Comparing Efficacy of Guselkumab versus Ustekinumab in Patients with Psoriatic Arthritis: An Adjusted Comparison Using Individual Patient Data from the DISCOVER and PSUMMIT Trials

Authors: Pushpike Thilakarathne[1], Agata Schubert[2], Steve Peterson[3], Wim Noel[4] Barkha P. Patel[5], and Fareen Hassan[6]

Author Affiliations: [1]Janssen Pharmaceutica, HEMAR Department, Beerse, Belgium; [2]Janssen Cilag Poland, HEMAR Department, Warsaw, Poland; [3]Janssen Global Services, LLC, Horsham PA, United States of America; [4]Janssen Pharmaceutica, Medical Affairs Department, Beerse, Belgium; [5]EVERSANA, Burlington, ON, Canada; [6]Janssen Cilag Ltd, HEMAR Department, High Wycombe, United Kingdom

Corresponding Author:

Fareen Hassan

fhassan4@its.jnj.com

Janssen Cilag Ltd, HEMAR Department, High Wycombe, United Kingdom

Supplementary Material

Overview of studies informing adjusted treatment comparisons

DISCOVER-1

DISCOVER-1 was an international, Phase 3, multi-center, double-blind, placebo-controlled, randomized trial in adults with active psoriatic arthritis (PsA) despite demonstrated inadequate response to, or intolerance of, standard treatment including ≥ four months of apremilast, ≥ three months of non-biologic disease-modifying antirheumatic drugs (DMARDs), or ≥ four weeks of nonsteroidal anti-inflammatory drugs (NSAIDs) and a current or documented history of psoriasis [6]. Approximately 30% of enrolled patients could have been previously treated with one or two tumor necrosis factor (TNF) inhibitors. Active PsA was defined as those patients fulfilling classification criteria for PsA and displaying ≥ three tender and ≥ three swollen joints and C-reactive protein (CRP) ≥ 0.3 mg/dL. The study was conducted at 86 sites in 13 countries: Australia, Canada, Czech Republic, Germany, Hungary, Malaysia, Poland, Republic of Korea, Russia, Spain, Taiwan, Ukraine, United States. Patients were randomized to one of three parallel treatment groups: guselkumab 100 mg at weeks 0, 4, then every 8 weeks (Q8W), guselkumab 100 mg every 4 weeks (Q4W), or placebo. The study included a placebo-controlled period from Week 0 to Week 24 and an active treatment period from Week 24 to Week 52 (last dose administered at Week 48). The primary endpoint was ACR 20 response at Week 24.

DISCOVER-2

DISCOVER-2 was an international, Phase 3, multi-center, double-blind, placebo-controlled, randomized trial in adults with active PsA for at least six months with either inadequate response to, or intolerance of, standard non-biologic treatment [7]. Standard treatment included at least three months of non-biologic DMARDs, at least four months of apremilast at the approved dose (if discontinued > four weeks before receiving study treatment), or at least four weeks of NSAIDs and a current or documented history of psoriasis. Active PsA was defined as those patients fulfilling the classification criteria for PsA and displaying ≥ five tender and ≥ five swollen joints and CRP ≥ 0.6 mg/dL. The study was conducted at 118 sites in 13 countries: Bulgaria, Czech Republic, Estonia, Latvia, Lithuania, Malaysia, Poland, Russia, Spain, Taiwan, Turkey, Ukraine, and the United States. Patients were randomized to one of three parallel treatment groups: guselkumab 100 mg at weeks 0, 4, then Q8W, guselkumab 100 mg Q4W, or placebo. The study included a placebo-controlled period from Week 0 to Week 24 and an active treatment period from Week 24 to Week 100. The primary endpoint was ACR 20 response at Week 24.

PSUMMIT 1

PSUMMIT 1 was an international, Phase 3, multi-center, double-blind, placebo-controlled, randomized trial in adults with active PsA despite ≥ three months of treatment with conventional DMARDS, or ≥ four weeks of treatment with NSAIDs or intolerance to these agents [8]. Active PsA was defined as ≥ five of 66 swollen joints and ≥ five of 68 tender joints at both screening

and baseline, a screening CRP level of ≥ 3.0 mg/L or documented history of plaque psoriasis. The study was conducted at 104 sites in 14 countries: Australia, Austria, Canada, Finland, Germany, Hungary, Latvia, Lithuania, New Zealand, Poland, Russia, Spain, the United Kingdom, and the United States. Patients were randomized to one of three parallel treatment groups: ustekinumab 45 mg, ustekinumab 90 mg, or placebo at week 0, week 4, and every 12 weeks thereafter. The primary endpoint was ACR 20 response at Week 24.

PSUMMIT 2

PSUMMIT 2 was an international, Phase 3, multi-center, double-blind, placebo-controlled, randomized trial in adults with active PsA despite ≥ three months of conventional DMARD therapy, ≥ four weeks of NSAIDs and/or ≥ eight weeks of etanercept, adalimumab, golimumab, or certolizumab pegol or ≥14 weeks of infliximab therapy [9]. Participants were also eligible if they were intolerant to anti-TNF therapies. Active PsA was defined as ≥ five of 66 swollen and ≥ five of 68 tender joints at screening and baseline, screening CRP ≥ 6 mg/l (modified to ≥ 3 mg/L after study start), and a documented history of plaque psoriasis. The study was conducted at 71 sites in European and North American countries. Patients were randomized to one of three parallel treatment groups: ustekinumab 45 mg, ustekinumab 90 mg, or placebo at week 0, week 4, and every 12 weeks thereafter. The primary endpoint was ACR 20 response at Week 24.

Supplementary Tables

Supplementary Table S1: Additional baseline characteristics for the biologic-naïve patient population

	DISCOVER 1 & 2		PSUMMIT 1 & 2		
	GUS 100 mg Q8W N (%)	GUS 100 mg Q4W N (%)	UST 45/90 mg N (%)	Total N (%)	p-value
Sample	335	336	499	1170	
Male	173 (51.6%)	187 (55.7%)	274 (54.9%)	634 (54.2%)	0.5297
Female	162 (48.4%)	149 (44.3%)	225 (45.1%)	536 (45.8%)	
Race					
White	321 (95.8%)	329 (97.9%)	482 (96.6%)	1132 (96.8%)	0.2990
Other	14 (4.2%)	7 (2.1%)	17 (3.4%)	38 (3.2%)	
BMI*					
<25	93 (27.8%)	88 (26.3%)	107 (21.5%)	288 (24.7%)	0.0405
25 to <30	116 (34.7%)	108 (32.2%)	153 (30.7%)	377 (32.3%)	
≥30	125 (37.4%)	139 (41.5%)	238 (47.8%)	502 (43%)	
Country					
Poland	52 (15.5%)	47 (14.0%)	63 (12.6%)	162 (13.8%)	
Russia	88 (26.3%)	119 (35.4%)	123 (24.6%)	330 (28.2%)	<0.0001
Ukraine	97 (29.0%)	95 (28.3%)	29 (5.8%)	221 (18.9%)	
Western	30 (9.0%)	19 (5.7%)	106 (21.2%)	155 (13.2%)	
Other	68 (20.3%)	56 (16.7%)	178 (35.7%)	302 (25.8%)	
PsA Subtype					
Distal interphalangeal joint-predominant arthritis	24 (7.2%)	23 (6.8%)	51 (10.2%)	98 (8.4%)	
Symmetric polyarthritis-predominant arthritis	138 (41.2%)	130 (38.7%)	4 (0.8%)	272 (23.2%)	
Arthritis mutilans	3 (0.9%)	2 (0.6%)	117 (23.4%)	122 (10.4%)	<0.0010
Asymmetric oligoarthritis or monoarthritic	78 (23.3%)	77 (22.9%)	188 (37.7%)	343 (29.3%)	
Spondylitis with peripheral	92 (27.5%)	104 (31.0%)	139 (27.9%)	335 (28.6%)	
Use of non-biologic DMARDs					
use of non-biologic DMARDs	225 (67.2%)	227 (67.6%)	378 (75.8%)	830 (70.9%)	0.0075
no use of non-biologic DMARDs	110 (32.8%)	109 (32.4%)	121 (24.2%)	340 (29.1%)	
Number of prior non-biologic DMARDs					
No prior non-biologic DMARDs	35 (10.4%)	34 (10.1%)	121 (24.2%)	190 (16.2%)	
1 prior non-biologic DMARDs	208 (62.1%)	187 (55.7%)	375 (75.2%)	770 (65.8%)	
2 prior non-biologic DMARDs	69 (20.6%)	95 (28.3%)	3 (0.6%)	167 (14.3%)	<0.0010
3 or more prior non-biologic DMARDs	23 (6.9%)	20 (6.0%)	0	43 (3.7%)	
Oral corticosteroids use at baseline					
Yes	62 (18.5%)	54 (16.1%)	76 (15.2%)	192 (16.4%)	0.4474
No	273 (81.5%)	282 (83.9%)	423 (84.8%)	978 (83.6%)	
Use of NSAIDs at baseline					
Yes	213 (63.6%)	217 (64.6%)	373 (74.7%)	803 (68.6%)	0.0005
No	122 (36.4%)	119 (35.4%)	126 (25.3%)	367 (31.4%)	

Note: Each guselkumab dose is pooled within each DISCOVER-1 and DISCOVER-2 trial; both doses of ustekinumab are pooled from the PSUMMIT 1 and 2 trials.

A chi-square test of independence was used to determine if there was an association between baseline characteristics and treatment groups.

BMI: body mass index; DMARDS: disease-modifying antirheumatic drugs; GUS: guselkumab; NSAIDs: non-steroidal anti-inflammatory drugs; PsA: psoriatic arthritis; Q4W: every four weeks; Q8W: every eight weeks; UST: ustekinumab.

Supplementary Table S2: Additional baseline characteristics for the biologic-experienced patient population

	DISCOVER 1		PSUMMIT 2		
	GUS 100 mg Q8W N (%)	GUS 100 mg Q4W N (%)	UST 45/90 mg N (%)	Total N (%)	p-value
Sample	41	38	118	197	
Male	24 (58.5%)	21 (55.3%)	45 (38.1%)	90 (45.7%)	0.0326
Female	17 (41.5%)	17 (44.7%)	73 (61.9%)	107 (54.3%)	
Race					
White	36 (87.8%)	34 (89.5%)	116 (98.3%)	186 (94.4%)	0.0139
Other	5 (12.2%)	4 (10.5%)	2 (1.7%)	11 (5.6%)	
BMI					
<25	8 (19.5%)	4 (10.5%)	24 (20.3%)	36 (18.3%)	0.1408
25 to <30	14 (34.1%)	15 (39.5%)	25 (21.2%)	54 (27.4%)	
≥30	19 (46.3%)	19 (50.0%)	69 (58.5%)	107 (54.3%)	
Country					
Poland	11 (26.8%)	10 (26.3%)	4 (3.4%)	25 (12.7%)	<0.0001
Russia	8 (19.5%)	8 (21.1%)	6 (5.1%)	22 (11.2%)	
Ukraine	8 (19.5%)	7 (18.4%)	0	15 (7.6%)	
Western	8 (19.5%)	7 (18.4%)	31 (26.3%)	46 (23.4%)	
Other	6 (14.6%)	6 (15.8%)	77 (65.3%)	89 (45.2%)	
PsA Subtype					
Distal interphalangeal joint-predominant arthritis	4 (9.8%)	2 (5.3%)	24 (20.3%)	30 (15.2%)	<0.0001
Symmetric polyarthritis-predominant arthritis	21 (51.2%)	16 (42.1%)	0	37 (18.8%)	
Arthritis mutilans	1 (2.4%)	0	28 (23.7%)	29 (14.7%)	
Asymmetric oligoarthritis or monoarthritic	8 (19.5%)	13 (34.2%)	44 (37.3%)	65 (33.0%)	
Spondylitis with peripheral	7 (17.1%)	7 (18.4%)	22 (18.6%)	36 (18.3%)	
Number of prior anti-TNF agents					
1	34 (82.9%)	33 (86.8%)	51 (43.2%)	118 (59.9%)	<0.0001
≥2	7 (17.1%)	5 (13.2%)	67 (56.8%)	79 (40.1%)	
Use of non-biologic DMARDs					
use of non-biologic DMARDs	31 (75.6%)	27 (71.1%)	102 (86.4%)	160 (81.2%)	0.0630
no use of non-biologic DMARDs	10 (24.4%)	11 (28.9%)	16 (13.6%)	37 (18.8%)	
Number of prior non-biologic DMARDs					
No prior non-biologic DMARDs	1 (2.4%)	2 (5.3%)	16 (13.6%)	19 (9.6%)	<0.0001
1 prior non-biologic DMARDs	16 (39%)	18 (47.4%)	78 (66.1%)	112 (56.9%)	
2 prior non-biologic DMARDs	18 (43.9%)	12 (31.6%)	24 (20.3%)	54 (27.4%)	
3 or more prior non-biologic DMARDs	6 (14.6%)	6 (15.8%)	0	12 (6.1%)	
Oral corticosteroids use at baseline					
Yes	6 (14.6%)	9 (23.7%)	25 (21.2%)	40 (20.3%)	0.5656
No	35 (85.4%)	29 (76.3%)	93 (78.8%)	157 (79.7%)	
Use of NSAIDs at baseline					
Yes	25 (61.0%)	24 (63.2%)	76 (64.4%)	125 (63.5%)	0.9249
No	16 (39.0%)	14 (36.8%)	42 (35.6%)	72 (36.5%)	

Note: Each guselkumab dose is pooled within the DISCOVER-1 trial; both doses of ustekinumab are pooled from the PSUMMIT 2 trial.

A chi-square test of independence was used to determine if there was an association between baseline characteristics and treatment groups.

BMI: body mass index; DMARDS: disease-modifying antirheumatic drugs; GUS: guselkumab; NSAIDs: non-steroidal anti-inflammatory drugs; PsA: psoriatic arthritis; Q4W: every four weeks; Q8W: every eight weeks; TNF: tumor necrosis factor; UST: ustekinumab.

Supplementary Table S3: Scenario analyses results for ACR 20 and PASI 90 response for guselkumab versus ustekinumab in biologic-naïve patients

ACR 20	Scenario 1[a]		Scenario 2[b]	
Week	Odds Ratio [95% CI]		Odds Ratio [95% CI]	
	GUS Q8 vs UST 45 mg	GUS Q4 vs UST 45 mg	GUS Q8 vs UST 45/90 mg	GUS Q4 vs UST 45/90 mg
16	2.28 [1.51-3.45]	2.38 [1.55-3.63]	2.21 [1.48-3.30]	2.29 [1.52-3.45]
24	1.64 [1.08-2.47]	1.75 [1.14-2.67]	1.63 [1.09-2.43]	1.74 [1.15-2.62]
52	1.88 [1.22-2.88]	1.91 [1.23-2.97]	1.93 [1.27-2.92]	1.96 [1.28-3.01]
PASI 90	Scenario 1[c]		Scenario 2[d]	
Week	Odds Ratio [95% CI]		Odds Ratio [95% CI]	
	GUS Q8 vs UST 45 mg	GUS Q4 vs UST 45 mg	GUS Q8 vs UST 45/90 mg	GUS Q4 vs UST 45/90 mg
16	2.85 [1.73-4.69]	3.11 [1.87-5.16]	2.51 [1.56-4.03]	2.76 [1.70-4.47]
24	2.78 [1.71-4.52]	2.49 [1.52-4.08]	2.56 [1.60-4.09]	2.33 [1.44-3.75]
52	2.78 [1.70-4.53]	3.42 [2.06-5.66]	2.53 [1.57-4.07]	3.13 [1.92-5.12]

Note: Odds ratios presented are adjusted OR based on multivariable logistic regression models. Scenario 1 examined only ustekinumab 45 mg as it is the recommended dose by the Food and Drug Administration (FDA) and the European Medicines Agency (EMA). Scenario 2 examined the recommended dose of ustekinumab 45 mg (body weight ≤100 kg) and ustekinumab 90 mg (body weight >100 kg), as per the FDA and EMA label.

[a] GUS Q8: n = 335; GUS Q4: n = 336; UST 45 mg: n = 248

[b] GUS Q8: n = 335; GUS Q4: n = 336; UST 45/90 mg: n = 305

[c] GUS Q8: n = 264; GUS Q4: n = 270; UST 45 mg: n = 181

[d] GUS Q8: n = 264; GUS Q4: n = 270; UST 45/90 mg: n = 227

ACR: American College of Rheumatology; CI: confidence interval; GUS: guselkumab; PASI: Psoriasis Area and Severity Index; Q4W: every four weeks; Q8W: every eight weeks; UST: ustekinumab.

Supplementary Table S4: Scenario analyses results for ACR 20 and PASI 90 response for guselkumab versus ustekinumab in biologic-experienced patients

ACR 20	Scenario 1[a]		Scenario 2[b]	
Week	Odds Ratio [95% CI]		Odds Ratio [95% CI]	
	GUS Q8 vs UST 45 mg	GUS Q4 vs UST 45 mg	GUS Q8 vs UST 45/90 mg	GUS Q4 vs UST 45/90 mg
16	3.96 [1.30-12.03]	7.63 [2.47-23.57]	3.87 [1.36-11.02]	7.39 [2.58-21.15]
24	2.65 [0.98-7.17]	2.54 [0.93-6.94]	2.63 [1.02-6.79]	2.55 [0.99-6.59]
52	2.94 [1.12-7.72]	4.87 [1.78-13.34]	3.24 [1.27-8.27]	5.20 [1.96-13.79]
PASI 90	Scenario 1[c]		Scenario 2[d]	
Week	Odds Ratio [95% CI]		Odds Ratio [95% CI]	
	GUS Q8 vs UST 45 mg	GUS Q4 vs UST 45 mg	GUS Q8 vs UST 45/90 mg	GUS Q4 vs UST 45/90 mg
16	14.37 [2.66-77.71]	10.65 [2.04-55.47]	13.38 [2.92-61.30]	9.94 [2.27-43.48]
24	3.18 [0.93-10.80]	4.70 [1.40-15.73]	3.43 [1.06-11.11]	5.02 [1.59-15.89]
52	6.22 [1.57-24.66]	21.62 [4.97-94.09]	6.03 [1.69-21.57]	20.56 [5.23-80.82]

Note: Odds ratios presented are adjusted OR based on multivariable logistic regression models. Scenario 1 examined only ustekinumab 45 mg as it is the recommended dose by the Food and Drug Administration (FDA) and the European Medicines Agency (EMA). Scenario 2 examined the recommended dose of ustekinumab 45 mg (body weight ≤100 kg) and ustekinumab 90 mg (body weight >100 kg), as per the FDA and EMA label.

[a] GUS Q8: n = 41; GUS Q4: n = 38; UST 45 mg: n = 60

[b] GUS Q8: n = 41; GUS Q4: n = 38; UST 45/90 mg: n = 84

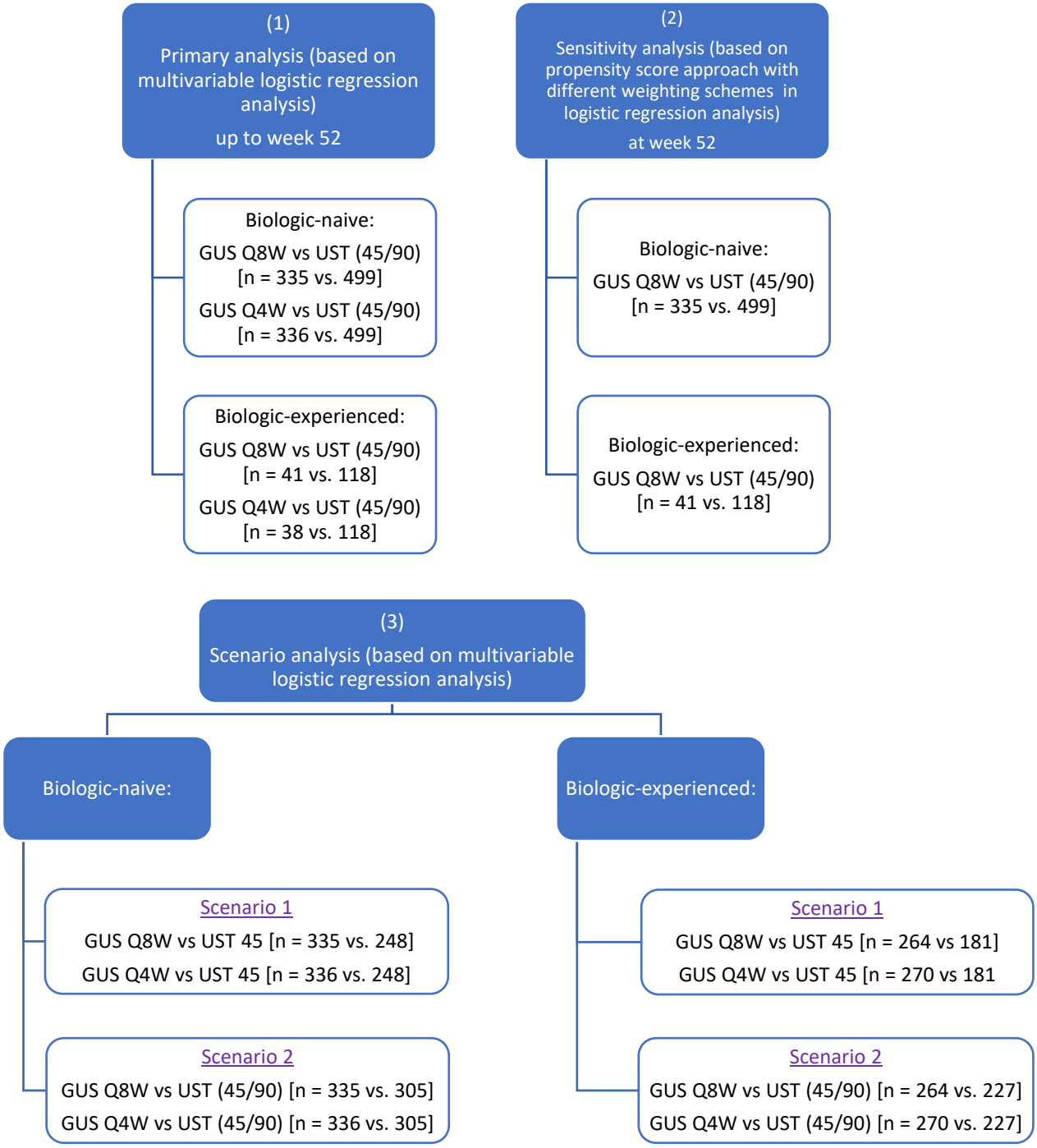
[c] GUS Q8: n = 30; GUS Q4: n = 31; UST 45 mg: n = 44

[d] GUS Q8: n = 30; GUS Q4: n = 31; UST 45/90 mg: n = 61

ACR: American College of Rheumatology; CI: confidence interval; GUS: guselkumab; PASI: Psoriasis Area and Severity Index; Q4W: every four weeks; Q8W: every eight weeks; UST: ustekinumab.

Supplementary Figures:

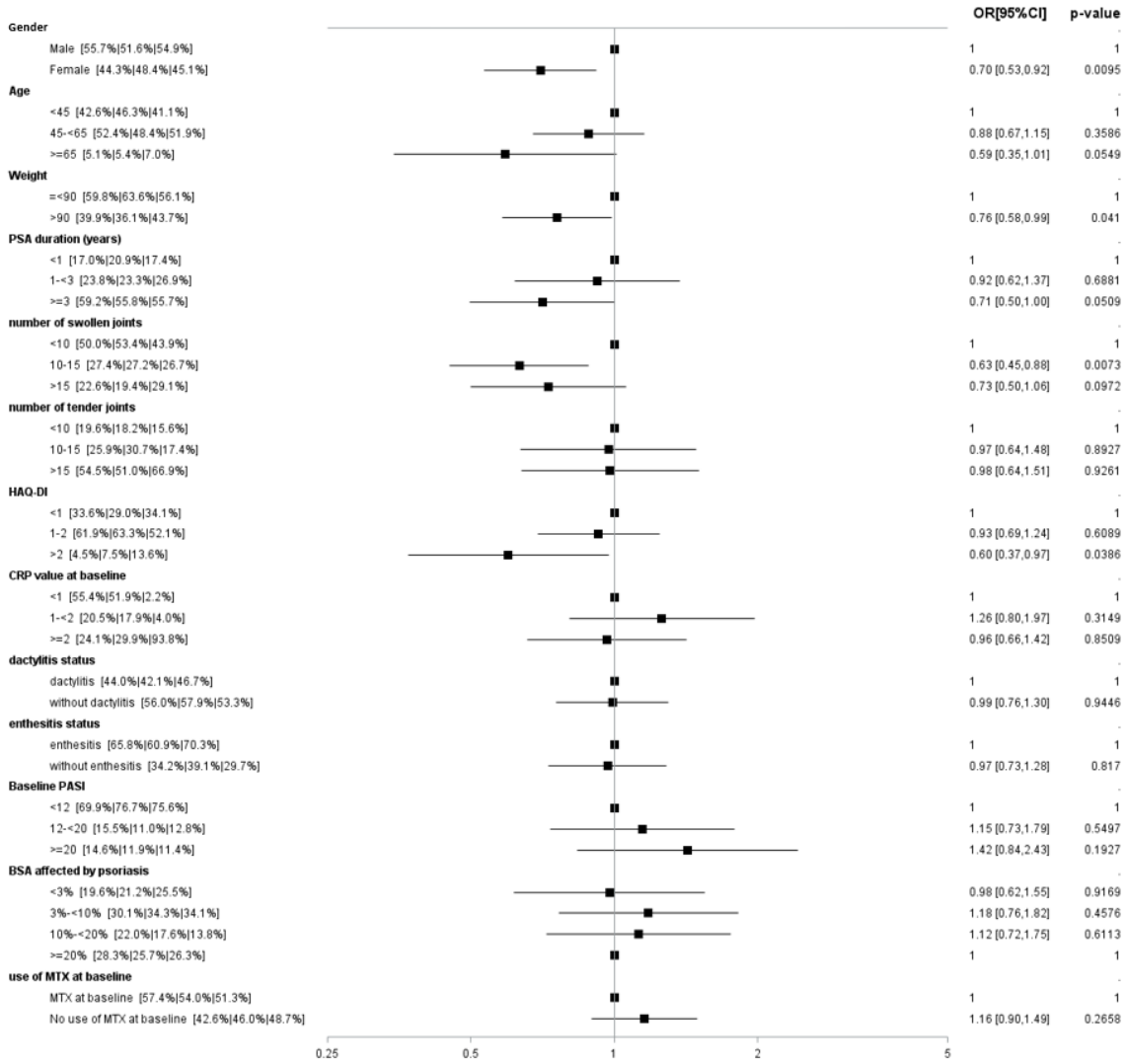
Supplementary Figure S1: A flow diagram outlining the analytical procedures used



Note: 1) primary analysis, 2) sensitivity analysis 3) scenario analysis: Scenario 1 examined only ustekinumab 45 mg as it is the recommended dose by the Food and Drug Administration (FDA) and the European Medicines Agency (EMA). Scenario 2 examined the recommended dose of ustekinumab 45 mg (body weight ≤100 kg) and ustekinumab 90 mg

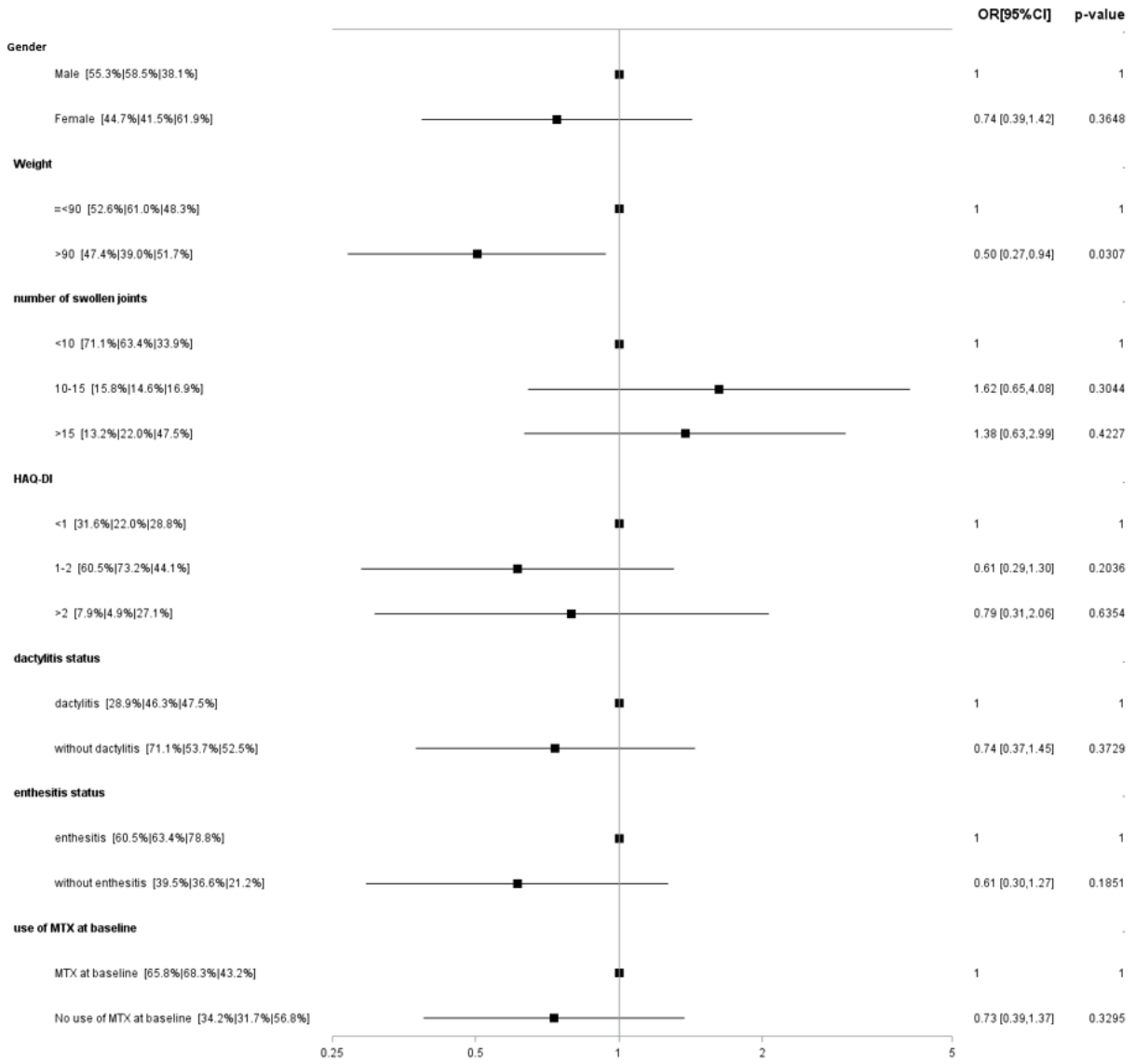
(body weight >100 kg), as per the FDA and EMA label. GUS: guselkumab; Q4W: every 4 weeks; Q8W: every 8 weeks; UST: ustekinumab.

Supplementary Figure S2: Prognostic strength, odds ratios to reach ACR 20 at week 52, by baseline characteristic in biologic-naïve patients (OR- estimates from multivariable logistic regression model)



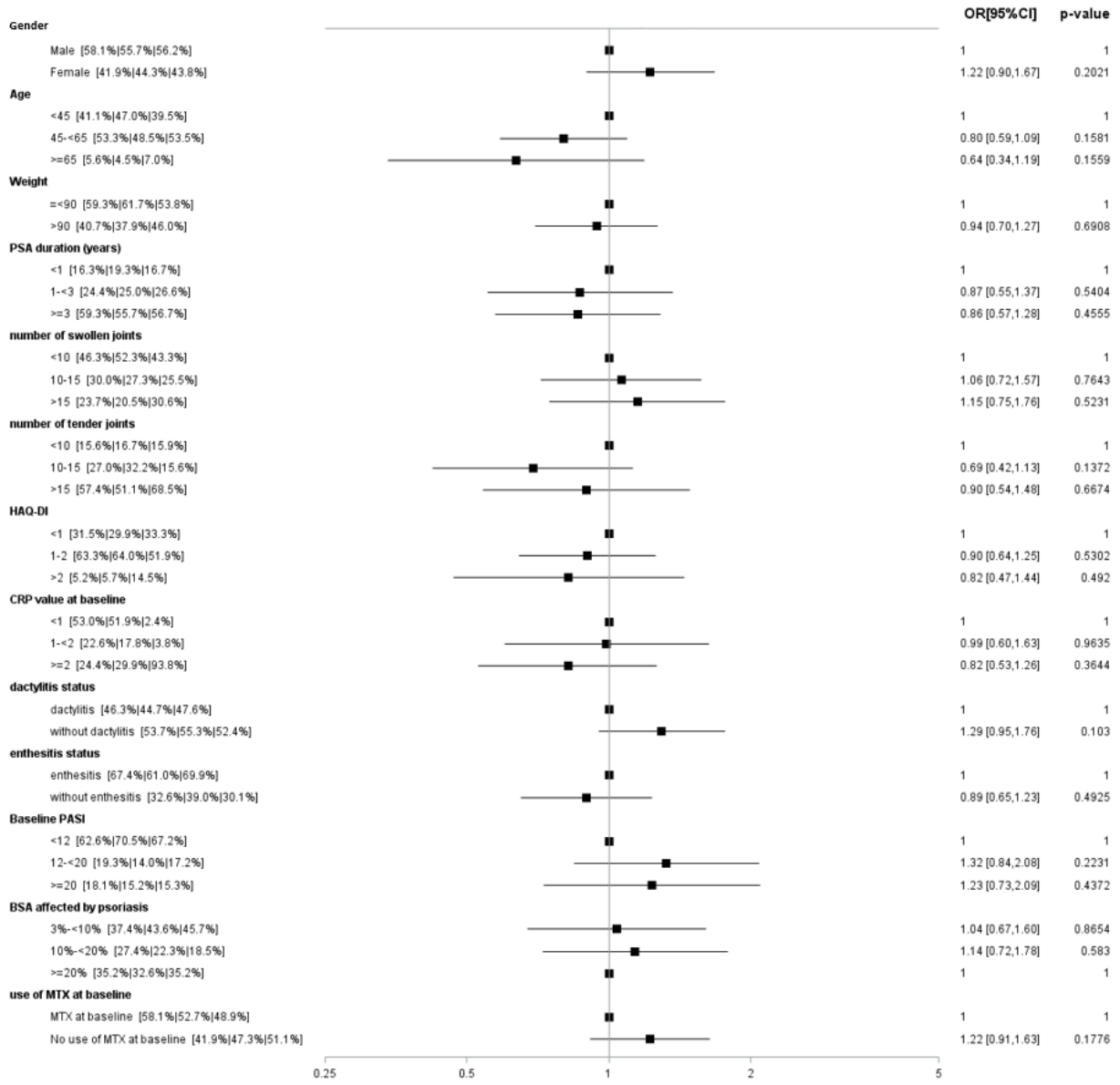
Note: Non-responder imputation was used for missing data. For each baseline characteristic, the numbers in brackets refer to the proportion of patients in each subgroup for guselkumab Q4W (DISCOVER 1 & 2), guselkumab Q8W (DISCOVER 1 & 2), and ustekinumab 45/90 mg (PSUMMIT 1 & 2) respectively.
ACR: American College of Rheumatology; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis.

Supplementary Figure S3: Prognostic strength, odds ratios to reach ACR 20 at week 52, by baseline characteristics in biologic-experienced patients (OR-estimates from multivariable logistic regression model)



Note: Non-responder imputation was used for missing data. For each baseline characteristic, the numbers in brackets refer to the pooled percentages for guselkumab Q4W (DISCOVER 1), guselkumab Q8W (DISCOVER 1), and ustekinumab 45/90 mg (PSUMMIT 2).
ACR: American College of Rheumatology; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis.

Supplementary Figure S4: Prognostic strength, odds ratios to reach PASI 90 at week 52, by baseline characteristic in biologic-naïve patients (OR-estimates from multivariable logistic regression model) *

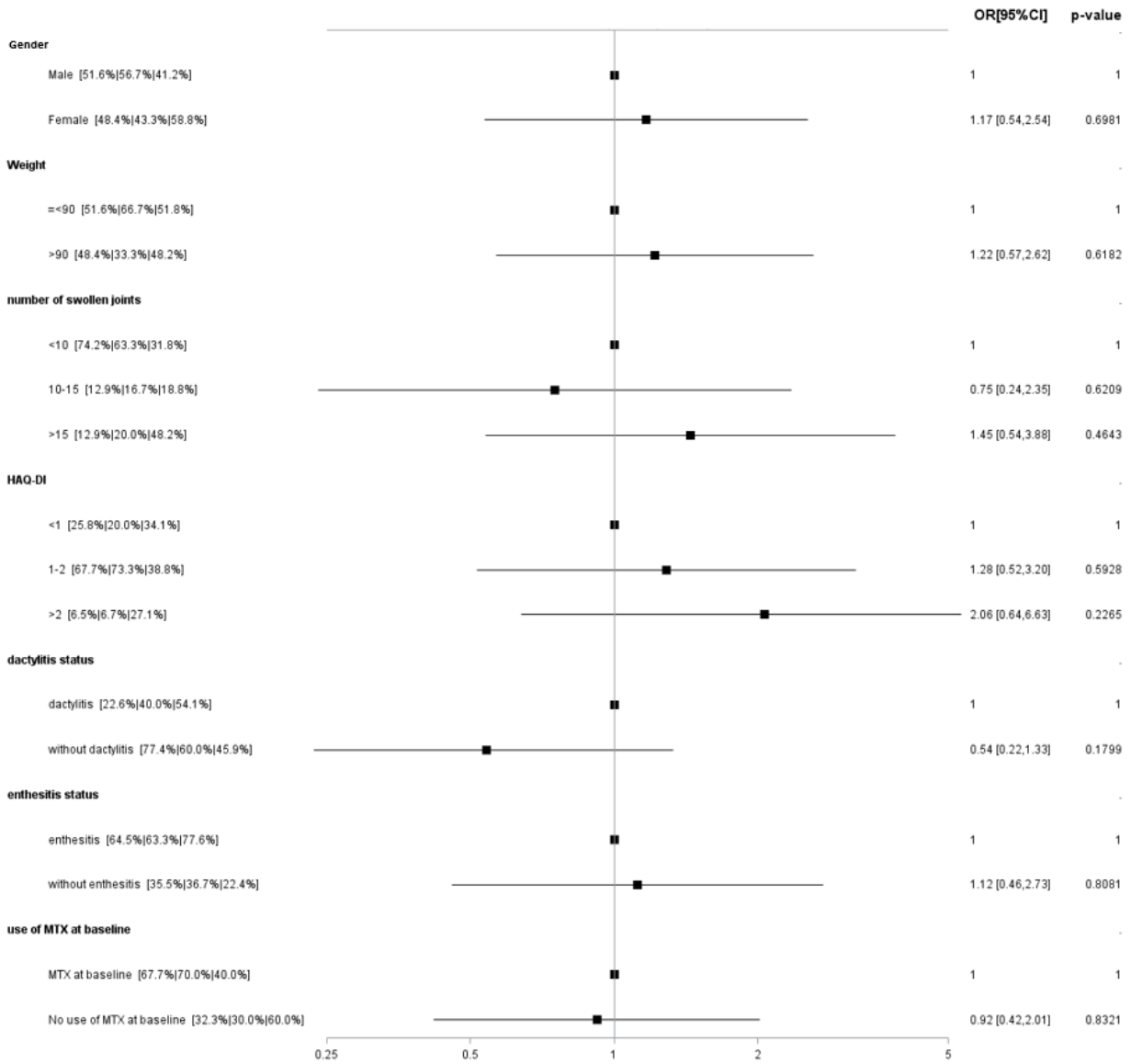


Note: Non-responder imputation was used for missing data. For each baseline characteristic, the numbers in brackets refer to the pooled percentages for guselkumab Q4W (DISCOVER 1 & 2), guselkumab Q8W (DISCOVER 1 & 2), and ustekinumab 45/90 mg (PSUMMIT 1 & 2)

*Evaluated in patients with BSA ≥ 3% at baseline

BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis.

Supplementary Figure S5: Prognostic strength, odds ratios to reach PASI 90 at week 52, by baseline characteristics in biologic-exposed patients (OR-estimates from multivariable logistic regression) *

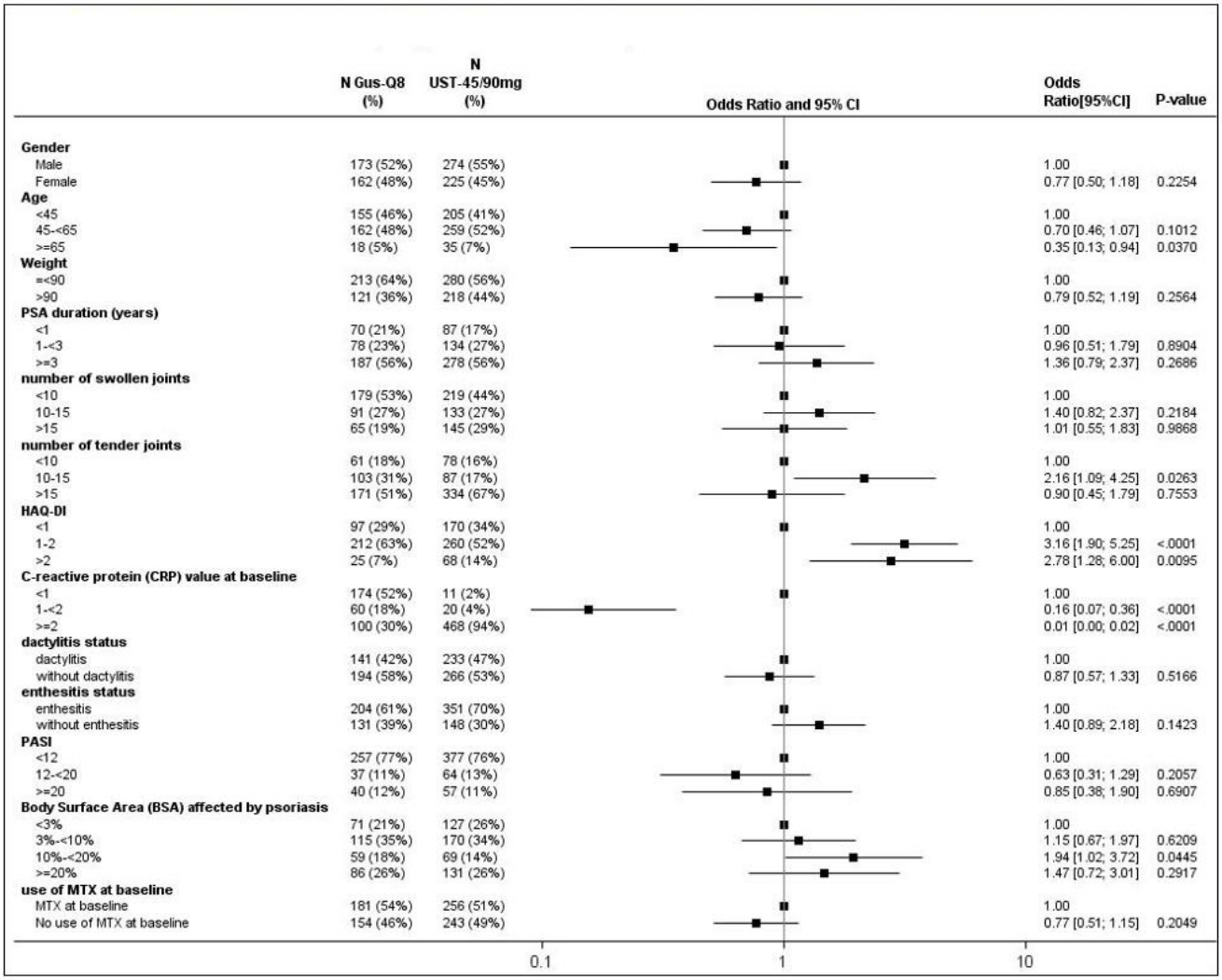


Note: Non-responder imputation was used for missing data. For each baseline characteristic, the numbers in brackets refer to the pooled percentages for guselkumab Q4W (DISCOVER 1), guselkumab Q8W (DISCOVER 1), and ustekinumab 45/90 mg (PSUMMIT 2).

*Evaluated in patients with BSA ≥ 3% at baseline

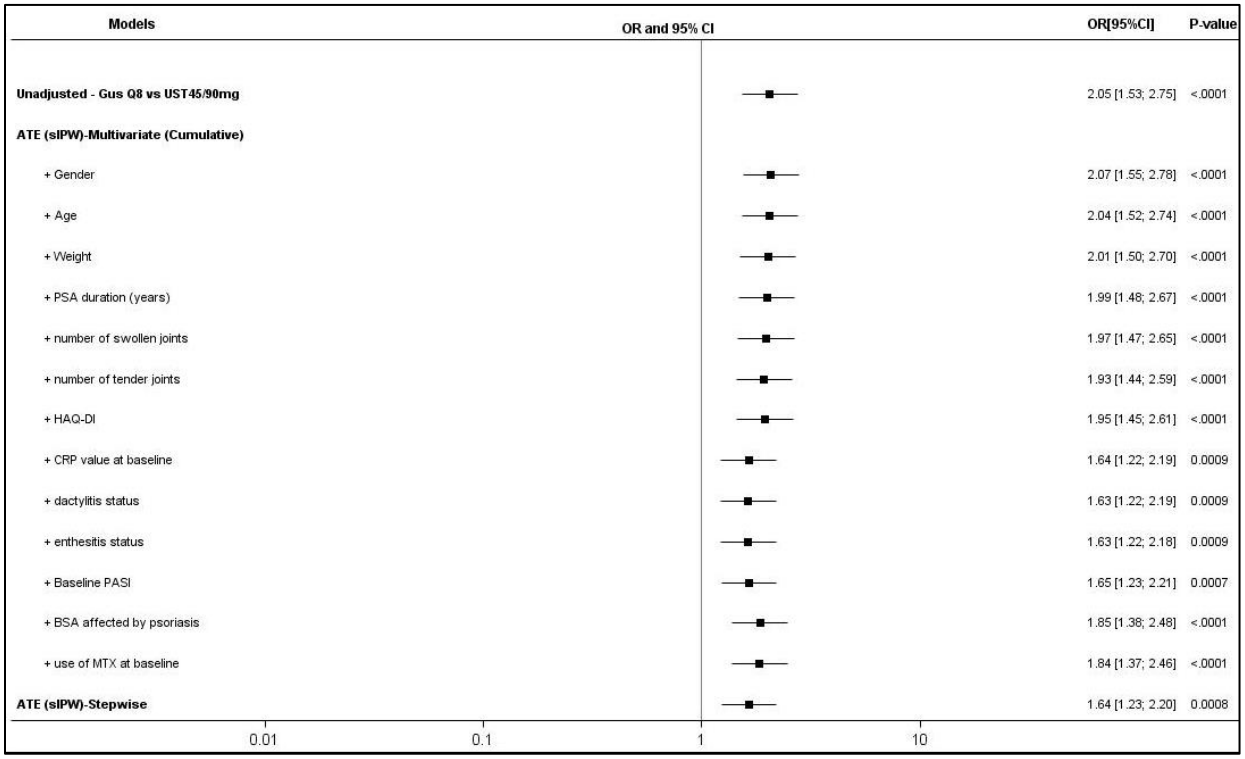
BSA: body surface area; CI: confidence intervals; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index.

Supplementary Figure S6: Estimated odds ratios for baseline variables for the propensity score model from which weights are derived in the biologic-naïve population *



Note: Non-responder imputation was used for missing data.
BSA: body surface area; CI: confidence intervals; GUS-Q8: guselkumab every 8 weeks; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PSA: psoriatic arthritis; UST: ustekinumab.

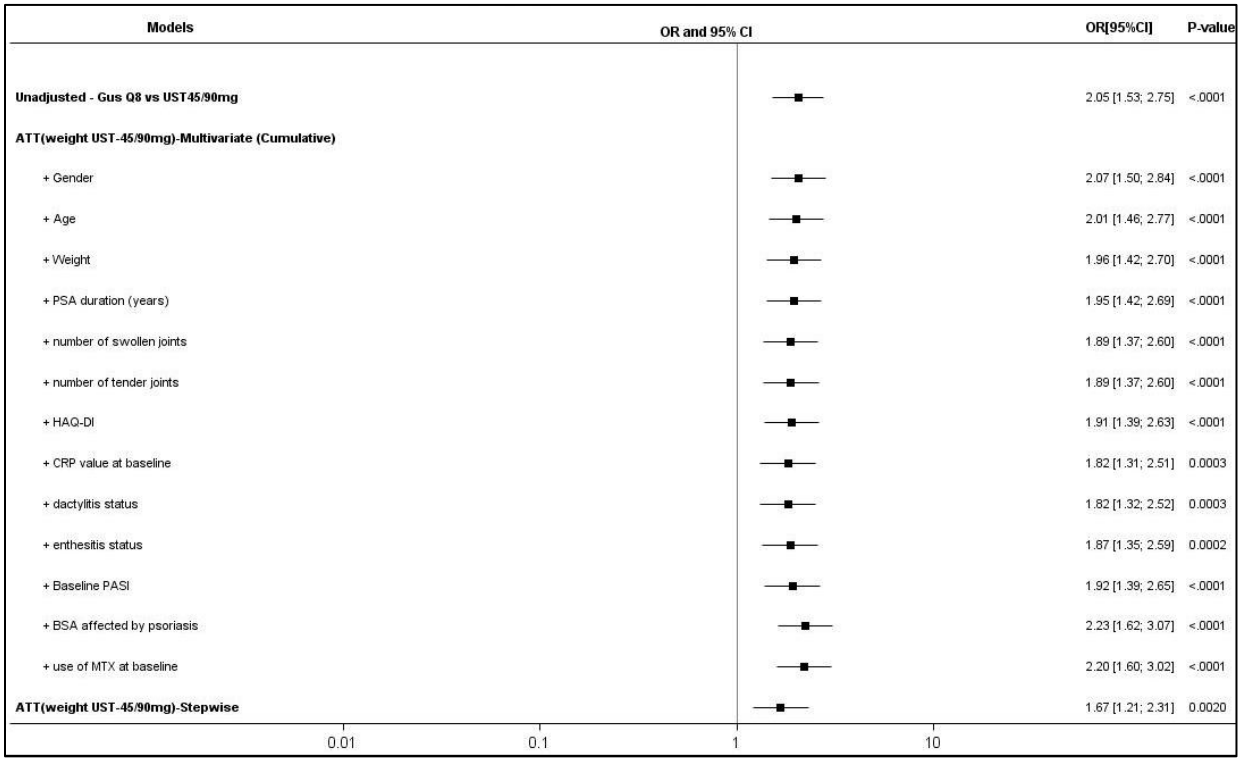
Supplementary Figure S7: Unadjusted and cumulative adjustment ACR 20 results (IPW-ATE analyses) for biologic-naïve population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ACR: American College of Rheumatology; ATE: average treatment effect; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; UST: ustekinumab.

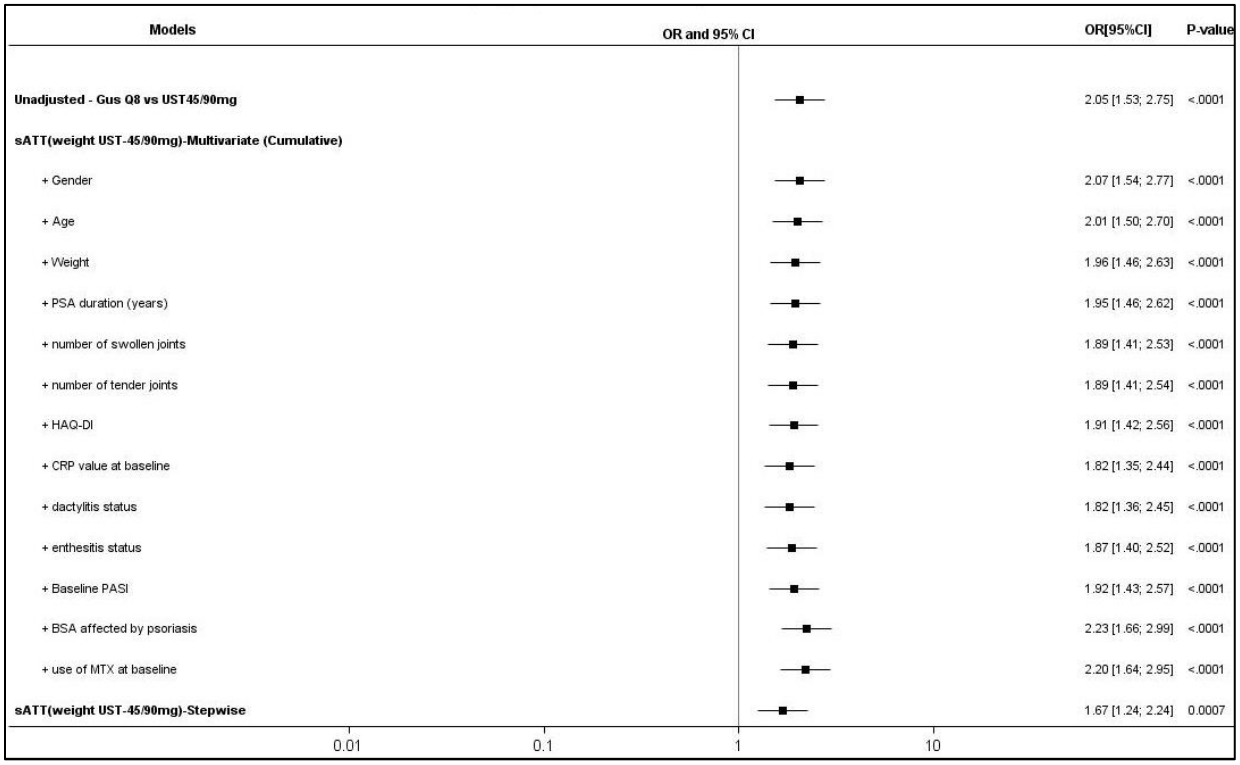
Supplementary Figure S8: Unadjusted and cumulative adjustment ACR 20 results (IPW-ATT analyses) for biologic-naïve population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ACR: American College of Rheumatology; ATT: average treatment effect in the treated population; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; UST: ustekinumab.

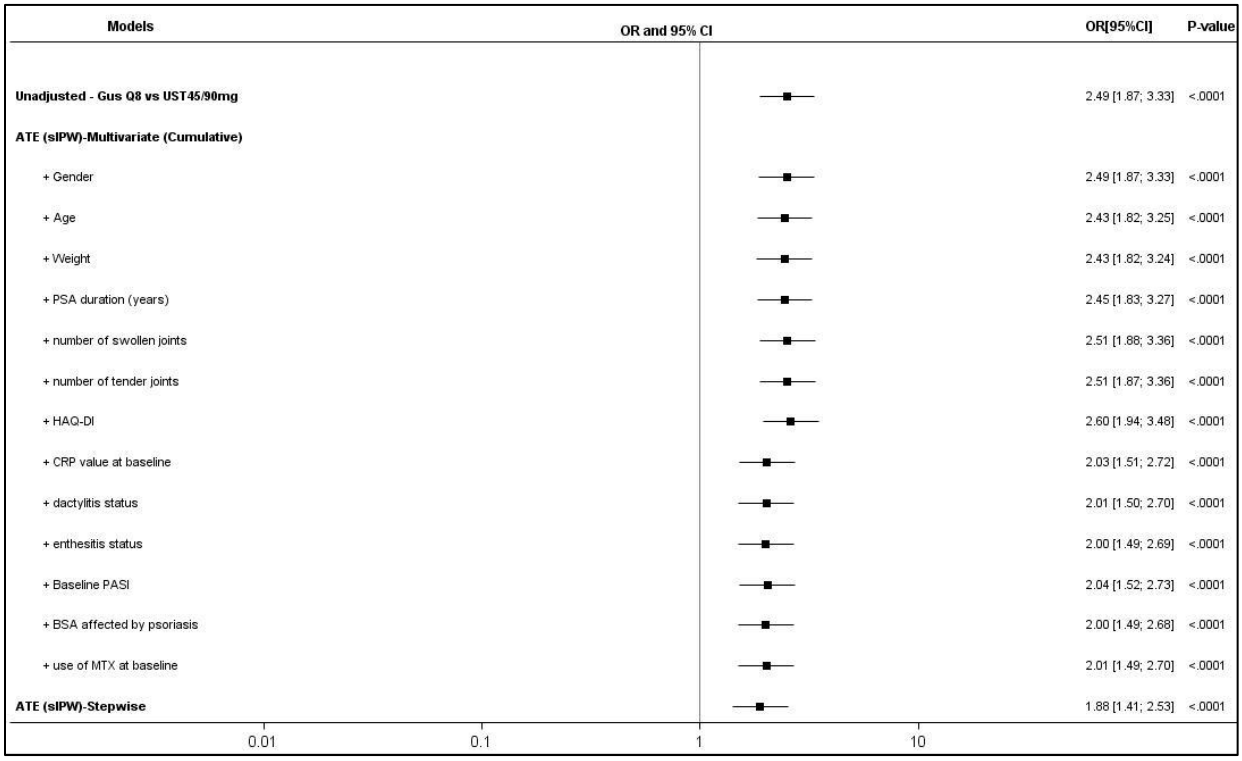
Supplementary Figure S9: Unadjusted and cumulative adjustment ACR 20 results (IPW-sATT analyses) for biologic-naïve population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ACR: American College of Rheumatology; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; sATT: standardized average treatment effect; UST: ustekinumab.

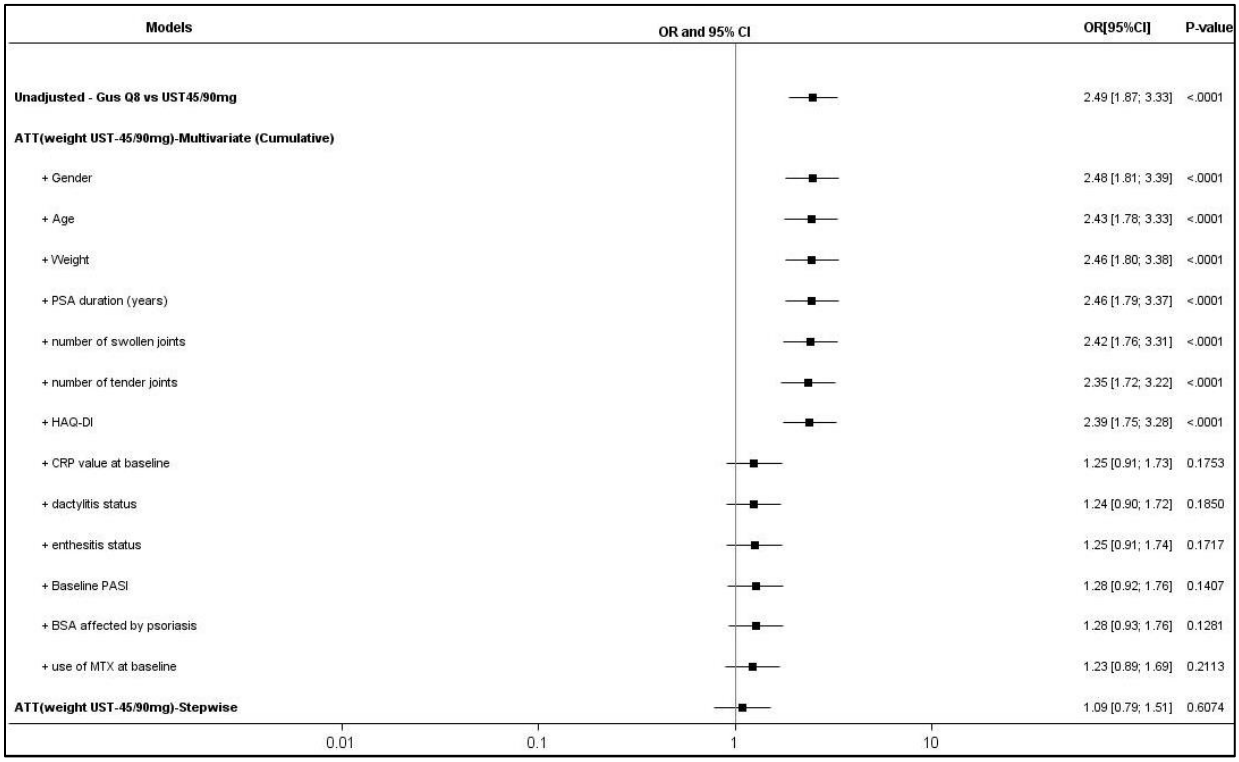
Supplementary Figure S10: Unadjusted and cumulative adjustment PASI 90 results (IPW-ATE analyses) for the biologic-naive population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ATE: average treatment effect; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; UST: ustekinumab.

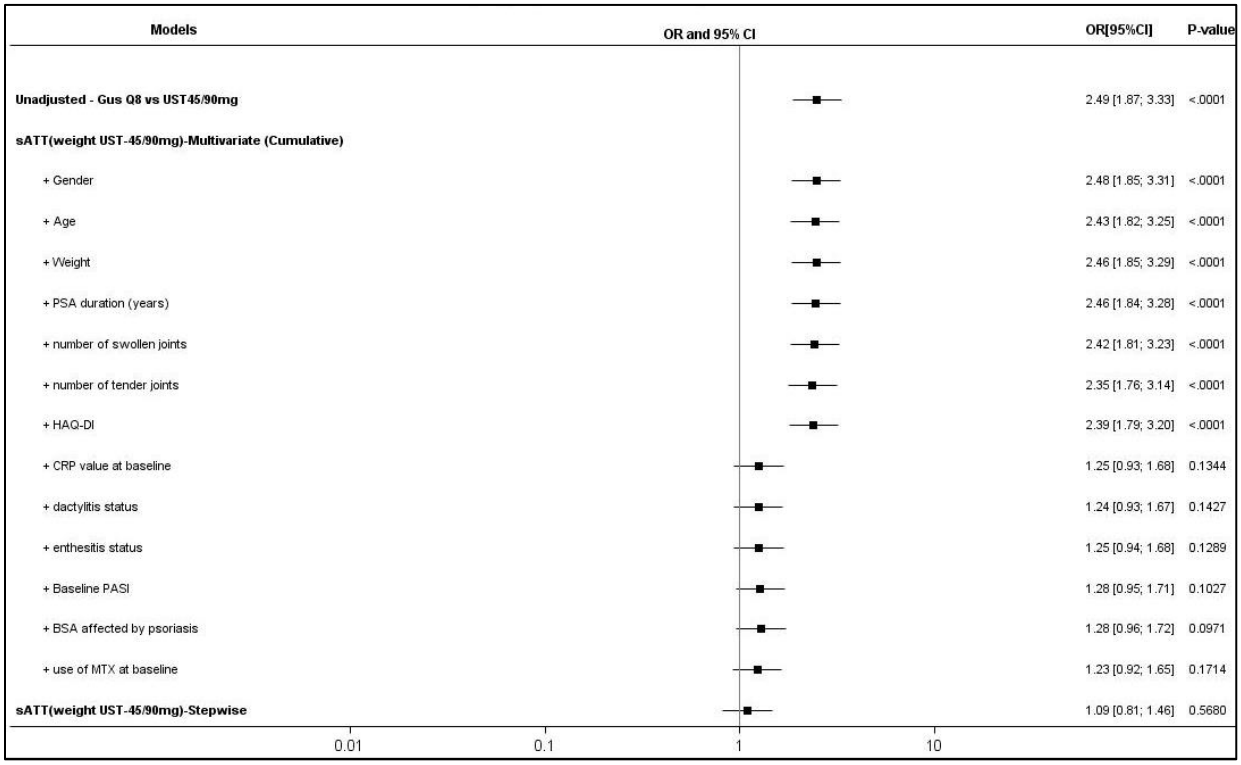
Supplementary Figure S11: Unadjusted and cumulative adjustment PASI 90 results (IPW-ATT analyses) for the biologic-naive population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ATT: average treatment effect in the treated population; BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; UST: ustekinumab.

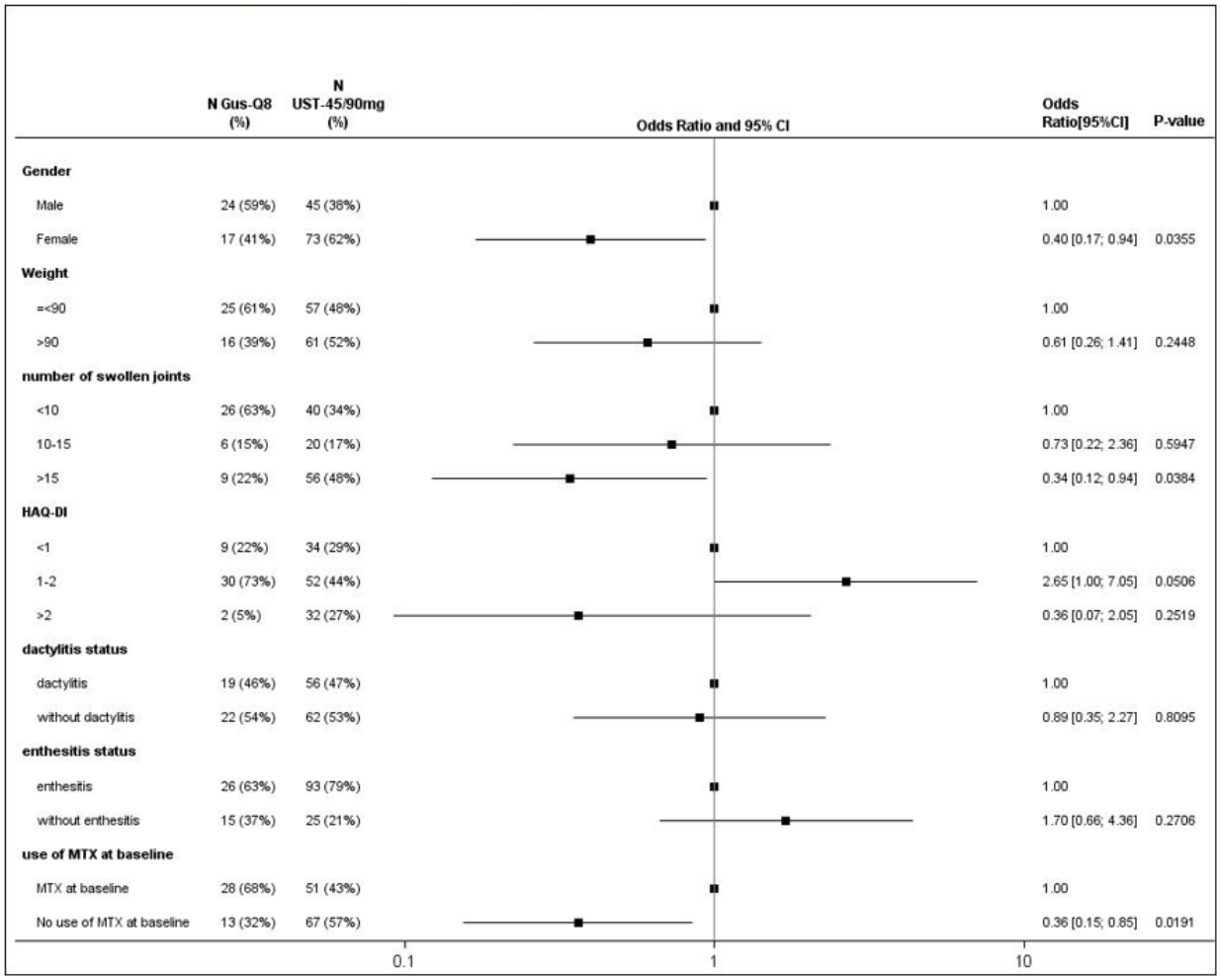
Supplementary Figure S12: Unadjusted and cumulative adjustment PASI 90 results (IPW-sATT analyses) for the biologic-naïve population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

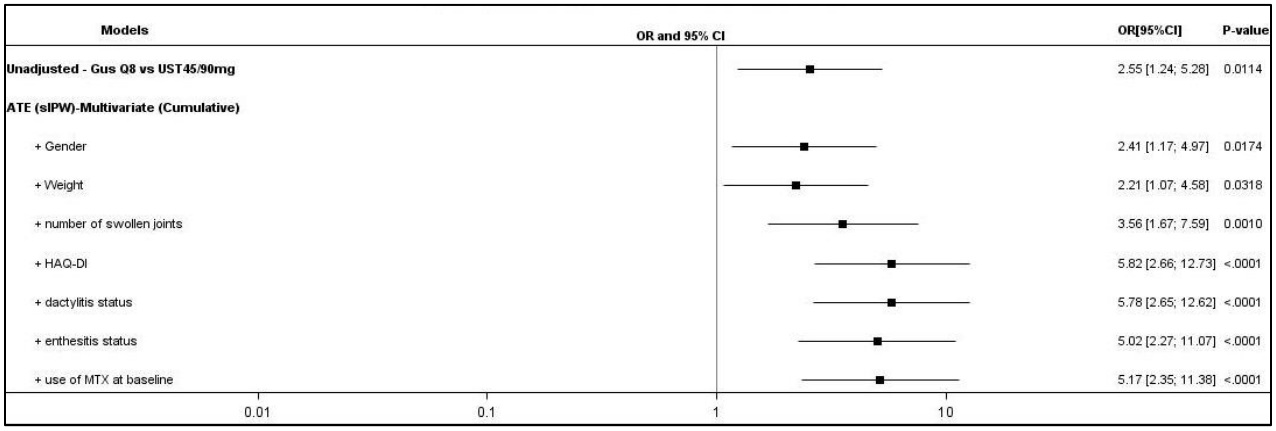
BSA: body surface area; CI: confidence intervals; CRP: C-reactive protein; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; PsA: psoriatic arthritis; Q8: every 8 weeks; sATT: standardized average treatment effect; UST: ustekinumab.

Supplementary Figure S13: Estimated odds ratios for baseline variables for the propensity score model from which weights are derived in the biologic-experienced population



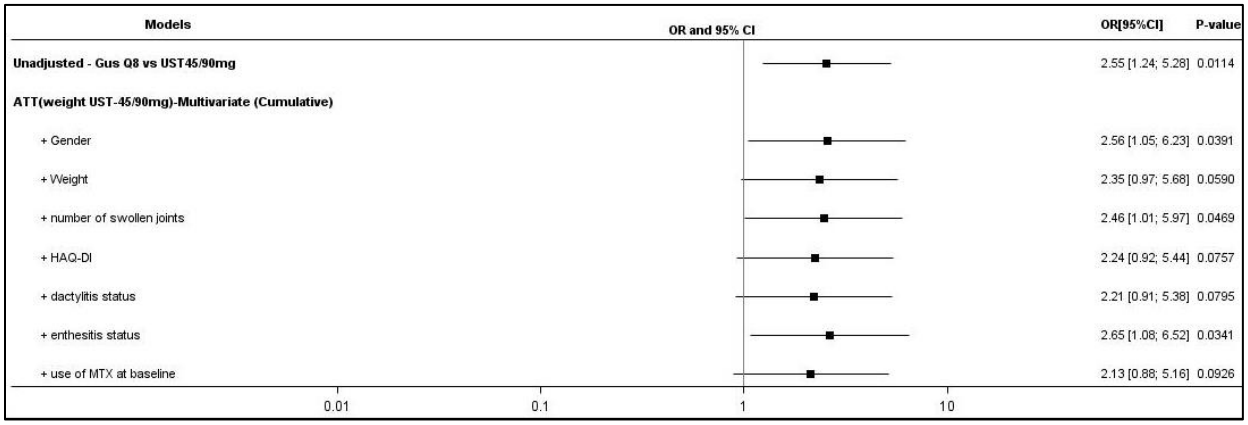
Note: Non-responder imputation was used for missing data.
BSA: body surface area; CI: confidence intervals; GUS-Q8: guselkumab every 8 weeks; HAQ-DI: health assessment questionnaire – disability index; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; UST: ustekinumab.

Supplementary Figure S14: Unadjusted and cumulative adjustment ACR 20 results (IPW-ATE analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.
ACR: American College of Rheumatology; ATE: average treatment effect; CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; Q8: every 8 weeks; UST: ustekinumab.

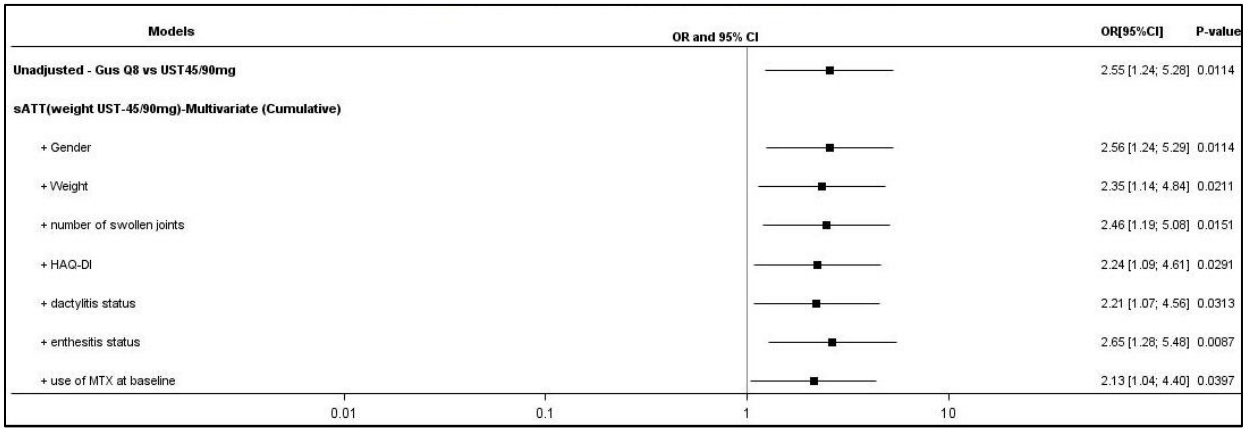
Supplementary Figure S15: Unadjusted and cumulative adjustment ACR 20 results (IPW-ATT analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ACR: American College of Rheumatology; ATT: average treatment effect in the treated population; CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; Q8: every 8 weeks; UST: ustekinumab.

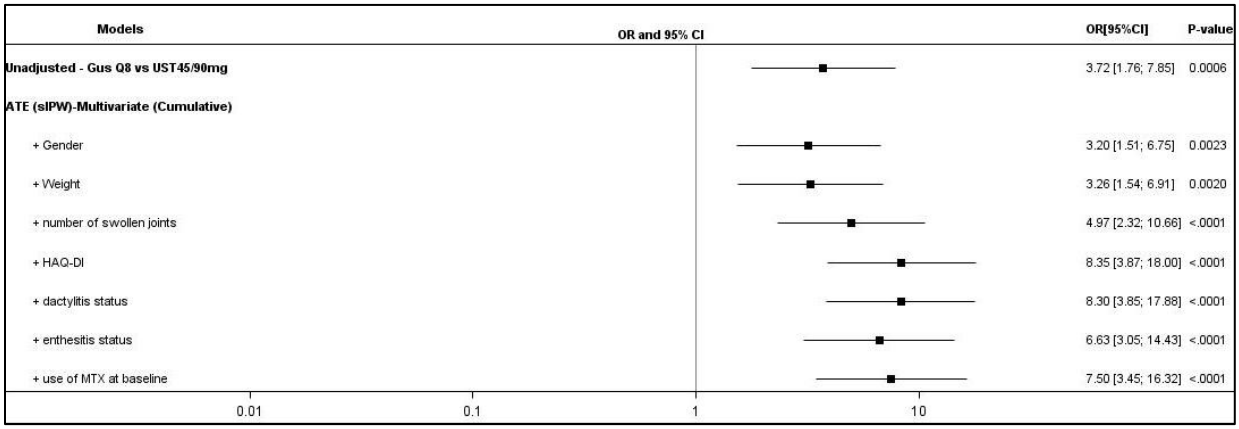
Supplementary Figure S16: Unadjusted and cumulative adjustment ACR 20 results (IPW-sATT analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ACR: American College of Rheumatology; CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; Q8: every 8 weeks; sATT: standardized average treatment effect; UST: ustekinumab.

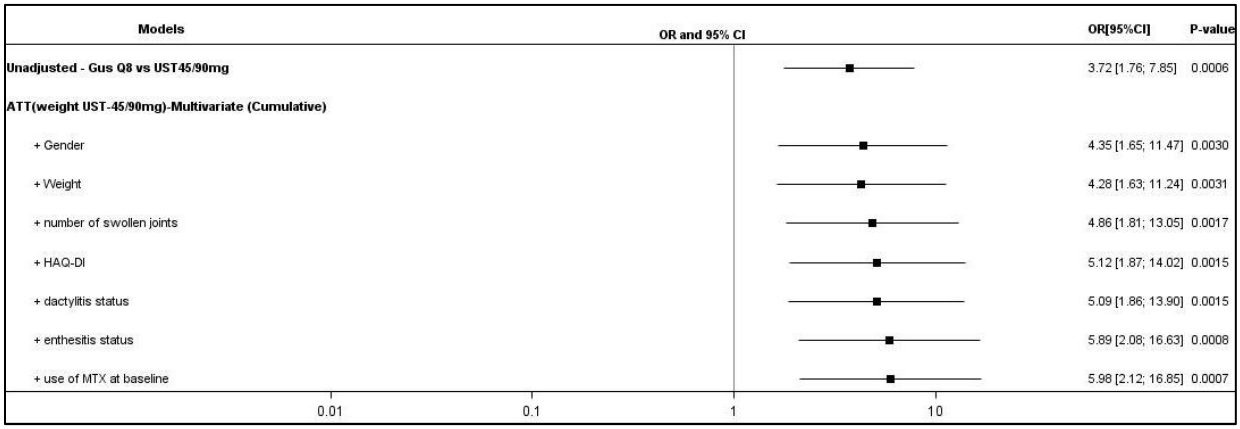
Supplementary Figure S17: Unadjusted and cumulative adjustment PASI 90 results (IPW-ATE analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ATE: average treatment effect; CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; Q8: every 8 weeks; UST: ustekinumab.

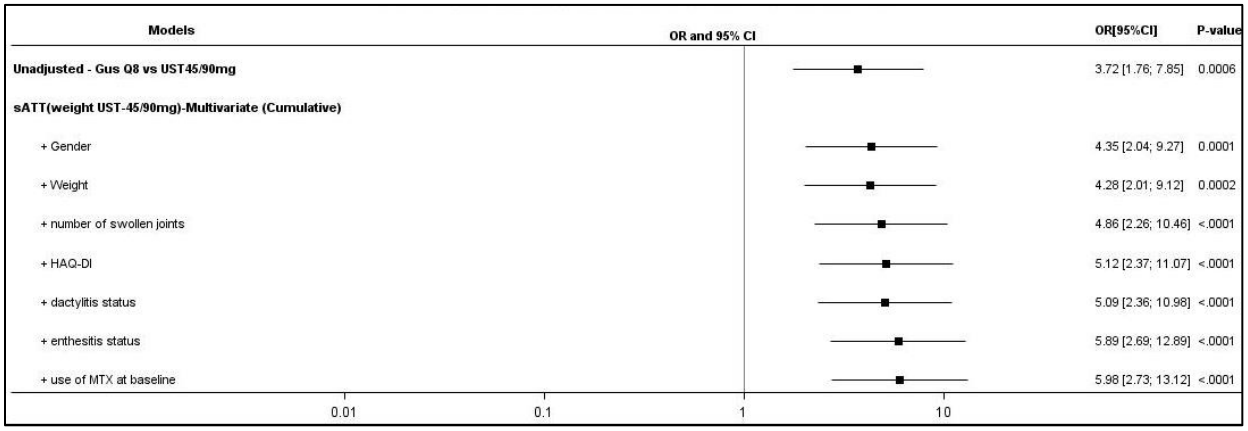
Supplementary Figure S18: Unadjusted and cumulative adjustment PASI 90 results (IPW-ATT analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

ATT: average treatment effect in the treated population; CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; Q8: every 8 weeks; UST: ustekinumab.

Supplementary Figure S19: Unadjusted and cumulative adjustment PASI 90 results (IPW-sATT analyses) for the biologic-experienced population at week 52



Note: Odds ratios with 95% CIs are shown comparing Gus Q8 and UST45/90. Cumulative adjustment findings present the incremental change in the treatment comparison as additional variables were included in the corresponding IPW model. The final entry denotes findings from the fully adjusted model, and results based on the stepwise approach are shown at the end.

CI: confidence intervals; GUS: guselkumab; HAQ-DI: health assessment questionnaire – disability index; IPW: inverse probability weighting; MTX: methotrexate; OR: odds ratio; PASI: psoriasis area and severity index; Q8: every 8 weeks; sATT: standardized average treatment effect; UST: ustekinumab.