Real-world efficacy and retention of guselkumab in psoriatic arthritis: insights from a 12-month multicenter study

Farina N[1], Boffini N[1], Adinolfi A[2], Batticciotto A[3], Tomelleri A[1], Cariddi A[1], Calvisi S[1], Baldissera E[1], Matucci Cerinic M[1,4], Cappelli A[3], Epis O[2], Dagna L[1,4]

[1]Unit of Immunology, Rheumatology, Allergy and Rare Diseases, IRCCS San Raffaele Hospital, Milan, Italy

[2]Rheumatology Unit, ASST Grande Ospedale Metropolitano Niguarda, Milan, Italy

[3]Rheumatology Unit, Internal Medicine Department, ASST Sette Laghi, Ospedale Di Circolo-Fondazione Macchi, Varese, Italy

[4]Vita Salute San Raffaele University, Milan, Italy

Short title: Guselkumab in PsA: real world efficacy data

Correspondence to

Nicola Farina

E-mail: farina.nicola@hsr.it

Submitted: 11/04/2025

Accepted: 28/07/2025

Abstract

Background: Psoriatic arthritis (PsA) is a chronic inflammatory disease that affects joints, skin, and other structures. Guselkumab, an IL-23 inhibitor, has shown efficacy in clinical trials, but real-world data on its long-term use in PsA are limited. This study aimed to assess the efficacy, safety, and retention rate of guselkumab in a real-world cohort of PsA patients over 12 months.

Methods: This retrospective study included PsA patients treated with guselkumab for at least 12 months across three medical centers. Patients were assessed at baseline and at 12 months using PsA disease activity scores. Retention rate at 12 months and reasons for discontinuation were recorded. Statistical analyses included descriptive statistics, Mann-Whitney tests for changes in disease activity, and Cox regression for identifying factors associated with treatment discontinuation.

Results: We included 70 PsA patients. Significant reductions in disease activity were observed at 12 months for DAS28, DAPSA, MASES and ASDAS. The 12-month retention rate was 79%, with discontinuation primarily due to inefficacy. No significant adverse events were reported. Cox regression analysis found no significant associations between baseline characteristics and treatment discontinuation.

Conclusions: Guselkumab demonstrated significant efficacy in reducing disease activity and a favorable retention rate over 12 months in a real-world PsA cohort. These findings support guselkumab as an effective treatment for PsA, although further prospective studies are needed to confirm long-term safety and efficacy.

Keywords: Enthesitis; Biological therapies; Spondyloarthropathies (including psoriatic arthritis); Spondylarthritis; Psoriatic arthritis.

Introduction

Psoriatic arthritis (PsA) is a chronic inflammatory disease that significantly affects patient quality of life, characterized by a combination of peripheral joint inflammation, skin lesions, and extra-articular features such as enthesitis and dactylitis[1]. The pathophysiology of PsA involves complex immune responses, particularly the IL-23/Th17 pathway, which has led to the development of targeted biologic therapies[2]. Among these, guselkumab, a fully human monoclonal antibody that selectively inhibits the p19 subunit of IL-23, has emerged as an effective treatment option. Guselkumab efficacy has been confirmed in pivotal phase III trials, including DISCOVER-1, DISCOVER-2 and COSMOS, demonstrating significant improvements in joint and skin symptoms among both biologic-naive and TNF inhibitor-experienced patients[3-7].

While clinical trials provide critical insights, real-world evidence (RWE) studies are essential for understanding how treatments perform in everyday clinical practice, considering diverse patient demographics and adherence patterns.

Ruscitti *et al.* published in 2024 a study that evaluated the effectiveness and safety of guselkumab in a multicentric cohort of 111 PsA patients. This study included a mixed population of both biologic-naive and biologic-experienced patients, assessing clinical outcomes over a follow-up period of six months. The results demonstrated significant improvements in both disease activity and joint function[8]. The same group specifically investigated the 4-month outcomes of patients with PsA and axial involvement treated with guselkumab, highlighting the efficacy of this medication even in case of axial involvement[9].

These favorable RWE data were confirmed by Mease *et al*. in their study on 114 patients from the CorEvitas PsA/Spondyloarthritis Registry. At six months, they found that approximately 80% of patients maintained treatment during this period, with significant improvements in both disease activity and patient-reported outcomes[10]. Two additional groups published small case series of PsA patients treated with guselkumab for 24 weeks and confirmed its efficacy and safety[11,12].

While long-term (i.e., ≥ 12 months) data are extensively available for the use of guselkumab in psoriasis[13], they are scant for PsA. Elgaard *et al*. reported in 2022 a 89% 12-month retention rate for guselkumab in a cohort mostly comprising psoriatic patients without arthritis (only 27 out of 80 patients had PsA)[14]. The same year a multicentric study was published by the Spanish Group of Psoriasis[15]. In this work on PsA patients, Rocamora *et al.* reported 89% and 84% retention rates for guselkumab at 12 and 24 months respectively. However, all patients had concomitant

psoriasis, which in the majority of cases was the main indication for guselkumab start in the absence of significant baseline arthritic disease activity.

In our study, we aim to define the efficacy and retention rate of guselkumab – started due to arthritis activity – in PsA patients in a real-world setting across three centers at a 12-month timepoint. By analyzing clinical outcomes, treatment persistence, and safety profiles, we hope to provide comprehensive insights that reflect the therapeutic impact of guselkumab on patient populations typically encountered in clinical practice.

Methods

Study Design

This retrospective study was conducted across three medical centers (IRCCS San Raffaele Hospital, Niguarda Hospital, and Ospedale di Circolo).

Patient Population

Patients were included if they met the following criteria:

1. Age: 18 years or older at the time of guselkumab initiation.
2. Diagnosis: A confirmed diagnosis of psoriatic arthritis according to the Classification Criteria for Psoriatic Arthritis (CASPAR) criteria.
3. Treatment: Treatment with guselkumab, started due to arthritis activity, for at least 12 months
4. Follow-up: Availability of clinical data throughout the treatment period, including assessments of disease activity and adverse events.

Data Collection

Data were extracted from electronic medical records and included demographic information (age, sex), clinical history, and PsA-related disease characteristics at the time of guselkumab initiation. The evaluation of PsA domains included:

- Peripheral arthritis: assessed by tender and swollen joint count, used to calculate disease activity score-28 (DAS28) and Disease Activity in PSoriatic Arthritis (DAPSA) scores.
- Axial involvement: active axial disease was defined by the presence of inflammatory back pain accompanied by an ASDAS score ≥1.3, consistent with validated thresholds in axial spondyloarthritis[16]. Axial involvement was primarily assessed based on clinical

symptoms and physical examination findings. Imaging studies were not systematically available for all patients due to variable imaging accessibility and documentation in this retrospective real-world setting; however, when performed, they included MRI of the sacroiliac joints and/or the spine. MRI findings considered indicative of active inflammation included bone marrow edema on STIR sequences. Radiographic or CT findings were not systematically used to define axial disease.

- Dactylitis: defined clinically by the presence of uniform swelling of an entire digit (finger or toe). Data were recorded as binary (present/absent) at each visit, and the number of affected digits was recorded.
- Enthesitis: assessed using the Maastrich Ankylosing Spondylitis Enthesitis Score (MASES), which was routinely collected in the participating centers. LEI and SPARCC enthesitis indices were not consistently documented across sites and were therefore not used in the analysis.

Treatment history was also analyzed, including prior and concomitant csDMARDs and bDMARDs, NSAID and corticosteroid use.

Disease activity scores (DAS28, DAPSA, MASES, ASDAS) were collected at baseline and at 12 months, with each patient assessed using the score(s) relevant to their clinical phenotype.

Although data were collected at multiple timepoints during treatment, clinical assessments were heterogeneous across centers and often incomplete at intermediate visits. For this reason, we focused our analysis on the two most consistently recorded timepoints: baseline and 12 months.

Number of discontinued treatment courses until the 12th month of therapy, along with reasons for discontinuation (e.g., adverse events, lack of efficacy).

The study was approved by the San Raffaele Hospital Ethical Committee ('PanImmuno Protocol').

Statistical Analysis

As this was a retrospective study, the sample size was based on the number of eligible patients who met the inclusion criteria across the three participating centers during the defined study period. No formal sample size calculation was performed, in line with the exploratory nature of this real-world analysis.

Descriptive statistics were used to summarize demographic and clinical characteristics of the patient population. Continuous variables were expressed as median (interquartile range, IQR), while categorical variables were presented as frequencies and percentages.

Changes in disease measures from baseline to 12 months were analyzed using Mann Whitney test. Retention rate was calculated as the percentage of patients remaining on treatment at the 12-month follow-up, and survival analysis (Kaplan-Meier) was employed to evaluate time to discontinuation. Cox regression analysis was performed to find variables potentially associated with treatment discontinuation. Variables included in the Cox regression model were selected based on clinical relevance and prior literature suggesting a potential association with treatment response or persistence in PsA[17]. These included:

- Age and sex;
- PsA disease domains (axial involvement, peripheral arthritis, dactylitis, enthesitis);
- Concomitant csDMARD therapy;
- History of previous bDMARD exposure.

A p-value of <0.05 was considered statistically significant.

Results

A total of 70 PsA patients treated with guselkumab for at least 12 months were included. Baseline demographic and clinical characteristics are summarized in Table I.

At treatment initiation, the most frequently involved domains were peripheral arthritis (89%), enthesitis (64%), dactylitis (47%), and axial involvement (33%). Psoriasis was present in 92% of patients.

At baseline, 43 patients (61%) had previously received at least one biologic DMARD, and 31 (44%) were on concomitant csDMARDs, most commonly methotrexate.

In terms of other medications, 18 patients (26%) were receiving oral corticosteroids at guselkumab initiation (median dose: 5 mg/day prednisone equivalent), and 34 (49%) were taking NSAIDs regularly or on-demand for inflammatory symptoms due to PsA activity.

Significant improvements were observed across all domains between baseline and the 12-month timepoint (Figure 1), including DAS28, DAPSA, MASES, and ASDAS.

Drug retention rate at 12 months was 79%. Among the 15 patients (21%) who discontinued guselkumab, all stopped treatment due to lack of efficacy. No discontinuations were due to adverse events. The Kaplan-Meier curve in Figure 2 illustrates treatment persistence over time.

Cox regression analysis revealed no statistically significant associations between baseline characteristics and the risk of treatment discontinuation (Table II).

Discussion

In our study population, guselkumab treatment led to substantial clinical improvements across multiple disease parameters in patients with PsA. After 12 months of treatment, there were significant reductions in key measures of disease activity, including DAS28, DAPSA, MASES, and ASDAS, highlighting guselkumab efficacy on peripheral arthritis, enthesitis and axial disease. Additionally, we observed a 79% retention rate at 12 months, which is consistent with the results of other RWE studies and provides further confidence in the long-term viability of guselkumab as a treatment option. Notably, in our cohort, no significant adverse events were observed during the 12-month period, reinforcing the safety profile of guselkumab in a clinical setting.

Our findings are particularly valuable because our study is among the largest and longest to evaluate guselkumab in PsA patients in a real-world setting, with a follow-up period extending to 12 months. This is an important strength of our study, as it provides a longer observation period compared to other studies that primarily focused on shorter follow-up periods, such as those by Ruscitti et al. and Mease *et al.*[8-10]. These studies, while valuable, did not provide data beyond 6 months, making our longer follow-up particularly significant for understanding the sustained effects of guselkumab in PsA management. Furthermore, unlike studies by Elgaard *et al.* and Rocamora *et al.*, which demonstrated strong retention rates in populations where psoriasis activity was the primary indication for initiating guselkumab[14, 15], our study specifically focused on patients for whom guselkumab was started exclusively for PsA activity. This distinction is crucial, as it isolates the drug's effect on PsA without the confounding influence of psoriasis severity, allowing for a more accurate assessment of its role in managing PsA-related symptoms.

Our study also provides a broad assessment of musculoskeletal involvement including enthesitis and dactylitis, offering a more comprehensive evaluation of guselkumab's efficacy in PsA patients with diverse clinical presentations. In particular, we observed significant improvements in disease activity as measured by ASDAS, suggesting that guselkumab may be effective in managing axial symptoms. However, it is important to note that ASDAS reflects both axial and peripheral disease activity, as well as systemic inflammation through C-reactive protein levels. Thus, while our findings indicate an overall reduction in disease burden, they do not allow for definitive conclusions about guselkumab's efficacy in targeting isolated axial involvement. Nonetheless, our results align with previous reports suggesting that guselkumab may have a beneficial impact on axial symptoms, broadening its potential utility in PsA management[9]).

This comprehensive approach enhances the relevance of our results to real-world PsA populations, as many patients present with multiple disease domains that require a treatment strategy capable of addressing these complexities.

In addition to these strengths, the fact that our study was conducted across three different medical centers adds to the external validity of our findings, reflecting a range of clinical practices and patient populations. This multicenter approach contributes to the generalizability of our results to a wider group of PsA patients, providing a more accurate picture of how guselkumab performs in routine clinical practice.

However, despite the strengths of our study, there are several limitations that need to be acknowledged. First, as a retrospective study, our findings are susceptible to inherent biases, such as selection bias and information bias, which could influence the accuracy and generalizability of the results. Second, the lack of a control group in our study limits our ability to compare guselkumab's effectiveness directly with other treatment options for PsA. Although other biologics, such as TNF inhibitors or IL-17 inhibitors, are commonly used in PsA, the absence of a direct comparison means we cannot definitively establish guselkumab's superiority over these alternatives. Third, the sample size is relatively small, which limits the statistical power to conduct subgroup or multivariate analyses. This constraint reduces our ability to explore potential interactions between different clinical factors and treatment outcomes. Fourth, some patient characteristics, such as body mass index and smoking status, were not consistently recorded in this retrospective study. These variables may influence both the efficacy and retention rates of guselkumab, and their absence represents a limitation in interpreting the findings. The indication for NSAID use was not consistently documented either, limiting our ability to determine whether these medications were taken specifically for axial or peripheral inflammatory symptoms. Additionally, imaging to confirm axial involvement was not systematically performed, which may have led to misclassification in some cases.

In conclusion, our study provides valuable real-world evidence on the efficacy, safety, and retention rate of guselkumab in PsA patients over 12 months. The results confirm its effectiveness in reducing disease activity and improving patient outcomes, with a relatively high retention rate compared to other biologic agents. Indeed, further prospective studies with larger, more diverse cohorts and extended follow-up periods are needed to confirm our findings and better understand the long-term impact of guselkumab on PsA management.

Tables and Figures

Table I. Demographic and disease features of the study population at guselkumab start.

Variable	Study population (n=70)
Age (years)	59 (45-66)
Female sex	31 (44%)
Psoriasis	64 (92%)
Axial involvement	23 (33%)
Peripheral involvement	62 (89%)
Dactylitis	33 (47%)
Enthesitis	45 (64%)
Concomitant csDMARD	31 (44%)
Previous bDMARD	43 (61%)
Number of previous bDMARDs	1 (0-2)
DAS28	3.92 (3.4-4.8)
DAPSA	20 (15-30)
MASES	1 (0-2)
ASDAS	2.3 (1.9-3.1)

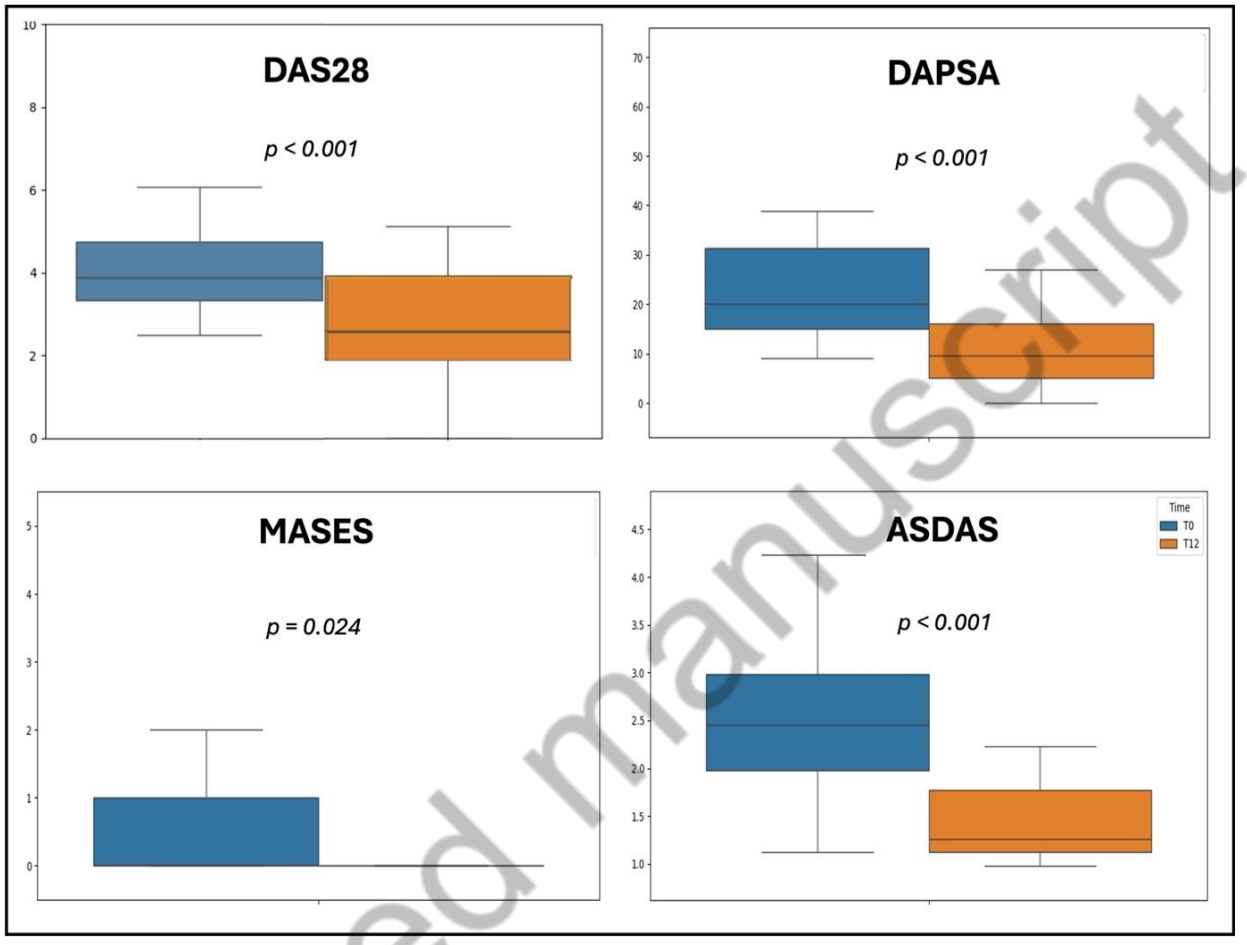
Categorial and continuous variables are shown as absolute numbers (%) and median (interquartile range), respectively.

Table II. Results of Cox regression analysis testing the association between baseline variables and guselkumab discontinuation.

Covariate	Hazard Ratio	95% Confidence Interval	*p-value*
Age (years)	1.01	0.96 - 1.04	0.68
Female sex	0.64	0.21 - 1.98	0.44
Psoriasis	0.55	0.07 - 4.29	0.57
Axial involvement	0.82	0.25 - 2.67	0.74
Peripheral involvement	1.27	0.16 - 9.77	0.82
Dactylitis	0.56	0.18 - 1.71	0.31
Enthesitis	1.12	0.34 - 3.66	0.83
Concomitant csDMARD	1.05	0.35 - 3.13	0.92
Previous bDMARD	1.51	0.46 - 4.91	0.49

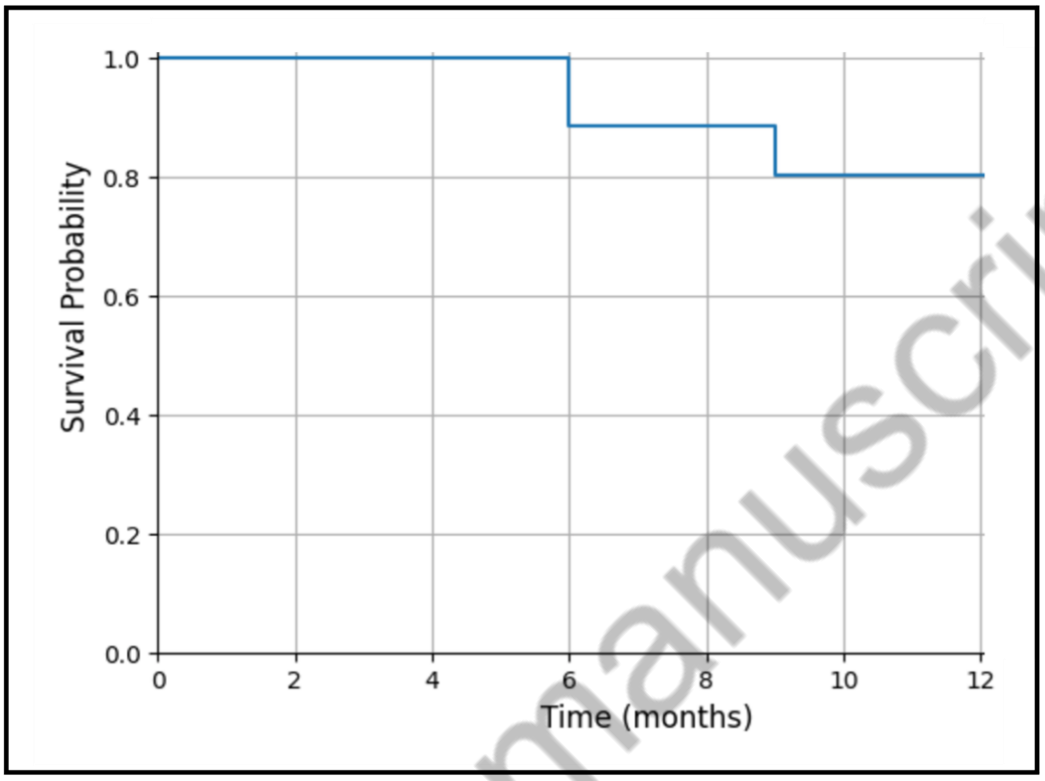
bDMARD, biologic disease modifying anti-rheumatic drugs; csDMARD, conventional synthetic disease modifying anti-rheumatic drugs.

Figure 1. Boxplots showing variations of disease activity measures between baseline (blue) and the 12-month timepoint (orange).



ASDAS, Ankylosing Spondyloarthritis Disease Activity Score; DAS28, Disease activity score-28; DAPSA, Disease Activity in PSoriatic Arthritis, MASES, Maastrich Ankylosing Spondylitis Enthesitis Score.

Figure 2. Kaplan Meier curve showing the survival rate of guselkumab in our study population.



References

1. Guimarães F, Ferreira M, Soares C, Parente H, Matos CO, Costa R, et al. Cycling versus swapping strategies in psoriatic arthritis: results from the rheumatic diseases Portuguese register. ARP Rheumatol. 2023 Jun 4. Online ahead of print.

2. Yousif P, Nahra V, Khan MA, Magrey M. Disease characteristics, pathogenesis, and treatment controversies of axial psoriatic arthritis. Joint Bone Spine. 2024;91(1):105625. https://doi.org/10.1016/j.jbspin.2023.105625

3. Deodhar A, Helliwell PS, Boehncke WH, Kollmeier AP, Hsia EC, Subramanian RA, et al. Guselkumab in patients with active psoriatic arthritis who were biologic-naive or had previously received TNFα inhibitor treatment (DISCOVER-1): a double-blind, randomised, placebo-controlled phase 3 trial. Lancet. 2020 Apr 4;395(10230):1115-1125. https://doi.org/10.1016/S0140-6736(20)30265-8

4. Mease PJ, Rahman P, Gottlieb AB, Kollmeier AP, Hsia EC, Xu XL, et al. Guselkumab in biologic-naive patients with active psoriatic arthritis (DISCOVER-2): a double-blind, randomised, placebo-controlled phase 3 trial. Lancet. 2020 Apr 4;395(10230):1126-1136. https://doi.org/10.1016/S0140-6736(20)30263-4

5. Coates LC, Gossec L, Theander E, Bergmans P, Neuhold M, Karyekar CS, et al. Efficacy and safety of guselkumab in patients with active psoriatic arthritis who are inadequate responders to tumour necrosis factor inhibitors: results through one year of a phase IIIb, randomised, controlled study (COSMOS). Ann Rheum Dis. 2022 Mar;81(3):359-369. https://doi.org/10.1136/annrheumdis-2021-220991

6. Ritchlin CT, Helliwell PS, Boehncke WH, Soriano ER, Hsia EC, Kollmeier AP, et al. Guselkumab, an inhibitor of the IL-23p19 subunit, provides sustained improvement in signs and symptoms of active psoriatic arthritis: 1 year results of a phase III randomised study of patients who were biologic-naïve or TNFα inhibitor-experienced. RMD Open. 2021 Feb;7(1):e001457. https://doi.org/10.1136/rmdopen-2020-001457

7. McInnes IB, Rahman P, Gottlieb AB, Hsia EC, Kollmeier AP, Xu XL, et al. Long-Term Efficacy and Safety of Guselkumab, a Monoclonal Antibody Specific to the p19 Subunit of Interleukin-23, Through Two Years: Results From a Phase III, Randomized, Double-Blind, Placebo-Controlled Study Conducted in Biologic-Naive Patients With Active Psoriatic Arthritis. Arthritis Rheumatol. 2022 Mar;74(3):475-485. https://doi.org/10.1002/art.42010

8. Ruscitti P, Cataldi G, Gentile M, Dionisi A, Volpe P, Finucci A, et al. The Evaluation of Effectiveness and Safety of Guselkumab in Patients with Psoriatic Arthritis in a Prospective Multicentre "Real-Life" Cohort Study. Rheumatol Ther. 2024 Jun;11(3):539-551. https://doi.org/10.1007/s40744-024-00649-2

9. Ruscitti P, Pantano I, Cataldi G, Gentile M, Arrigoni F, Riccio L, et al. Short-term effectiveness of guselkumab in psoriatic arthritis patients and suggestive features of axial involvement: results

from a real-life multicentre cohort. Rheumatology (Oxford). 2024 Apr 10:keae220. https://doi.org/10.1093/rheumatology/keae220

10. Mease PJ, Ogdie A, Tesser J, Shiff NJ, Lin I, Chakravarty SD, et al. Six-Month Persistence and Multi-domain Effectiveness of Guselkumab in Adults with Psoriatic Arthritis: Real-World Data from the CorEvitas Psoriatic Arthritis/Spondyloarthritis Registry. Rheumatol Ther. 2023 Dec;10(6):1479-1501. https://doi.org/10.1007/s40744-023-00582-w

11. Ak T, Temiz SNY, Taner M, Ayla AY, Aygun AA, Engin B, et al. Effectiveness of anti-interleukin-23 therapy in psoriatic arthritis: A pilot prospective real-world study. Int J Rheum Dis. 2023 May;26(5):878-884. https://doi.org/10.1111/1756-185X.14663

12. Vaiopoulos AG, Dalamaga M, Katsimbri P, Koumourtzis M, Lampadaki K, Theodoropoulos K, et al. Real-world data show high efficacy of IL23 inhibitors guselkumab and risankizumab in psoriatic arthritis and difficult-to-treat areas. Int J Dermatol. 2023 Nov;62(11):1404-1413. https://doi.org/10.1111/ijd.16849

13. Hugo J, Kojanova M, Turkova B, Gkalpakiotis S; BIOREP Study Group. Long-Term Efficacy, Safety, and Drug Survival of Guselkumab in Patients with Psoriasis: Real-World Data from the Czech Republic BIOREP Registry. Dermatol Ther (Heidelb). 2023 Mar;13(3):787-801. https://doi.org/10.1007/s13555-023-00893-4

14. Elgaard CDB, Iversen L, Hjuler KF. Guselkumab, tildrakizumab, and risankizumab in a real-world setting: drug survival and effectiveness in the treatment of psoriasis and psoriatic arthritis. J Dermatolog Treat. 2023 Dec;34(1):2133531. https://doi.org/10.1080/09546634.2022.2133531

15. Rocamora V, Crespi L, Ferran M, Llamas-Velasco M, Del Alcázar E, Carrascosa JM, et al. Guselkumab effectiveness and survival in patients with psoriasis and psoriatic arthritis: Multicenter analysis in daily clinical practice by the Spanish Psoriasis Group. Dermatol Ther. 2022 Nov;35(11):e15865. https://doi.org/10.1111/dth.15865

16. Machado P, Landewé R, Lie E, Kvien TK, Braun J, Baker D, van der Heijde D. Assessment of SpondyloArthritis international Society. Ankylosing Spondylitis Disease Activity Score (ASDAS): defining cut-off values for disease activity states and improvement scores. Ann Rheum Dis. 2011 Jan;70(1):47-53. https://doi.org/10.1136/ard.2010.138594

17. Jasmen M, García D, Ibáñez S, Díaz P. The Persistence of Biologic Therapies for Psoriatic Arthritis: A Narrative Review. J Clin Rheumatol. 2025 Apr 1;31(3):107-116. https://doi.org/10.1097/RHU.0000000000002159