Achievement of Minimal and Very Low Disease Activity Among Patients with Psoriatic Arthritis Initiating Biologic or Targeted Synthetic Disease-Modifying Antirheumatic Drugs in the CorEvitas PsA/SpA Registry

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Objective

To evaluate the achievement of minimal disease activity (MDA) and very low disease activity (VLDA) among patients with psoriatic arthritis (PsA) treated with biologic/targeted synthetic disease-modifying antirheumatic drugs (b/tsDMARDs) in a clinical setting for 6 months and identify factors associated with achieving MDA and VLDA

Background

- Patients with PsA in a state of MDA are more likely to have clinically meaningful improvements in disease activity and patient-reported outcomes.[1]
- Despite advances in therapeutic care, it remains a challenge for patients with PsA to reach MDA, and even fewer reach VLDA.[2]

Methods

- Patients with PsA enrolled in the CorEvitas PsA/Spondyloarthritis (SpA) registry (March 2013–September 2023) who initiated b/tsDMARDs and had a follow-up visit 6 months after initiating treatment were eligible. Index was the date of treatment initiation (**Figure 1**).
- Baseline characteristics associated with index were assessed at the registry index visit, which was either the registry visit at which treatment initiation occurred (index), or the closest prior registry visit within four months of index if treatment initiation occurred between registry visits.
- The study utilized a cohort design to assess the achievement of MDA and VLDA (**Figure 1**). Patients initiating treatment who:
  - Were in MDA at index were ineligible for the MDA cohort.
  - Were in VLDA at index were ineligible for the VLDA cohort. However, patients in MDA but not VLDA at index were eligible for the VLDA cohort.
  - Did not have the sufficient criteria to assess MDA or VLDA at index and follow-up were excluded from the respective cohort.
- Achievement of MDA (≥5/7 MDA criteria met) and VLDA (7/7 VLDA criteria met) was assessed at the 6-month follow-up visit. See footnotes of **Figure 1** for MDA/VLDA criteria.
- Relative risks (95% confidence intervals [CIs]) of achieving MDA and VLDA were estimated using Poisson regression models; predictors of achieving MDA and VLDA were identified using adjusted multivariable models. The results were stratified by b/tsDMARD experience at index.

Results

Achievement of MDA and VLDA

- Of the 7,507 patients initiating b/tsDMARDs, 2,093 patients were eligible for the MDA cohort, and 2,491 patients were eligible for the VLDA cohort.
  - In both cohorts, approximately 35% of patients were b/tsDMARD-naïve (MDA: n=727; VLDA: n=868) and 65% were b/tsDMARD-experienced (MDA: n=1,366; VLDA: n=1,623) at index.
- For each cohort, the baseline characteristics of the overall cohort are summarized and stratified by MDA and VLDA status at 6 months in **Table 1**.
- After 6 months, 18% (n/N=370/2,093) of patients in the MDA cohort achieved MDA; 23% (n/N=169/727) and 15% (n/N=201/1,366) of patients in the b/tsDMARD-naïve and b/tsDMARD-experienced subgroups achieved MDA, respectively.
- In the VLDA cohort, 8% (n/N=187/2,491) of patients achieved VLDA after 6 months; 11% (n/N=94/868) and 6% (n/N=93/1,623) of patients in the b/tsDMARD-naïve and b/tsDMARD-experienced subgroups achieved VLDA, respectively.

Predictors of Achieving MDA and VLDA

- **MDA Cohort**
  - Female sex, higher (5-unit increase) baseline clinical Disease Activity Index in Psoriatic Arthritis (cDAPSA) score, fatigue, and spine pain, and prior b/tsDMARD experience were associated with a significantly decreased probability of achieving MDA (p<0.05; **Figure 2**).
  - Patients with a higher baseline EuroQol-5D-5L (EQ-5D-5L) score (0.1-unit increase) were 13% (95% CI: 6%, 20%) more likely to achieve MDA (**Figure 2**).
  - Patients treated with b/tsDMARD monotherapy were 36% (95% CI: 7%, 73%) more likely to achieve MDA compared with conventional DMARD and b/tsDMARD combination therapy (**Figure 2**).
- **VLDA Cohort**
  - Older age, female sex, higher (5-unit increase) fatigue and spine pain, and prior b/tsDMARD experience were associated with a significantly decreased probability of achieving VLDA (p<0.05; **Figure 2**).
  - Patients with longer PsA disease duration (1-year increase) were 11% (95% CI: 2%, 20%) more likely to achieve VLDA (**Figure 2**).
- Predictors of achieving MDA and VLDA were generally similar regardless of b/tsDMARD experience at index (**Figure 3**).

Limitations

- While models used to identify predictors of achieving MDA and VLDA were fully adjusted, the study was not designed to compare the achievement of MDA and VLDA by mechanism of action (MOA) of therapies used at index.
- The study examined the achievement of MDA and VLDA across all lines of therapy. A study examining MDA and VLDA achievement by line of therapy is warranted.

Conclusions

The results highlight unmet needs in PsA management as relatively few patients achieved MDA and VLDA after 6 months of b/tsDMARD treatment.

Worse baseline disease activity and patient-reported outcomes were associated with a low likelihood, while higher baseline EQ-5D-5L score (denoting greater baseline quality of life) and b/tsDMARD monotherapy were associated with a high likelihood of achieving MDA/VLDA after 6 months of treatment.

Summary

Reaching MDA is associated with meaningful improvements in disease activity and quality of life

This study assessed the achievement of MDA/VLDA in patients with PsA initiating b/tsDMARDs in the CorEvitas PsA/SpA Registry

Few patients were in a state of MDA or VLDA after 6 months of treatment, regardless of b/tsDMARD experience at treatment initiation

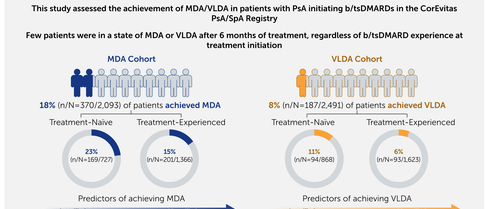
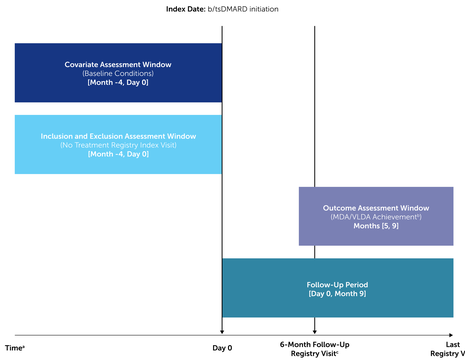


Figure 1 Study design



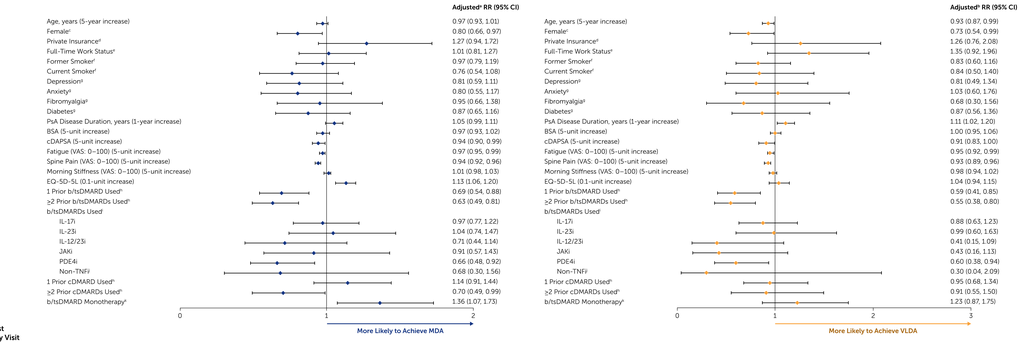
[a] The first baseline visit occurred in April 2013. **[b]** MDA/VLDA criteria include: TJC ≤1; SJC ≤1; psoriasis BSA ≤3%; patient pain VAS ≤15; PGA of arthritis and psoriasis VAS ≤20; HAQ-DI ≤0.5; tender entheseal points ≤1; **[c]** The follow-up visit could occur 5–9 months following the registry index visit. If there were multiple registry visits in the follow-up period, the registry visit closest to 6 months was used as the follow-up visit.

Table 1 Baseline characteristics stratified by MDA and VLDA status at the 6-month follow-up visit

	MDA Cohort			VLDA Cohort		
	All Patients N=2,093	Month 6 MDA Status		All Patients N=2,491	Month 6 VLDA Status	
		Achievers[a] N=370	Non-Achievers[a] N=1,723		Achievers[a] N=187	Non-Achievers[a] N=2,304
Demographic Characteristics						
Age, years, mean (SD) [n]	54.7 (12.4) [2,091]	52.9 (13.3) [370]	55.1 (12.2) [1,721]	54.5 (12.5) [2,488]	50.2 (13.4) [187]	54.8 (12.4) [2,301]
Female, n/N (%)	1,320 (2,093) (63.1)	190/369 (51.5)	1,130/1,717 (65.9)	1,510/2,482 (60.9)	79/186 (42.4)	1,434/2,296 (62.5)
White Race, n/N (%)	1,894/2,062 (91.9)	323/365 (88.5)	1,571/1,697 (92.6)	2,246/2,453 (91.6)	164/186 (88.2)	2,082/2,267 (91.8)
Private Insurance, n/N (%)	1,593/2,093 (76.1)	317/370 (85.7)	1,276/1,723 (74.1)	1,915/2,491 (76.9)	165/187 (88.2)	1,750/2,304 (76.0)
Work Status (full-time), n/N (%)	997/2,044 (48.3)	229/366 (62.6)	768/1,698 (45.2)	1,237/2,454 (50.4)	137/185 (74.1)	1,100/2,269 (48.5)
Current Smoker, n/N (%)	290/2,079 (13.9)	33/369 (8.9)	257/1,710 (15.0)	325/2,468 (13.1)	16/187 (8.6)	307/2,281 (13.5)
Comorbidities, N	2,093	370	1,723	2,491	187	2,304
Cardiovascular Disease, n (%)	235 (11.2)	24 (6.5)	211 (12.2)	272 (10.9)	4 (2.1)	268 (11.6)
Depression, n (%)	477 (22.8)	50 (13.5)	427 (24.8)	524 (21.0)	19 (10.2)	505 (21.9)
Anxiety, n (%)	324 (15.5)	28 (7.6)	296 (17.2)	346 (13.9)	13 (7.0)	333 (14.5)
Fibromyalgia, n (%)	375 (17.9)	30 (8.1)	345 (20.0)	385 (15.5)	6 (3.2)	379 (16.4)
Hypertension, n (%)	854 (40.8)	148 (40.0)	706 (41.0)	1,000 (40.1)	64 (34.2)	936 (40.6)
Diabetes, n (%)	378 (18.1)	45 (12.2)	333 (19.3)	419 (16.8)	18 (9.6)	401 (17.4)
Disease Characteristics						
PsA Disease Duration, years, mean (SD) [n]	6.4 (8.0) [2,075]	6.4 (8.5) [367]	6.4 (7.9) [1,708]	6.5 (8.0) [2,473]	6.7 (8.5) [185]	6.5 (7.9) [2,286]
Spinal Involvement, n/N (%)	298/2,054 (14.5)	45/366 (12.3)	253/1,688 (15.0)	349/2,443 (14.3)	19/183 (10.4)	330/2,260 (14.6)
cDAPSA, mean (SD) [n]	21.8 (14.9) [2,010]	18.9 (11.9) [352]	24.8 (15.2) [1,658]	21.1 (15.1) [2,388]	13.0 (11.7) [180]	21.8 (15.2) [2,208]
MDA Criteria Fulfilled, mean (SD) [n]	2.4 (1.1) [1,979]	2.8 (1.0) [345]	2.3 (1.1) [1,634]	2.9 (1.5) [2,358]	4.0 (1.5) [177]	2.8 (1.5) [2,181]
PGA of Arthritis and Psoriasis (VAS: 0–100), mean (SD) [n]	53.2 (24.0) [2,062]	42.2 (24.0) [362]	55.5 (23.3) [1,700]	48.3 (26.1) [2,453]	31.3 (24.5) [185]	49.7 (25.8) [2,268]
HAQ-DI, mean (SD) [n]	1.1 (0.6) [2,075]	0.7 (0.5) [367]	1.1 (0.6) [1,708]	0.9 (0.7) [2,467]	0.4 (0.5) [186]	1.0 (0.7) [2,281]
Patient Pain (VAS: 0–100), mean (SD) [n]	60.3 (23.5) [2,072]	49.6 (24.7) [366]	62.6 (22.5) [1,706]	54.7 (26.6) [2,461]	34.8 (26.3) [185]	56.3 (26.0) [2,276]
Fatigue (VAS: 0–100), mean (SD) [n]	58.4 (25.4) [2,086]	44.9 (27.1) [368]	61.2 (24.0) [1,718]	53.7 (27.6) [2,478]	32.6 (26.9) [186]	55.4 (26.7) [2,292]
Spine pain (VAS: 0–100), mean (SD) [n]	41.5 (30.6) [2,078]	24.8 (26.4) [367]	45.1 (30.3) [1,711]	37.0 (30.9) [2,467]	15.5 (22.4) [186]	38.7 (30.9) [2,281]
EQ-5D-5L, mean (SD) [n]	0.6 (0.2) [2,062]	0.7 (0.2) [362]	0.6 (0.2) [1,700]	0.6 (0.2) [2,452]	0.7 (0.2) [186]	0.6 (0.2) [2,266]
Fibromyalgia Severity Scale (0–31),[1] mean (SD) [n]	11.3 (5.8) [847]	8.2 (4.6) [154]	11.9 (5.8) [693]	10.3 (5.9) [1,010]	5.7 (4.2) [79]	10.7 (5.9) [931]
Treatment Characteristics						
b/tsDMARD at Index, N	2,093	370	1,723	2,491	187	2,304
TNFi, n (%)	818 (39.1)	166 (44.9)	652 (37.8)	981 (39.4)	94 (50.3)	887 (38.5)
IL-17i, n (%)	525 (25.1)	95 (25.7)	430 (25.0)	614 (24.6)	46 (24.6)	568 (24.7)
IL-23i, n (%)	160 (7.6)	27 (7.3)	133 (7.7)	198 (7.9)	17 (9.1)	181 (7.9)
IL-12/23i, n (%)	116 (5.5)	15 (4.1)	101 (5.9)	134 (5.4)	4 (2.1)	130 (5.6)
JAKi, n (%)	145 (6.9)	20 (5.4)	125 (7.3)	165 (6.6)	4 (2.1)	161 (7.0)
PDE4i, n (%)	269 (12.9)	42 (11.4)	227 (13.2)	328 (13.2)	21 (11.2)	307 (13.3)
Non-TNFi,[a] n (%)	60 (2.9)	5 (1.4)	55 (3.2)	71 (2.9)	1 (0.5)	70 (3.0)
Prior Number of b/tsDMARDs,[a] N	2,093	370	1,723	2,491	187	2,304
0, n (%)	727 (34.7)	169 (45.7)	558 (32.4)	868 (34.8)	94 (50.3)	774 (33.6)
1, n (%)	517 (24.7)	82 (22.2)	435 (25.2)	624 (25.1)	42 (22.5)	582 (25.3)
≥2, n (%)	849 (40.6)	119 (32.2)	730 (42.4)	999 (40.1)	51 (27.3)	948 (41.1)
b/tsDMARD Monotherapy, n/N (%)	1,367/2,093 (65.3)	259/370 (70.0)	1,108/1,723 (64.3)	1,634/2,491 (65.6)	129/187 (69.0)	1,505/2,304 (65.3)

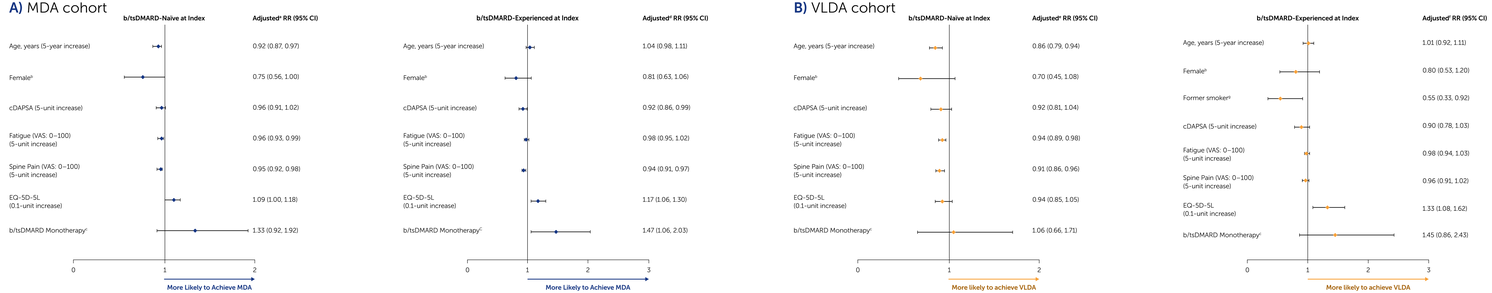
[a] MDA: ≥5/7 criteria fulfilled. VLDA: 7/7 criteria fulfilled; **[b]** MDA: ≤4/7 criteria fulfilled. VLDA: ≤6/7 criteria fulfilled; **[c]** Data were collected as of May 1, 2020; **[d]** Included abatacept (n=54) and three non-approved PsA biologics captured in the CorEvitas PsA/SpA registry that are sometimes used for PsA treatment (tocilizumab, anakinra, and rituximab). **[e]** Included b/tsDMARDs used prior to the start of CorEvitas PsA/SpA registry (March 2013) or prescribed by physicians outside of the registry.

Figure 2 Adjusted relative risks assessing the association between achieving (A) MDA and (B) VLDA and baseline characteristics



[a] Adjusted for age, sex, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, concomitant therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance, work status, smoking history, EQ-5D-5L, fatigue, stiffness severity, MOA, and spine pain; **[b]** Adjusted for age, sex, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, combination therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance, work status, smoking history, EQ-5D-5L, fatigue, stiffness severity, MOA, spine pain, and prior number of cDMARDs; **[c]** Reference: male; **[d]** Reference: not full-time; **[e]** Reference: never smoked; **[g]** Reference: no; **[h]** Reference: 0; **[i]** Reference: TNFi; **[j]** Included abatacept (n=54) and three non-approved PsA biologics captured in the CorEvitas PsA/SpA registry that are sometimes used for PsA treatment (tocilizumab, anakinra, and rituximab); **[k]** Reference: combination therapy with cDMARD.

Figure 3 Adjusted relative risks assessing the association between achieving (A) MDA and (B) VLDA and baseline characteristics by b/tsDMARD experience at index



Adjusted models for the b/tsDMARD-naïve and -experienced subgroups also included insurance type, work status, smoking status, history of comorbidities (anxiety, depression, fibromyalgia, diabetes), duration of PsA disease (years), BSA, morning stiffness, b/tsDMARD MOA, prior number of cDMARDs, and spinal involvement (for the MDA b/tsDMARD-naïve subgroup only). Prior number of b/tsDMARDs was included in the adjusted model for only the b/tsDMARD-experienced subgroups. **[a]** Adjusted for age, sex, duration of PsA diagnosis, cDAPSA, BSA, concomitant therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance type, work status, smoking status, spine pain, spinal involvement, EQ-5D-5L, fatigue, stiffness severity, MOA, and prior number of cDMARDs. **[b]** Reference: male; **[c]** Reference: cDMARD combination therapy; **[d]** Adjusted for age, sex, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, combination therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance type, work status, smoking status, EQ-5D-5L, fatigue, spine pain, stiffness severity, MOA, and prior number of cDMARDs; **[e]** Adjusted for age, sex, BMI, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, combination therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance type, work status, smoking status, EQ-5D-5L, fatigue, spine pain, stiffness severity, MOA, and prior number of cDMARDs; **[f]** Adjusted for age, sex, BMI, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, combination therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance type, work status, smoking status, spine pain, EQ-5D-5L, fatigue, and stiffness severity; **[g]** Adjusted for age, sex, BMI, duration of PsA diagnosis, prior number of b/tsDMARDs, cDAPSA, BSA, combination therapy with cDMARDs, anxiety, depression, fibromyalgia, diabetes, insurance type, work status, smoking status, spine pain, EQ-5D-5L, fatigue, and stiffness severity; **[h]** Reference: never smoked.

BMI: body mass index; **BSA:** body surface area; **b/tsDMARDs:** biologic/targeted synthetic disease-modifying antirheumatic drugs; **cDAPSA:** clinical disease activity index in psoriatic arthritis; **cDMARD:** conventional disease-modifying antirheumatic drug; **CI:** confidence interval; **EQ-5D-5L:** EuroQol-5D-5L; **HAQ-DI:** Health Assessment Questionnaire-Disability Index; **i:** inhibitor; **IL:** interleukin; **JAK:** Janus kinase; **MDA:** minimal disease activity; **MOA:** mechanism of action; **PDE4:** phosphodiesterase-4; **PGA:** Patient's Global Assessment of arthritis and psoriasis; **PsA:** psoriatic arthritis; **RR:** relative risk; **SD:** standard deviation; **SJC:** swollen joint count; **SpA:** spondyloarthritis; **TJC:** tender joint count; **TNF:** tumor necrosis factor; **VAS:** visual analog scale; **VLDA:** very low disease activity.

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References: [1]Ogdie A. Arthritis Rheumatol 2021;73 Suppl 9:1–4259; [2]Ortolan A. Semin Arthritis Rheum 2023;62:152237. **Author Contributions:** Substantial contributions to study conception/design, or acquisition/analysis/interpretation of data: **AO**, **CS**, **NM**, **MM**, **ME**, **RL**, **PJM**; drafting of the publication or reviewing it critically for important intellectual content: **AO**, **CS**, **NM**, **MM**, **ME**, **RL**, **PJM**; final approval of the publication: **AO**, **CS**, **NM**, **MM**, **ME**, **RL**, **PJM**. **Author Disclosures: AO:** Grant/research support from AbbVie, Amgen, Janssen, Novartis and Pfizer, consultant of AbbVie, Amgen, BMS, Celgene, CorEvitas, Eli Lilly and Company, GSK, Gilead, Janssen, Novartis, Pfizer, Takeda, and UCB. **CS, RL:** Employees and shareholders of UCB. **NM, MM, ME:** Employees of CorEvitas, LLC. **PJM:** Received research grants from AbbVie, Aceleyrin, Amgen, BMS, Eli Lilly and Company, Janssen, Novartis, Pfizer, Sana, and UCB; consulting fees from AbbVie, Acelyrin, Amgen, BMS, Cullinan, Eli Lilly and Company, GSK, Inmagene, Janssen, Moonlake Pharma, Novartis, Pfizer, Takeda, UCB, and Ventyx; speakers bureau fees from AbbVie, Amgen, Eli Lilly and Company, Janssen, Novartis, Pfizer, and UCB. **Acknowledgments:** This study was sponsored by CorEvitas, LLC, and funded by UCB. CorEvitas, LLC has been supported through contracted subscriptions in the last two years by AbbVie, Amgen, Arena, Boehringer Ingelheim, BMS, Chugai, Eli Lilly and Company, Gesynta, GSK, Janssen, LEO Pharma, Novartis, Ortho Dermatologics, Pfizer, Sun Pharma, and UCB. We would like to thank the patients and their caregivers in addition to the investigators and their teams who contributed to this study. Medical writing support was funded by UCB. The authors acknowledge Tiffany Park, PharmD, UCB, Smyrna, GA, USA, for publication coordination and Nnenna Ene, BA, of Costello Medical, Boston, MA, for medical writing support, and the Costello Medical Creative team for graphic design assistance. All costs associated with development of this poster were funded by UCB.

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