Disease Severity at Advanced Therapy Initiation in Real-World Psoriasis Patients in the U.S

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Background

Psoriasis (PsO) is a chronic immune-mediated skin disease that is commonly treated with a step-up approach to therapy. In other immune-mediated diseases such as rheumatoid arthritis and Crohn's disease, early intervention with biologic therapy improves long-term outcomes, and researchers hypothesize that a similar approach may be beneficial for PsO.[1,2] Observational studies suggest potential advantages to early systemic therapy for PsO patients, though high-quality trials are limited.[3] Additional research is needed to clarify if early intervention with advanced treatments alters the long-term course of PsO.

Objective

This study aims to describe psoriasis patients by disease severity at the time of decision to initiate advanced therapy to better characterize real-world treatment patterns and describe changes in body surface area (BSA) after treatment.

Methods

Data were derived from the OM1 PremiOM™ PsO dataset (OM1, Boston, MA), consisting of linked dermatology EMR data and healthcare claims on US patients with PsO.

Patients were included if they initiated an advanced therapy (index date) between 1/1/2013 - 1/22/2025, had at least one year of baseline data available with no evidence of prior advanced therapy, and an estimated *or* observed percent body surface area assessment (e/BSA) at index.

Patients were analyzed by categorical PsO severity at first record of advanced treatment (index date), with advanced treatment defined as a biologic or targeted synthetic medication record for an IL-12/23, IL-17, IL-23, PDE-4 inhibitor, JAK inhibitor, or TYK2. eBSA scores were estimated by an artificial intelligence (AI) model that estimates scores within 3 ranges (<3, 3-<10, and ≥ 10), corresponding to mild, moderate, and severe disease. The eBSA model was validated on a dataset with 48,594 patients and 143,224 notes. Model performance metrics were as follows: PPV 0.70, NPV 0.91, AUC 0.81. Clinical PsO subtype (i.e., plaque, pustular, erythrodermic, guttate, inverse scalp or nail) and PsO bodily location (s) were identified by automated text extraction. Select common comorbidities were identified by the presence of ICD and/or SNOMED codes prior to index.

Results

- A total of 9,302 patients met the study criteria; 14% had mild (e/BSA <3), 27% had moderate (e/BSA 3-<10), and 59% had severe PsO (e/BSA ≥ 10) at index.
- **A higher proportion of patients with mild and moderate PsO at index were female (58.9%, 59.4% vs 51.9%) & White (78.2%, 76.4% vs 73.0%) and resided in the Midwest (34.1%, 33.2% vs 20.7%)** **Table 1**
- **Greater proportions of patients with mild and moderate disease had hand and/or foot involvement (29.8%, 30.4% vs 25.8%) or any difficult to treat area (82.6%, 83.9% vs 77.9%)**, while patients with severe PsO had more upper extremity (33.4% vs 28.0%, 27.4%) and trunk involvement (32.5% vs 22.4%, 24.7%). **Table 2**
- **Psoriatic arthritis was more common during the baseline period for patients with mild PsO** (17.3%) compared to patients with moderate (12.3%) or severe disease(12.0%). **Table 2**
- The most common therapies initiated were PDE-4 inhibitors (36.3%), IL-23 inhibitors (22.5%), and TNFα inhibitors (18.4%). **Use of IL-23 inhibitors increased with severity (15.7%, 18.1%, 26.1%)**, while PDE-4 inhibitors were more frequently used by patients with mild (37.8%) and moderate disease (46.2%) vs. those with severe disease (31.3%). **Table 2**
- At 12 months post-index, 1,887 (20.3%) had an e/BSA measurement available. **Figure 1** Among these patients, 48.1% had mild (e/BSA <3), 25.8% had moderate (3 to <10), and 26.2% had severe PsO (e/BSA ≥ 10). **Among these patients, 91.2% had improved or stable disease severity category, and 8.8% had a higher disease severity category.** **Figure 2**

Figure 1. Availability of e/BSA at Index & Follow-up

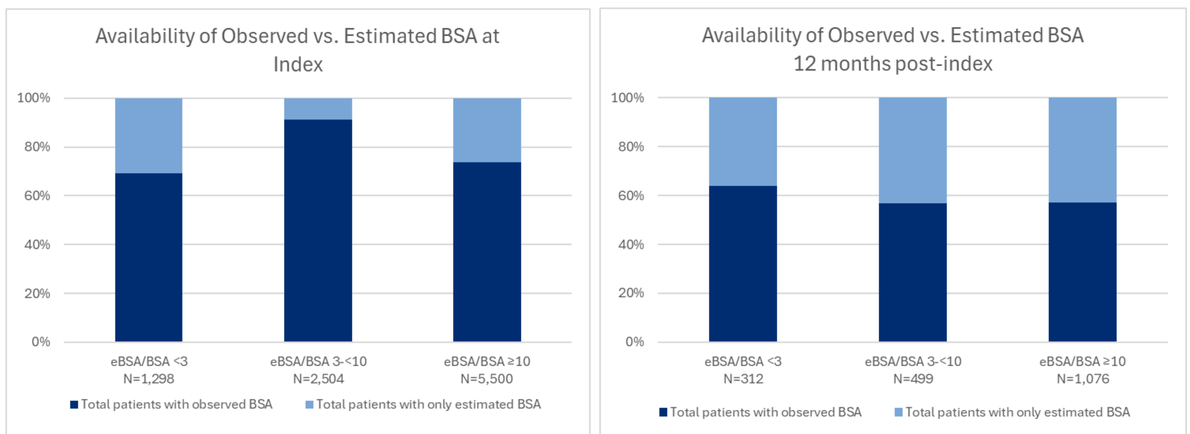


Table 1. Patient Demographics

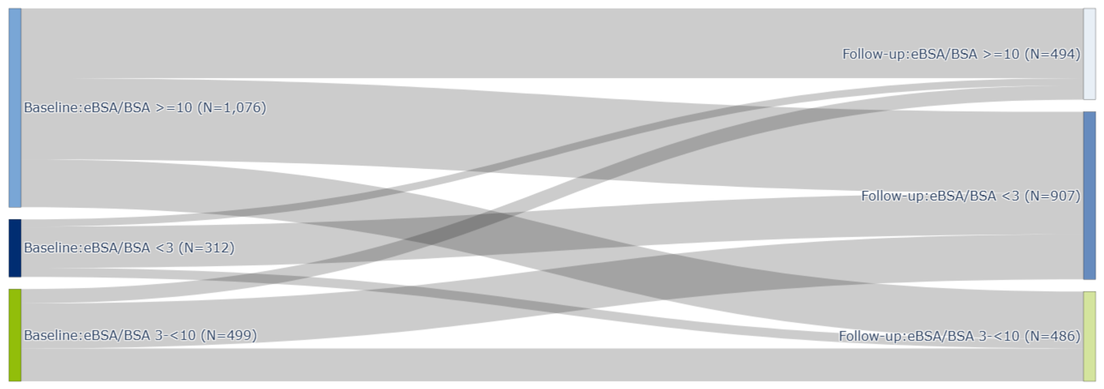
	e/BSA<3% N=1,298	e/BSA 3% - <10% N=2,504	e/BSA ≥10% N=5,500
Age at index in years, mean (SD)	53 (15.8)	51 (16.1)	50 (16.6)
Female, n (%)	765 (58.9%)	1,487 (59.4%)	2,856 (51.9%)
Race n (%)			
White	1,015 (78.2%)	1,913 (76.4%)	4,015 (73.0%)
Black or African American	46 (3.5%)	115 (4.6%)	289 (5.3%)
Asian	38 (2.9%)	59 (2.4%)	166 (3.0%)
Other/Unknown	168 (13.0%)	383 (15.3%)	913 (16.6%)
Ethnicity, n (%)			
Not Hispanic or Latino	1,000 (77.0%)	1,949 (77.8%)	4,123 (75.0%)
Hispanic or Latino	57 (4.4%)	119 (4.8%)	286 (5.2%)
Unknown or not reported	241 (18.6%)	436 (17.4%)	1,091 (19.8%)
U.S. Census Region, n (%)			
South	620 (47.8%)	1,214 (48.5%)	3,111 (56.6%)
Midwest	442 (34.1%)	831 (33.2%)	1,140 (20.7%)
West	147 (11.3%)	269 (10.7%)	744 (13.5%)
Northeast	89 (6.9%)	190 (7.6%)	504 (9.2%)
Unknown	0 (0.0%)	0 (0.0%)	1 (0.0%)

Table 2. Clinical Characteristics

	e/BSA<3% N=1,298	e/BSA 3% - <10% N=2,504	e/BSA ≥10% N=5,500
PsO Location	**795**	**1,530**	**3,331**
Scalp	453 (57.0%)	924 (60.4%)	1834 (55.1%)
Upper Extremities	363 (45.7%)	686 (44.8%)	1836 (55.1%)
Lower Extremities	349 (43.9%)	673 (44.0%)	1782 (53.5%)
Trunk	291 (36.6%)	619 (40.5%)	1789 (53.7%)
Face	259 (32.6%)	498 (32.5%)	1070 (32.1%)
Hands/Feet	237 (29.8%)	465 (30.4%)	861 (25.8%)
Intertriginous/Inverse	142 (17.9%)	271 (17.7%)	739 (22.2%)
Nails	58 (7.3%)	107 (7.0%)	201 (6.0%)
Genital Area	46 (5.8%)	92 (6.0%)	223 (6.7%)
Neck	42 (5.3%)	72 (4.7%)	209 (6.3%)
Joints	4 (0.5%)	5 (0.3%)	6 (0.2%)
Mucosal / Other	3 (0.4%)	3 (0.2%)	6 (0.2%)
Any difficult to treat area*	657 (82.6%)	1284 (83.9%)	2596 (77.9%)
PsO subtype	**1,271**	**2,442**	**5,324**
Plaque	1,263 (99.4%)	2,429 (99.5%)	5,294 (99.4%)
Guttate	106 (8.3%)	166 (6.8%)	591 (11.1%)
Inverse	28 (2.2%)	44 (1.8%)	101 (1.9%)
Pustular	14 (1.1%)	19 (0.8%)	77 (1.4%)
Erythrodermic	4 (0.3%)	2 (0.1%)	7 (0.1%)
Comorbidities			
Obesity	477 (36.7%)	894 (35.7%)	2,020 (36.7%)
Hypertension	458 (35.3%)	870 (34.7%)	1,975 (35.9%)
Hypercholesterolemia	430 (33.1%)	805 (32.1%)	1,802 (32.8%)
Psoriatic arthritis	225 (17.3%)	308 (12.3%)	659 (12.0%)
Diabetes	211 (16.3%)	392 (15.7%)	967 (17.6%)
Depression	186 (14.3%)	338 (13.5%)	744 (13.5%)
First advanced therapy			
PDE-4 Inhibitor	491 (37.8%)	1,158 (46.2%)	1,724 (31.3%)
IL-17 Inhibitor	256 (19.7%)	330 (13.2%)	870 (15.8%)
TNFα inhibitor	249 (19.2%)	401 (16.0%)	1,063 (19.3%)
IL-23 Inhibitor	204 (15.7%)	453 (18.1%)	1,436 (26.1%)
IL-12/23 Inhibitor	83 (6.4%)	126 (5.0%)	365 (6.6%)
TYK2 Inhibitor	10 (0.8%)	28 (1.1%)	37 (0.7%)
JAK Inhibitor	7 (0.5%)	10 (0.4%)	19 (0.3%)

*Defined as any combination of the following: face, genital area, hands/feet, nails, scalp

Figure 2. Change in e/BSA Category at 12 months



Limitations

- This analysis used real-world electronic medical record and claims data, which may include incomplete or misclassified information
- Index advanced treatment represents the first record for an advanced treatment during the observation period and may not the first received by the patient since diagnosis; in addition, patients may have initiated some medications for another primary indication (e.g., PsA, IBD).
- Disease severity (e/BSA) was estimated for some patients using a validated AI model rather than direct measurement, which may introduce misclassification error
- Only one-third of patients had follow-up e/BSA values at 12 months, potentially biasing assessment of treatment response
- Analyses were descriptive and did not adjust for confounding factors such as comorbidities, treatment history, or physician preference

Conclusions

- In this analysis, most patients initiating advanced therapy had severe PsO (59%), but a substantial minority had lower severity levels at treatment initiation
- Patients initiating treatment with low disease severity were more likely to be female and White, to have psoriatic arthritis, and to have PsO located in at least one difficult to treat area
- Choice of therapy varied across disease severity levels, indicating severity (or comorbid indications) may influence treatment decisions
- AI models can improve the availability of clinical characteristics and outcomes in dermatology real-world data (RWD) studies
- e/BSA remained stable or improved for most patients, indicating treatment effectiveness for patients across differing baseline disease severities. Further research should evaluate whether earlier intervention improves long-term disease control and reduces disease burden.

Conference

Presented at ISPOR EU Annual Conference. 10 Nov 2025. Glasgow, Scotland, UK

References

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