs comparators (ADA and SEC) for the treatment of moderate-to-severe HS at Week 48–52[†]

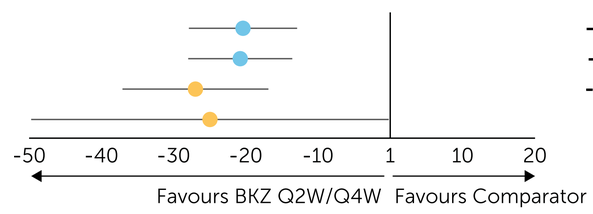
A

Outcomes	Comparator	BKZ Q2W/Q4W ESS	Comparator N	Comparator events	OR [95% CI]
HiSCR50 (OC)	**SEC Q2W**	**163.45**	**254**	**155**	**2.77 (1.73, 4.45)**
HiSCR75 (OC)	**SEC Q2W**	**163.45**	**254**	**109**	**2.09 (1.40, 3.14)**
HiSCR90 (OC)	**SEC Q2W**	**163.45**	**254**	**65**	**2.11 (1.39, 3.22)**
HiSCR50 (OC)	**SEC Q4W**	**150.75**	**255**	**151**	**3.14 (1.94, 5.07)**
HiSCR75 (OC)	**SEC Q4W**	**150.75**	**255**	**103**	**2.53 (1.67, 3.82)**
HiSCR90 (OC)	**SEC Q4W**	**150.75**	**255**	**66**	**2.16 (1.40, 3.33)**
HiSCR50 (LOCF)	**ADA QW**	**139.59**	**88**	**51**	**2.29 (1.30, 4.05)**
HiSCR75 (LOCF)	ADA QW	139.59	88	36	1.58 (0.92, 2.72)
HiSCR90 (LOCF)	ADA QW	139.59	88	26	1.36 (0.77, 2.42)



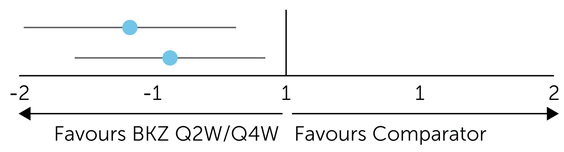
B

Outcomes	Comparator	BKZ Q2W/Q4W ESS	Comparator N	MD [95% CI]
% CFB AN (OC)	**SEC Q2W**	**163.45**	**254**	**-20.40 (-27.72, -13.08)**
% CFB AN (OC)	**SEC Q4W**	**150.75**	**255**	**-20.75 (-27.80, -13.70)**
% CFB AN (OC)	**ADA QW**	**100.70**	**81**	**-26.98 (-36.95, -17.00)**
% CFB DTs (OC)	**ADA QW**	**76.69**	**57**	**-24.95 (-49.64, -0.25)**



C

Outcomes	Comparator	BKZ Q2W/Q4W ESS	Comparator N	MD [95% CI]
CFB DTs (OC)	**SEC Q2W**	**129.63**	**168**	**-1.18 (-1.96, -0.39)**
CFB DTs (OC)	**SEC Q4W**	**120.98**	**154**	**-0.87 (-1.58, -0.17)**



A. HiSCR outcomes (binary, ORs); B. % CFB outcomes (continuous, MD as a %); C. Absolute CFB outcomes (continuous, MD).
[†]Bold denotes statistically significant difference based on 95% CI.

Abbreviations: **ADA**, adalimumab; **AN**, abscess and inflammatory nodules; **BKZ**, bimekizumab; BMI, body mass index; **CI,** confidence interval; **CFB**, change from baseline; **DT**, draining tunnels; **ESS**, effective sample size; **HiSCR**, Hidradenitis Suppurativa Clinical Response; **HS**, Hidradenitis suppurativa; **hsCRP**, high-sensitivity C-reactive protein; **LOCF**, last observation carried forward; **MAIC**, matching adjusted indirect comparison; **MD**, mean difference; **NMA**, network meta-analysis; **OC**, observed case; **OR**, odds ratio, **QW**, once a week; **Q2W**, every two weeks; **Q4W**, every 4 weeks; **SEC**, secukinumab; **SD**, standard deviation; **SLR**, systematic literature review; **US**, United States.

Acknowledgements: This study was funded by UCB Pharma. Analyses and medical writing services were supported by Source Health Economics and funded by UCB Pharma. Review management was provided by Costello Medical.

Disclosures: LD, MFM, VT, SK: Employees and shareholders of UCB Pharma. IM, VS: Employees of Source Health Economics. HN: Received grant support from AbbVie; consulting fees from 23andme, AbbVie, Aristea Therapeutics, Nimbus Therapeutics, Medscape, Sonoma Biotherapeutics, DAVA Oncology, Boehringer Ingelheim, Union Chimique Belge's (UCB), Novartis; investigator fees from Pfizer; holds shares in Radera, Inc; Associate Editor for JAMA Dermatology; board member of the Hidradenitis Suppurativa Foundation. VP: Received grant support from AbbVie, Bausch Health, Boehringer Ingelheim, Bristol Myers Squibb, Celgene, Eli Lilly, Incyte, Janssen, LEO Pharma, L'Oréal, Novartis, Organon, Pfizer, Sandoz and Sanofi; received payment or honoraria for speaking engagement from Sanofi; participated on an advisory board for LEO Pharma, Novartis, Sanofi, Union Therapeutics, AbbVie and UCB; received equipment donation from L'Oréal. BK: Research support from/was a principal investigator (clinical trials) for AbbVie, Almirall, Janssen, Merck Sharpe Dolme, Moonlake, Novartis, Pfizer and UCB; consultant for AbbVie, Almirall, Celgene, Janssen, Merck Sharpe Dolme, Moonlake, Novartis, Pfizer, and UCB; received honoraria from AbbVie, Almirall, Celgene, Janssen, Lilly, Mc2 therapeutics, Moonlake, Novartis, Pfizer, and UCB; participated on scientific advisory boards for AbbVie, Almirall, Celgene, Janssen, Lilly, MC2 therapeutics, Moonlake, Novartis, Pfizer, and UCB.

Institutions: [1]Department of Dermatology, University of California, San Francisco, CA, USA; [2]European Hidradenitis Suppurativa Foundation, e.V., Dessau, Germany; Department of Dermatology, Nordland Hospital Trust, Bodø, Norway; [3]Division of Dermatology, Department of Medicine, Women's College Hospital, University of Toronto, Toronto, Ontario, Canada; [4]UCB Pharma, Morrisville, NC, United States; [5]UCB Pharma, Copenhagen, Denmark; [6]UCB Pharma, Colombes, France; [7]UCB Pharma, Slough, UK; [8]Source Health Economics, 91 Wimpole Street, London W1G 0EF, UK; [9]St Vincent's University Hospital, Elm Park and the Charles Institute, University College Dublin, Republic of Ireland

References: [1]Clinicaltrials.gov. https://clinicaltrials.gov/study/NCT04242446. 2023; [2]Kimball, A.B. et al, American Academy of Dermatology Annual Meeting; 2023 17-21 March; New Orleans, Louisiana; [3]EMA. Bimzelx EPAR. 2024; [4]Page, M. J., et al, BMJ, 2021;372; [5]Kimball, A.B. et al, Lancet 2023;401:747-61; [6]Kimball, A.B. et al, N Engl J Med 2016;375:422-34; [7]Zouboulis, C.C. et al, J Am Acad Dermatol 2019;80:60-9 e2.

To receive a copy of this poster, scan the QR code or visit: UCBposters.com/ISPOREU24
Poster ID: CO72
Link expiration: 4 December 2024