Title: The Effect of Gusekumab on Work Productivity in Biologic-Naïve Patients With Active Psoriatic Arthritis Through Week 52 of the Phase 3, Randomized, Placebo-Controlled DISCOVER-2 Trial

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**ABSTRACT**

**Introduction:** The DISCOVER-2 phase 3 trial evaluated guselkumab effect on impaired work productivity and nonwork activity in biologic-naïve patients with psoriatic arthritis (PsA).

**Methods:** Adults with active PsA were randomized (1:1:1) to guselkumab 100 mg every 4 weeks (Q4W); at weeks 0, 4, then every 8 weeks (Q8W); or placebo (with crossover to guselkumab Q4W at week 24). Least squares mean change from baseline in Work Productivity and Activity Impairment Questionnaire for PsA (WPAI-PsA) domains and employment were assessed by treatment group. Multivariate analysis of weeks 0 through 24 data assessed independent associations between PsA clinical features and WPAI-PsA domains.

**Results:** In total, 738 patients were evaluated (guselkumab Q4W N=245; guselkumab Q8W N=248; placebo N=245). At week 24, improvements (reduced impairment) in presenteeism (Q4W -20.1%, Q8W -19.6%, placebo -10.5%), work productivity (Q4W -20.1%, Q8W -19.2%, placebo -10.6%), and nonwork activity (Q4W -20.5%, Q8W -21.2%, placebo -9.9%) were greater in guselkumab-treated versus placebo-treated patients. At week 52, following placebo crossover at week 24, improvements were similar among groups. Baseline absenteeism was minimal and did not change in any group. By week 52, 23.1% to 25.9% of guselkumab-treated patients who were unemployed at baseline were employed. All WPAI-PsA domains were positively associated with C-reactive protein level, fatigue, and pain. All domains except absenteeism were positively associated with enthesitis and Psoriasis Area and Severity Index score. Age was negatively associated with presenteeism and work productivity loss, female sex and tender joint count were positively associated with nonwork activity impairment, and dactylitis was positively associated with presenteeism.
Conclusion: Both guselkumab regimens reduced work productivity loss and nonwork activity impairment in patients with active PsA. Association of work productivity loss and nonwork activity impairment with PsA joint and skin features suggests that improvement in both features is beneficial to optimize improved work productivity loss and nonwork activity impairment.

Trial registration: Clinicaltrials.gov identifier, NCT03158285

Keywords

Guselkumab, Psoriatic Arthritis, Work Productivity

Key Summary Points

Why carry out this study?

- Psoriatic arthritis (PsA) is a chronic inflammatory disease associated with peripheral arthritis, psoriasis, enthesitis, dactylitis, axial inflammation, and fatigue that can result in disability, work productivity loss, and economic consequences.
- Guselkumab is an interleukin-23 p19-subunit inhibitor approved for use in patients with active PsA that has been shown to significantly improve signs and symptoms of joint and skin disease, physical function, and overall quality of life through 2 years in patients with active PsA.
- The objectives of these analyses were to assess the effects of guselkumab 100 mg every 4 or 8 weeks on the domains of the Work Productivity and Activity Impairment Questionnaire for PsA (WPAI-PsA) and employment through 1 year in biologic-naïve patients with PsA in the phase 3 DISCOVER-2 trial, to estimate the impact of changes in
work productivity on PsA-related costs, and to assess the independent association between PsA patient characteristics and clinical features and the WPAI-PsA domains

What was learned from the study?

• Both guselkumab regimens reduced impairment in presenteeism, work productivity, and nonwork daily activity in patients with active PsA

• Reductions in work productivity loss in guselkumab-treated patients were estimated to result in substantial yearly indirect work productivity-related cost savings

• Work productivity loss was positively associated with C-reactive protein level, fatigue, patient-reported pain, skin involvement, and enthesitis, and nonwork activity impairment was positively associated with female sex, C-reactive protein level, fatigue, patient-reported pain, skin involvement, tender joint count, and enthesitis

• These results suggest that improvement in multiple clinical features of PsA is beneficial for optimal reduction in work productivity loss and nonwork daily activity impairment associated with PsA
INTRODUCTION

The multiple clinical features of psoriatic arthritis (PsA), a chronic inflammatory disease associated with peripheral arthritis, psoriasis, enthesitis, dactylitis, axial inflammation, and fatigue, can result in significant physical, psychological, social, and functional impairment [1, 2]. This impairment, in turn, is associated with disability, work productivity loss, and economic consequences [1, 2]. It has been estimated that 22% to 23% of patients with PsA are unemployed due to PsA, and 16% to 39% experience work productivity loss due to PsA [2]. The direct and indirect costs of unemployment and work productivity loss that have been shown to be associated with disease activity and physical function [3] are a significant burden for individuals with PsA, their employers, and society as a whole [4, 5]. Thus, work productivity loss, which is defined as a combination of missed work time (absenteeism) and reduced effectiveness at work (presenteeism) [2], and impaired ability to perform regular activities outside of work are important outcomes to monitor and address in patients with PsA. Indeed, participation, which includes employment as well as family roles and social and leisure activities, is an outcome measure that is recommended for inclusion in PsA trials by Outcome Measures in Rheumatology (OMERACT) [6, 7].

Guselkumab, a high-affinity interleukin-23 p19-subunit inhibitor, is the first IL-23 inhibitor approved for use in adults with active PsA [8, 9]. In the pivotal phase 3 DISCOVER-1 and DISCOVER-2 trials, subcutaneous guselkumab 100 mg every 4 or 8 weeks improved signs and symptoms of joint and skin disease, physical function, and overall quality of life through 2 years in patients with active PsA despite standard treatment [10-14]. Imaging assessments from the larger DISCOVER-2 trial demonstrated that subcutaneous guselkumab 100 mg every 4 weeks
also significantly inhibited the progression of structural damage at 24 weeks and through 2 years [11, 13, 14].

Herein, we report the effects of guselkumab therapy on work productivity, nonwork activity, and employment through 1 year in the DISCOVER-2 trial and the estimated impact of changes in work productivity on PsA-related costs. We also report the results of a post hoc analysis of pooled DISCOVER-2 data through week 24 that assessed the independent associations between PsA patient characteristics and clinical features and work productivity and nonwork activity.

**METHODS**

**Patients and Trial Design**

DISCOVER-2 (NCT03158285) was a phase 3, randomized, double-blind, placebo-controlled 3-arm trial. Trial design details have been previously reported [11, 13]. A total of 739 patients aged ≥18 years who met the classification criteria for PsA [15] and had ≥5 swollen and ≥5 tender joints and C-reactive protein (CRP) ≥0.6 mg/dL despite standard nonbiologic treatment were randomized and treated in DISCOVER-2 [11]. Patients were randomized in a 1:1:1 ratio to receive subcutaneous guselkumab 100 mg every 4 weeks (Q4W); guselkumab 100 mg at weeks 0, 4, and then every 8 weeks (Q8W); or placebo. Randomization was stratified by most recent high-sensitivity serum CRP value before randomization (<2.0 mg/dL versus ≥2.0 mg/dL) and by baseline nonbiologic disease-modifying antirheumatic drug (DMARD) use (yes versus no). At week 24, patients randomized to placebo crossed over to receive subcutaneous guselkumab 100 mg Q4W. Patients were naïve to biologic agents and Janus kinase inhibitors but could continue baseline use of stable doses of selected nonbiologic therapies.
This trial was conducted in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines. All patients provided written informed consent, and the protocols were approved by local institutional review boards or ethics committees (Sterling Institutional Review Board approval number for United States sites is 5910C).

**Outcome Assessments**

At baseline, week 16, week 24, and week 52, patient productivity was assessed using the Work Productivity and Activity Impairment Questionnaire for PsA (WPAI-PsA), a validated instrument that evaluates the impact of PsA on patients’ ability to work (among patients working at baseline) and perform daily nonwork activities (among all patients) during the previous 7 days [16-18]. Four scores are derived from the questionnaire: percentage of work time missed (absenteeism), percentage of reduced productivity while at work (presenteeism), an overall work productivity impairment score that combines absenteeism and presenteeism, and percentage of impairment in activities performed outside of work. Greater scores indicate greater impairment due to PsA (0% no impairment, 100% complete impairment). Employment status was also evaluated at baseline and throughout the trial. Data collected through week 52 are reported herein.

Clinical features assessed in DISCOVER-2 included evaluation of joints for tenderness (n=68; tender joint count [TJC]) and swelling (n=66, excluding hips; swollen joint count [SJC]), the presence of enthesitis (using the Leeds enthesitis index, 0-6 scale), and the presence and severity of dactylitis by independent assessors [11, 19-21]. Dactylitis severity for each digit was scored as 0 or none, 1 for mild, 2 for moderate, or 3 for severe dactylitis (total score: 0-60) [11]. Skin disease severity and extent was evaluated using the Investigator’s Global Assessment of psoriasis (IGA; 0 [clear] to 4 [severe]) [22] and the Psoriasis Area and Severity Index (PASI; 0 [none] to
at weeks 0, 16, 24, and 52. Serum CRP level was evaluated as a marker of inflammation [24]. Patients reported their pain level using a visual analog scale (VAS; 0 [no pain] to 10 [worst possible pain] cm), their physical function using the Health Assessment Questionnaire Disability Index (HAQ-DI; 0 [best] to 3 [worst]) [25], and their health-related quality of life (HRQoL) using the Short Form 36 health survey (SF-36) [26] physical component summary (PCS) and mental component summary (MCS) (0 [worst] to 100 [best]), EuroQol-5 dimension-5 level (EQ-5D-5L) Index (0 [death] to 1 [perfect health]), and EuroQol visual analog scale (EQ-VAS; 0 [worst] to 100 [best]) [27]. Fatigue over the previous 7 days was evaluated using the Functional Assessment of Chronic Illness Therapy-Fatigue (FACIT-F; 0 [severe] to 52 [none]) [28]. Clinical efficacy and HAQ-DI assessments were conducted at week 0, then Q4W up to week 28, and then Q8W up to week 52. Skin assessments were conducted at weeks 0, 16, 24, and 52. HRQoL assessments were conducted at weeks 0, 8, 16, 24, and 52.

Statistical Analyses

Change From Baseline in WPAI-PsA

A summary of the change from baseline in WPAI-PsA scores was prespecified, and least squares (LS) mean changes from baseline in WPAI-PsA domains were determined using an analysis of covariance model with baseline WPAI-PsA score, prior use of nonbiologic DMARDs (yes/no), and baseline CRP level (<2.0/≥2.0 mg/dL) as explanatory factors. A missing WPAI-PsA score, including domain scores, at any visit was imputed using the predicted value from an imputation model using the full conditional specification regression method. LS means and 95% confidence intervals were calculated as the average of all multiple imputation datasets at week 24 and week 52. Treatment differences between the guselkumab 100 mg Q4W (hereafter referred to as guselkumab Q4W) and guselkumab 100 mg Q8W (hereafter referred to as guselkumab Q8W)
groups and the placebo group at weeks 16 and 24 were estimated by the difference in the LS means. Changes in absenteeism, presenteeism, and overall work productivity impairment were assessed in patients employed at baseline who had postbaseline values. Changes in nonwork activity impairment were assessed in all patients who had postbaseline values. All patients were eligible for analysis; there was no minimal impairment required for analysis of the LS mean change in WPAI-PsA domains.

The proportion of patients who achieved the minimum clinically important difference (MCID) in work productivity (15% improvement) [16] was evaluated among patients with ≥15% work productivity impairment at baseline. The proportion of patients who achieved the MCID for nonwork activity (20% improvement) [16] was evaluated among patients with ≥20% impairment at baseline.

Changes From Baseline in Employment

Changes in employment status over the trial period were assessed post hoc by analyzing shifts in patient-reported employment status by treatment group from baseline through week 52. All patients were included in these analyses and were grouped by employment status (employed or unemployed) at baseline.

Association of Work Productivity and Nonwork Activity Impairment With Patient Variables and PsA Clinical Features

In post hoc analyses, observed baseline data pooled across treatment groups were used to calculate the Spearman correlation coefficient between WPAI-PsA domains and key variables, including EQ-5D-5L Index, EQ-VAS, patient-reported pain, FACIT-F, HAQ-DI, PASI, IGA, SF-36 PCS and MCS, TJC, SJC, CRP level, age, and body mass index (BMI).
Associations between selected variables and WPAI-PsA domains were also assessed using linear regression mixed models with random intercept. Observed data from week 0 through week 24 for all patients across all treatment groups who had postbaseline measurements were pooled to attain sufficient statistical power for analysis and were analyzed in a cross-sectional manner.

Univariate linear regression was executed to identify independent variables, chosen based on the core outcome measures recommended by OMERACT [7], that were associated with WPAI-PsA domains. Independent variables assessed were EQ-5D-5L Index, EQ-VAS, patient-reported pain, FACIT-F, HAQ-DI, PASI, IGA, SF-36 PCS and MCS, TJC, SJC, dactylitis, enthesitis, CRP level, age, sex, and BMI. Multivariate mixed model for repeated measures (MMRM) regression models evaluated variables with associations with WPAI-PsA domains that reached \( p < 0.10 \) in univariate analysis, taking collinearity between variables into account. Variables with \( p < 0.05 \) in the multivariate models were considered to be significantly associated with WPAI-PsA domains.

A sensitivity analysis that did not include patient-reported pain as a covariate was also conducted to control for collinearity between arthritis (TJC and SJC) and pain.

**Cost Analyses**

Potential yearly indirect cost savings from improved overall work productivity were estimated by multiplying the Organisation for Economic Co-operation and Development (OECD)-reported average wages for 2020 for Europe (including France, Germany, Italy, Spain, and the United Kingdom), the United States, and Japan [29] by the percentage change from baseline in WPAI-PsA overall work productivity impairment at weeks 24 and 52 for each treatment group. Note that all values are presented in United States dollars.

The significance level of all statistical tests reported were based on \( \alpha = 0.05 \) (2-tailed). Statistical analyses were performed using SAS, version 9.4, and R-studio version 1.3.1056.
RESULTS

Patients

Among the 739 patients randomized and treated in this trial, 738 had evaluable WPAI-PsA data at baseline, and 733 had evaluable WPAI-PsA (nonwork activity) postbaseline data (guselkumab Q4W N=242, guselkumab Q8W N=246, and placebo N=245) (Supplementary Material Figure S1a). Of the 738 total patients, 475 (64.4%) were actively employed at baseline (guselkumab Q4W N=153, guselkumab Q8W N=151, and placebo N=171) (Supplementary Material Figure S1b). A postbaseline missing value was imputed for 0.6% (5/738) of total patients and 5% (20/440) of employed patients with baseline and postbaseline WPAI-PsA values, including domain scores.

Overall, patients had a mean age of 45.7 years; majority (98.0%) were White, and more than half (52.5%) were male (Table 1). Baseline characteristics represented a patient population with moderate to severe disease activity (mean [standard deviation (SD)] SJC, 12.3 [7.2]; TJC, 21.3 [12.9]; patient pain score, 6.3 [1.9]; and median CRP, 1.2 mg/dL) and moderately impaired HRQoL (mean [SD] EQ-5D-5L Index score, 0.6 [0.1] and EQ-VAS score, 44.6 [19.7]). This patient population also had clinically significant impairment in most of the WPAI-PsA domains at baseline; overall mean (SD) percentage of presenteeism was 48.3% (24.7), work productivity impairment was 51.4% (25.9), and percentage of daily nonwork activity impairment was 55.5% (22.8). The percentage of absenteeism due to PsA was relatively low in this population (mean [SD] 11.2% [22.7]) and was unbalanced among treatment groups (guselkumab Q4W 8.4 [17.4], guselkumab Q8W 10.5 [21.0], and placebo 14.5 [27.5]). In addition, 61.3% of employed patients had 0% work time missed due to PsA, but only approximately 6% of patients had 0%
impairment in presenteeism (6.4%) and overall work productivity (6.1%), and only 2.2% of
patients had 0% nonwork activity impairment.

**Change From Baseline in WPAI-PsA**

Greater mean reductions from baseline in presenteeism, work productivity loss, and nonwork
activity were observed in guselkumab-treated versus placebo-treated patients at weeks 16 and 24
(Figure 1). At week 24, among patients who were employed at baseline, in the guselkumab
Q4W, guselkumab Q8W, and placebo groups, LS mean reductions in presenteeism were -20.1%,
-19.6%, and -10.5%, respectively, and LS mean reductions in work productivity loss
were -20.1%, -19.2%, and -10.6%, respectively (Figure 1b-c). Among all patients (employed
and not employed), LS mean reduction in nonwork activity impairment at week 24 was -20.5%
in the guselkumab Q4W group, -21.2% in the guselkumab Q8W group, and -9.9% in the placebo
group (Figure 1d). LS mean reductions in presenteeism (guselkumab Q4W -22.4%, guselkumab
Q8W -25.7%), work productivity loss (guselkumab Q4W -22.6%, guselkumab Q8W -25.9%),
and nonwork activity impairment (guselkumab Q4W -25.7%, guselkumab Q8W -25.4%)
continued through 1 year in both guselkumab treatment groups. In addition, by 1 year, LS mean
reductions from baseline in presenteeism, work productivity loss, and nonwork activity
impairment in the placebo→guselkumab Q4W group (-18.5%, -17.6%, and -22.3%, respectively)
were similar to those observed in patients who received a full year of guselkumab treatment. LS
mean reductions in absenteeism remained stable in all groups through week 52, ranging
from -3.0% to -5.0% across treatment groups at all time points (Figure 1a).

Among patients with ≥15% work productivity impairment at baseline (394 [89.5%] of 440), the
proportions of patients who achieved the MCID for improvement in work productivity were
numerically greater in the guselkumab treatment groups than in the placebo group at weeks 16
and 24 (Figure 2a). At week 52, the proportions of patients who achieved the MCID for work productivity impairment were relatively similar between the guselkumab treatment groups (66.4% in the guselkumab Q4W group and 76.4% in the guselkumab Q8W group) and the placebo→guselkumab Q4W group (62.9%).

Similarly, among patients with nonwork activity impairment ≥20% at baseline (701 [95.0%] of 738), the proportions of patients who achieved the MCID for improvement in nonwork activity were significantly (p≤0.002) greater in the guselkumab treatment groups than in the placebo group at weeks 16 and 24 (Figure 2b). At week 52, the proportions of patients who achieved the MCID for improvement in nonwork activity were similar between the guselkumab treatment groups (66.1% in the guselkumab Q4W group, 69.2% in the guselkumab Q8W group) and the placebo→guselkumab Q4W group (65.6%).

Change From Baseline in Employment

In a post hoc analysis evaluating change in work status among the 35.6% (263/738) of patients who were unemployed at baseline, the increase in the proportion of patients reporting active employment at week 16 was 13.0% and 12.4% in the guselkumab Q4W and Q8W groups, respectively, compared with 8.1% in the placebo group (Figure 3a). At week 52, active employment increased to 25.9% in the guselkumab Q4W group (12.9% difference versus week 16; p<0.05) and to 23.1% in the guselkumab Q8W group (10.7% difference versus week 16; p≥0.05). After crossover to guselkumab, active employment among patients in the placebo group increased to 17.1% at week 52 (9.0% difference versus week 16; p≥0.05). Among the 64.4% (475/738) of patients who were employed at baseline, active employment was relatively stable through 1 year (Figure 3b).
Association of Work Productivity Loss and Nonwork Activity Impairment With Patient Variables and PsA Clinical Features

A total of 738 patients were included in the Spearman, univariate, and multivariate post hoc analyses. At baseline, work productivity loss and nonwork activity impairment scores were moderately to strongly correlated (ie, Spearman correlation coefficient $\geq 0.4$) with multiple clinical features and patient-reported outcomes, including scores for patient-reported pain and measures of physical function, fatigue, and HRQoL (Figure 4). In the multivariate analysis, after controlling for all other variables, higher CRP level, greater fatigue (lower FACIT-F score), and greater patient-reported pain (higher score) were associated with greater impairment in all WPAI-PsA domains (Table 2). In addition, the presence of enthesitis and a higher (worse) PASI score were associated with greater presenteeism, work productivity loss, and nonwork activity impairment; younger age was associated with greater presenteeism and work productivity loss; female sex and a higher TJC were associated with greater nonwork activity impairment; and the presence of dactylitis was associated with greater presenteeism. Results of the sensitivity analysis that did not include patient-reported pain as a covariate were similar to those presented above, except that dactylitis presence was no longer associated with greater presenteeism, a higher SJC became associated with greater nonwork activity impairment, and a higher TJC became associated with greater presenteeism and work productivity loss in addition to greater nonwork activity impairment (Supplementary Material Table S1).

Cost Analyses

Cost analyses suggest that annualized monetized employment-related productivity gains associated with guselkumab treatment of PsA could result in significant indirect and employer-related economic benefits. In all countries evaluated, potential yearly cost savings from improved
overall work productivity at week 24 were similar between the 2 guselkumab treatment groups and nearly 2 times greater in guselkumab-treated versus placebo-treated patients (Figure 5a-c). At week 52, after placebo crossover to guselkumab Q4W, potential yearly cost savings were generally similar among all treatment groups. In Europe, the United States, and Japan, estimated annual cost savings at week 52 were $10453, $15648, and $8858, respectively, in the guselkumab Q4W group; $11817, $17938, and $10014, respectively, in the Q8W group; and $8181, $12241, and $6933, respectively, in the placebo→guselkumab Q4W group (Figure 5a-c).

DISCUSSION

The data presented here demonstrate that, consistent with prior research in this population [1, 2, 30], biologic-naïve patients with active PsA had substantial impairment in most WPAI-PsA domains at baseline. Reduction in impairment in these domains was observed 16 weeks after initiation of guselkumab, which was the earliest timepoint assessed. At week 24, improvement in presenteeism, work productivity loss, and daily nonwork activity impairment was significantly greater in guselkumab-treated versus placebo-treated patients. Improvement in presenteeism, work productivity loss, and nonwork activity impairment was maintained at week 52 in guselkumab-treated patients and was similar between guselkumab-treated and placebo→guselkumab Q4W patients at this time point. At week 52, among patients with impairment at baseline, improvement in work productivity and nonwork activity was clinically meaningful in up to 76.4% and 69.2% of patients, respectively, in the guselkumab groups and in 62.9% and 65.6% of patients, respectively, in the placebo→guselkumab Q4W group. These results are consistent with those from randomized controlled trials of other biologics in similar populations of patients with PsA [2, 31-36].
Substantial improvements in the percentage of absenteeism due to PsA were not observed in any of the treatment groups at any time point. This is likely because the percentage of work time missed due to PsA was limited at baseline, which is consistent with what has been previously reported [16, 32, 33]. Absenteeism may be relatively low in patients with PsA compared with presenteeism or impairment in daily activities due to the personal economic consequences of missing work.

Although absenteeism remained unchanged throughout the trial, among the 35.6% of patients who were unemployed at baseline, the proportion of patients who shifted to active employment was greater in guselkumab-treated patients versus placebo-treated patients at all time points. There was also a substantial increase in the proportion of patients who reported active employment in the placebo→guselkumab Q4W group from week 16 to week 52, after patients randomized to placebo had been receiving guselkumab treatment for 28 weeks. Among patients who were employed at baseline, the proportion of patients reporting active employment remained relatively stable in all treatment groups.

The observed increase in employment among guselkumab-treated patients who were unemployed at baseline demonstrates a potential indirect societal and economic benefit of guselkumab treatment in patients with active PsA. In addition, the reductions in work productivity loss observed in guselkumab-treated patients with PsA were estimated to result in significant indirect and employer-related economic benefits based on cost analyses using 2020 mean yearly wages (all occupations) for Europe, the United States, and Japan.

To identify the impact that PsA clinical features may have on work productivity loss and nonwork daily activity impairment, we used DISCOVER-2 data to explore the association between WPAI-PsA scores and PsA clinical features and patient demographics. In this
population of patients with active PsA, we found that both work productivity loss and nonwork activity impairment were associated with higher CRP levels and greater fatigue, pain, skin involvement, and enthesitis. Greater nonwork activity impairment was also associated with female sex and higher TJC. These results are similar to those previously reported in a systematic review of studies in patients with PsA, where unemployment and work productivity loss were found to be associated with longer disease duration, worse physical function, high TJC and/or SJC, low educational level, female sex, erosive disease, and manual work [2]. Younger age was associated with greater presenteeism and work productivity loss; however, the mean (SD) age in this trial was relatively low, 45.7 (11.7) years, and elderly patients are more likely to be retired and not included in the assessment of these domains because they were not employed at baseline.

The multivariate MMRM regression models used in these analyses did not evaluate the association between improvement in PsA clinical features and improvement in WPAI-PsA domains or guselkumab treatment effect. To enhance the statistical power of the analyses, cross-sectional, observed data from all time points were pooled across all treatment groups, allowing for a more robust analysis. Future studies may include a mediation analysis to identify relationships between treatment impact on PsA clinical features and treatment impact on WPAI-PsA domains. These data are limited because change from baseline in WPAI-PsA domains was not assessed until week 16 in DISCOVER-2, so it is not known how early a treatment effect could be observed. In previously published analyses from DISCOVER-2, clinically significant improvements in FACIT-F [37, 38] were observed in guselkumab-treated patients as early as week 8, suggesting that improvement in work productivity loss may also have occurred earlier than week 16. In addition, for the analyses of changes in WPAI-PsA domains, we did not require
that patients have any minimal amount of impairment at baseline, and as previously noted, 61.3% of patients had 0% work time missed due to PsA. This was unlikely to affect the mean improvement in overall work productivity and nonwork activity, however, because only 6.1% and 2.2% of patients, respectively, had 0% impairment in these domains. Furthermore, the overall population in these analyses had a mean of 12.3 swollen and 21.3 tender joints and substantial systemic inflammation (median serum CRP 1.2 mg/dL) at baseline, potentially limiting the generalization of the results of these analyses to patients with less active disease.

Selection bias should also be considered when evaluating the generalizability of these results, in that the type of work a patient performs or the number of hours they are required to work can affect their decision to participate in a clinical trial. It is also unknown whether patients who were not working at baseline were not working because of their disease or due to other factors. It is conceivable that there are additional factors contributing to absence of new employment.

CONCLUSIONS

We observed that in biologic-naïve patients with active PsA, treatment with guselkumab, the first IL-23 inhibitor approved for the treatment of adults with PsA, resulted in clinically meaningful improvement in work productivity loss and daily nonwork activity impairment, with improvement observed at week 16 and sustained at week 52. The observed improvements in work productivity loss were estimated to result in substantial yearly indirect work productivity-related cost savings. Multivariate analyses demonstrated that multiple PsA clinical features, including fatigue, physical disability, and skin and joint symptoms, were positively associated with the WPAI-PsA domains, suggesting that improvement in multiple clinical manifestations of PsA are beneficial for the optimization of improvement in work productivity loss and nonwork daily activity impairment.
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Authorship

All named authors meet the International Committee of Medical Journal Editors (ICMJE) criteria for authorship for this article, take responsibility for the integrity of the work as a whole, and have given their approval for this version to be published.

Author Contributions

Trial conception and design were performed by Jeffrey R. Curtis, Iain B. McInnes, Proton Rahman, Prasheen Agarwal, Alexa P. Kollmeier, Elizabeth C. Hsia, Bei Zhou, Chenglong Han, May Shawi, and Philip J. Mease; data collection and analysis were performed by Feifei Yang, Steve Peterson, and Prasheen Agarwal. All authors critically revised previous drafts of the manuscript content and read and approved the final manuscript.

Disclosures

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Iain B. McInnes received consultant fees from Astra Zeneca, BMS AbbVie, Bristol-Myers Squibb, Amgen, Eli Lilly and Company, Cabaletta, Compugen, GSK, Gilead, Janssen, Novartis, Pfizer, Sanofi, Roche, and UCB; grant/research support from Astra Zeneca, Bristol-Myers Squibb, Amgen, Eli Lilly and Company, GSK, Janssen, Novartis, Roche, and UCB, and is a shareholder for Causeway Therapeutics, EveloBio, and Compugen.

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Steve Peterson, Prasheen Agarwal, Feifei Yang, Alexa P. Kollmeier, Elizabeth C. Hsia, Bei Zhou, and Chenglong Han are employees of Janssen Research & Development, LLC, or Janssen Global Services, LLC, wholly owned subsidiaries of Johnson & Johnson, and may own stock in Johnson & Johnson.

Natalie J. Shiff is an employee of Janssen Scientific Affairs, LLC, a wholly owned subsidiary of Johnson & Johnson, and owns stock in AbbVie, Gilead, and Johnson & Johnson.

May Shawi is an employee of Immunology Global Medical Affairs, Janssen Pharmaceutical Companies of Johnson & Johnson, and owns stock in Johnson & Johnson.
William Tillett received consultant fees from AbbVie, Amgen, Eli-Lilly, Janssen, MSD, Novartis, Pfizer, and UCB; grant/research support from AbbVie, Amgen, Eli-Lilly, Janssen, and UCB; and speakers fees from AbbVie, Amgen, Eli-Lilly, Janssen, MSD, Novartis, Pfizer, and UCB.

Philip J. Mease received research support, consulting fees, and/or speaker bureau support from AbbVie, Amgen, BMS, Celgene, Eli Lilly, Galapagos, Gilead, GlaxoSmithKline, Inmagene, Janssen, Novartis, Pfizer, SUN Pharma, and UCB.

Compliance With Ethics Guidelines

DISCOVER-2 (NCT03158285) conformed with the Declaration of Helsinki and Good Clinical Practice guidelines, and the protocols were approved by local governing ethical bodies at each site (Sterling Institutional Review Board approval number for United States sites is 5910C). All patients provided written informed consent.

Data Availability

The datasets generated and/or analyzed during the current study are available upon reasonable request. The data sharing policy of Janssen Pharmaceutical Companies of Johnson & Johnson is available at https://www.janssen.com/clinical-trials/transparency. As noted on this site, requests for access to the trial data can be submitted through Yale Open Data Access (YODA) Project site at http://yoda.yale.edu.

Prior Presentations of Data

Curtis JR, McInnes IB, Rahman P, et al. Clinical characteristics and outcomes associate with work productivity in bio-naïve patients with active psoriatic arthritis through week 24 of

REFERENCES


10. Deodhar A, Helliwell PS, Boehncke W-H, et al. Guselkumab in patients with active psoriatic arthritis who were biologic-naïve or had previously received TNFα inhibitor


12. Ritchlin CT, Helliwell PS, Boehncke W-H, 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; 7:e001457.


18. Reilly Associates. WPAI:SHP v2.0 (updated August 18, 2010).


34. Coates LC, Gladman DD, Nash P, et al. Secukinumab provides sustained PASDAS-defined remission in psoriatic arthritis and improves health-related quality of life in


<table>
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<tr>
<th></th>
<th>Guselkumab</th>
<th></th>
<th>Placebo</th>
<th>All</th>
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<tr>
<td></td>
<td>Q4W N=245</td>
<td>Q8W N=248</td>
<td></td>
<td>N=739</td>
</tr>
<tr>
<td>Age (years)</td>
<td>45.9 (11.5)</td>
<td>44.9 (11.9)</td>
<td>46.3 (11.7)</td>
<td>45.7 (11.7)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male, n (%)</td>
<td>142 (58.0)</td>
<td>129 (52.0)</td>
<td>117 (47.6)</td>
<td>388 (52.5)</td>
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<td>Female, n (%)</td>
<td>103 (42.0)</td>
<td>119 (48.0)</td>
<td>129 (52.4)</td>
<td>351 (47.5)</td>
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<td>White, n (%)</td>
<td>242 (98.8)</td>
<td>240 (96.8)</td>
<td>242 (98.4)</td>
<td>724 (98.0)</td>
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<tr>
<td>BMI (kg/m²)</td>
<td>29.1 (5.9)</td>
<td>28.7 (6.3)</td>
<td>29.0 (6.4)</td>
<td>28.9 (6.2)</td>
</tr>
<tr>
<td>PsA disease duration (years)</td>
<td>5.5 (5.9)</td>
<td>5.1 (5.5)</td>
<td>5.8 (5.6)</td>
<td>5.5 (5.7)</td>
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<tr>
<td>SJC (0-66)</td>
<td>12.9 (7.8)</td>
<td>11.7 (6.8)</td>
<td>12.3 (6.9)</td>
<td>12.3 (7.2)</td>
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<td>TJC (0-68)</td>
<td>22.4 (13.5)</td>
<td>19.8 (11.9)</td>
<td>21.6 (13.1)</td>
<td>21.3 (12.9)</td>
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<td>Patient pain VAS (0-10 cm)</td>
<td>6.2 (2.0)</td>
<td>6.3 (2.0)</td>
<td>6.3 (1.8)</td>
<td>6.3 (1.9)</td>
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<td>HAQ-DI (0-3)</td>
<td>1.2 (0.6)</td>
<td>1.3 (0.6)</td>
<td>1.3 (0.6)</td>
<td>1.3 (0.6)</td>
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<tr>
<td>CRP level (mg/dL), median</td>
<td>1.2</td>
<td>1.3</td>
<td>1.2</td>
<td>1.2</td>
</tr>
<tr>
<td>Enthesitis, n (%)a</td>
<td>170 (69.4)</td>
<td>158 (63.7)</td>
<td>178 (72.7)</td>
<td>506 (68.6)</td>
</tr>
<tr>
<td>Dactylitis, n (%)a</td>
<td>121 (49.4)</td>
<td>111 (44.8)</td>
<td>99 (40.4)</td>
<td>331 (44.9)</td>
</tr>
<tr>
<td>PASI (0-72)a</td>
<td>10.8 (11.7)</td>
<td>9.7 (11.7)</td>
<td>9.3 (9.8)</td>
<td>9.9 (11.1)</td>
</tr>
<tr>
<td>IGA total score ≥2, n (%)a</td>
<td>201 (82.0)</td>
<td>195 (78.6)</td>
<td>209 (85.3)</td>
<td>605 (82.0)</td>
</tr>
<tr>
<td>EQ-5D-5L Index (0-1)a</td>
<td>0.6 (0.1)</td>
<td>0.6 (0.2)</td>
<td>0.6 (0.1)</td>
<td>0.6 (0.1)</td>
</tr>
<tr>
<td>EQ-VAS (0-100)a</td>
<td>46.9 (20.1)</td>
<td>44.5 (19.8)</td>
<td>42.5 (19.2)</td>
<td>44.6 (19.7)</td>
</tr>
<tr>
<td>FACIT-F (0-52)a</td>
<td>30.8 (9.6)</td>
<td>29.3 (9.9)</td>
<td>29.1 (9.5)</td>
<td>29.7 (9.7)</td>
</tr>
<tr>
<td>SF-36 PCSa</td>
<td>33.3 (7.1)</td>
<td>32.6 (7.9)</td>
<td>32.4 (7.0)</td>
<td>32.8 (7.3)</td>
</tr>
<tr>
<td>SF-36 MCSa</td>
<td>48.4 (11.0)</td>
<td>47.4 (10.8)</td>
<td>47.2 (12.0)</td>
<td>47.7 (11.3)</td>
</tr>
<tr>
<td>Employed, n (%)a</td>
<td>153 (62.4)</td>
<td>151 (60.9)</td>
<td>171 (69.8)</td>
<td>475 (64.4)</td>
</tr>
<tr>
<td>Unemployed, n (%)a</td>
<td>92 (37.6)</td>
<td>97 (39.1)</td>
<td>74 (30.2)</td>
<td>263 (35.6)</td>
</tr>
<tr>
<td>WPAL-PsA (%)a</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n</td>
<td>153</td>
<td>151</td>
<td>171</td>
<td>475</td>
</tr>
<tr>
<td>Work time missed (absenteeism)b</td>
<td>8.4 (17.4)</td>
<td>10.5 (21.0)</td>
<td>14.5 (27.5)</td>
<td>11.2 (22.7)</td>
</tr>
<tr>
<td>No time missed, n (%)</td>
<td>96 (62.8)</td>
<td>92 (60.9)</td>
<td>103 (60.2)</td>
<td>291 (61.3)</td>
</tr>
<tr>
<td>n</td>
<td>146</td>
<td>140</td>
<td>154</td>
<td>440</td>
</tr>
<tr>
<td>Impairment while working (presenteeism)b</td>
<td>46.9 (23.5)</td>
<td>48.8 (24.4)</td>
<td>49.3 (26.2)</td>
<td>48.3 (24.7)</td>
</tr>
<tr>
<td>No impairment, n (%)</td>
<td>8 (5.5)</td>
<td>9 (6.4)</td>
<td>11 (7.1)</td>
<td>28 (6.4)</td>
</tr>
<tr>
<td>n</td>
<td>146</td>
<td>140</td>
<td>154</td>
<td>440</td>
</tr>
<tr>
<td>Overall work productivity impairment (absenteeism+presenteeism)b</td>
<td>49.7 (25.0)</td>
<td>51.5 (25.4)</td>
<td>52.9 (27.2)</td>
<td>51.4 (25.9)</td>
</tr>
<tr>
<td>≥15% impairment, n (%)</td>
<td>130 (89.0)</td>
<td>126 (90.0)</td>
<td>138 (89.6)</td>
<td>394 (89.5)</td>
</tr>
<tr>
<td>No impairment, n (%)</td>
<td>8 (5.5)</td>
<td>9 (6.4)</td>
<td>10 (6.5)</td>
<td>27 (6.1)</td>
</tr>
<tr>
<td></td>
<td>245</td>
<td>248</td>
<td>245</td>
<td>738</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Daily nonwork activity impairment</td>
<td>54.4 (22.0)</td>
<td>56.2 (23.5)</td>
<td>56.0 (23.0)</td>
<td>55.5 (22.8)</td>
</tr>
<tr>
<td>≥20% impairment, n (%)</td>
<td>236 (96.3)</td>
<td>234 (94.4)</td>
<td>231 (94.3)</td>
<td>701 (95.0)</td>
</tr>
<tr>
<td>No impairment, n (%)</td>
<td>3 (1.2)</td>
<td>7 (2.8)</td>
<td>6 (2.5)</td>
<td>16 (2.2)</td>
</tr>
</tbody>
</table>

All data are mean (standard deviation) unless noted otherwise.

^Placebo N=245, All N=738

^Limited to patients who were employed at baseline.

BMI, body mass index; CRP, C-reactive protein; EQ-5D-5L, EuroQol-5 dimension-5 level; EQ-VAS, EuroQol visual analog scale; FACIT-F, Functional Assessment of Chronic Illness Therapy-Fatigue; HAQ-DI, Health Assessment Questionnaire Disability Index; IGA, Investigator’s Global Assessment of psoriasis; MCS, mental component summary; PASI, Psoriasis Area and Severity Index; PCS, physical component summary; PsA, psoriatic arthritis; Q4W, every 4 weeks; Q8W, every 8 weeks; SF-36, Short Form 36 health survey; SJC, swollen joint count; TJC, tender joint count; VAS, visual analog scale; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis
### Table 2. Final multivariate regression mixed models of association of patient variables with WPAI-PsA domains

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Absenteeism</th>
<th>Presenteeism</th>
<th>Work Productivity Loss</th>
<th>Nonwork Activity Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>P-value</td>
<td>Estimate</td>
<td>P-value</td>
</tr>
<tr>
<td>Age</td>
<td>-0.05</td>
<td>0.416</td>
<td>-0.27</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female sex</td>
<td>0.91</td>
<td>0.458</td>
<td>-1.54</td>
<td>0.221</td>
</tr>
<tr>
<td>CRP level (mg/dL)</td>
<td>0.73</td>
<td>0.041</td>
<td>0.97</td>
<td>0.006</td>
</tr>
<tr>
<td>FACIT-F score (0-52)</td>
<td>-0.31</td>
<td>&lt;0.001</td>
<td>-0.67</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Patient pain VAS (0-10 cm)</td>
<td>1.03</td>
<td>&lt;0.001</td>
<td>4.15</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>PASI score (0-72)</td>
<td>0.06</td>
<td>0.356</td>
<td>0.16</td>
<td>0.020</td>
</tr>
<tr>
<td>SJC (0-66)</td>
<td>0.08</td>
<td>0.475</td>
<td>-0.05</td>
<td>0.608</td>
</tr>
<tr>
<td>TJC (0-68)</td>
<td>-0.10</td>
<td>0.129</td>
<td>0.11</td>
<td>0.086</td>
</tr>
<tr>
<td>Dactylitis (Yes/No)</td>
<td>-1.10</td>
<td>0.392</td>
<td>2.47</td>
<td>&lt;0.050^a</td>
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<tr>
<td>Enthesitis (Yes/No)</td>
<td>1.52</td>
<td>0.203</td>
<td>2.38</td>
<td>0.042</td>
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</tbody>
</table>

Values in bold are statistically significant at p<0.050. Mixed-effects models for repeated measures analysis was conducted using cross-sectional data from week 0 through week 24 combined and pooled across treatment groups (N=738). Variables were included in the final multivariate model based on association with all WPAI-PsA domains (p<0.10) in univariate analyses and evaluation of collinearity between variables.

^a p=0.0498

CRP, C-reactive protein; FACIT-F, Functional Assessment of Chronic Illness Therapy-Fatigue; PASI, Psoriasis Area and Severity Index; SJC, swollen joint count; TJC, tender joint count; VAS, visual analog scale; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis
FIGURES

Figure 1. LS mean change from baseline through week 52 in WPAI-PsA absenteeism (a), presenteeism (b), work productivity loss (c), and nonwork activity impairment (d).

*p<0.05 vs placebo. Least squares (LS) mean changes from baseline were determined using an analysis of covariance model with baseline WPAI-PsA score, prior use of nonbiologic DMARDs (yes/no), and baseline CRP level (<2.0/≥2.0 mg/dL) as explanatory factors. GUS, guselkumab; LS, least squares; PBO, placebo; Q4W, every 4 weeks; Q8W, every 8 weeks; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis
Figure 2. Proportions of patients who achieved improvements in WPAI-PsA work productivity loss ≥15% (a) or nonwork activity impairment ≥20% (b) through week 52.

For panel A, patients with a baseline work productivity impairment ≥15% were included in the analysis. For panel B, patients with a baseline nonwork activity impairment ≥20% were included in the analysis. P-values are versus placebo.

GUS, guselkumab; Q4W, every 4 weeks; Q8W, every 8 weeks; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis
Figure 3. Employment shift analyses among patients who were unemployed (a) and employed (b) at baseline.

GUS, guselkumab; PBO, placebo; Q4W, every 4 weeks; Q8W, every 8 weeks; W, week

*p<0.05 versus W16; †Missing values were ≤3.3%.
Analyses were based observed baseline data pooled across treatment groups (N=738).

BMI, body mass index; CRP, C-reactive protein; EQ-5D-5L, EuroQol-5 dimension-5 level; EQ-VAS, EuroQol visual analog scale; FACIT-F, Functional Assessment of Chronic Illness Therapy-Fatigue; HAQ-DI, Health Assessment Questionnaire Disability Index; IGA, Investigator’s Global Assessment of psoriasis; MCS, mental component summary; PASI, Psoriasis Area and Severity Index; PCS, physical component summary; SF-36, Short Form 36
health survey; SJC, swollen joint count; TJC, tender joint count; VAS, visual analog scale; WPAI, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis

**Figure 5.** Estimated mean (SEM) indirect cost analysis of potential mean yearly savings due to reduced work productivity loss through week 52 in Europe (a), the United States (b), and Japan (c).
Europe includes France, Germany, Italy, Spain, and the United Kingdom. The average wage indicator for all countries is measured in USD constant prices using 2016 base year and Purchasing Power Parities for private consumption of the same year.

GUS, guselkumab; PBO, placebo; Q4W, every 4 weeks; Q8W, every 8 weeks; SEM, standard error of the mean; USD, United States dollars
SUPPLEMENTARY MATERIAL

Effect of Guselkumab on Work Productivity in Biologic-Naïve Patients With Active Psoriatic Arthritis Through Week 52 of the Phase 3, Randomized, Placebo-Controlled DISCOVER-2 Trial

Authors: Jeffrey R. Curtis,1 Iain B. McInnes,2 Proton Rahman,3 Dafna D. Gladman,4 Steven Peterson,5 Prasheen Agarwal,6 Feifei Yang,5 Alexa P. Kollmeier,7 Elizabeth C. Hsia,8,9 Natalie J. Shiff,10,11 Bei Zhou,6 Chenglong Han,12 May Shawi,13 William Tillett,14 Philip J. Mease15

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Supplementary Material Table S1. Final multivariate regression mixed models of association of patient variables with WPAI-PsA domains (sensitivity analysis excluding pain).

<table>
<thead>
<tr>
<th>Variable</th>
<th>Absenteeism</th>
<th>Presenteeism</th>
<th>Work Productivity Loss</th>
<th>Nonwork Activity Impairment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimate</td>
<td>P-value</td>
<td>Estimate</td>
<td>P-value</td>
</tr>
<tr>
<td>Age</td>
<td>-0.04</td>
<td>0.460</td>
<td>-0.26</td>
<td>0.0001</td>
</tr>
<tr>
<td>Female</td>
<td>1.00</td>
<td>0.421</td>
<td>-1.22</td>
<td>0.388</td>
</tr>
<tr>
<td>CRP level (mg/dL)</td>
<td><strong>0.92</strong></td>
<td><strong>0.010</strong></td>
<td><strong>1.73</strong></td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>FACIT-F (0-52)</td>
<td><strong>-0.42</strong></td>
<td><strong>&lt;0.001</strong></td>
<td><strong>-1.11</strong></td>
<td><strong>&lt;0.001</strong></td>
</tr>
<tr>
<td>PASI (0-72)</td>
<td>0.09</td>
<td>0.219</td>
<td>0.25</td>
<td>0.001</td>
</tr>
<tr>
<td>SJC (0-66)</td>
<td>0.10</td>
<td>0.334</td>
<td>0.08</td>
<td>0.480</td>
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<td>TJC (0-68)</td>
<td>-0.07</td>
<td>0.307</td>
<td><strong>0.24</strong></td>
<td><strong>0.001</strong></td>
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<td>Dactylitis (Yes/No)</td>
<td>-1.10</td>
<td>0.395</td>
<td>2.11</td>
<td>0.124</td>
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<tr>
<td>Enthesitis (Yes/No)</td>
<td>1.61</td>
<td>0.180</td>
<td><strong>2.74</strong></td>
<td><strong>0.031</strong></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>

Values in bold are statistically significant at p<0.050. Mixed-effects models for repeated measures analysis of cross-sectional data from week 0 through week 24 combined and pooled across treatment groups (N=738). Variables were included in the final multivariate model based on association with all WPAI-PsA domains (p<0.10) in univariate analyses and evaluation of collinearity between variables.

CRP, C-reactive protein; FACIT-F, Functional Assessment of Chronic Illness Therapy-Fatigue; SJC, swollen joint count; TJC, tender joint count; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis
Supplementary Material Figure S1. Patient disposition for the overall population (a) and by baseline employment status (b).

a

Randomized, treated, and provided WPAI-PsA data at baseline N=738

GUS 100 mg Q4W N=245
GUS 100 mg Q8W N=246
Placebo N=245

Any WPAI-PsA nonwork activity measurements at week 16, 24, or 52 N=733

GUS 100 mg Q4W N=242
GUS 100 mg Q8W N=246
Placebo N=245

WPAI-PsA nonwork activity impairment ≥20% at baseline N=701

GUS 100 mg Q4W N=236
GUS 100 mg Q8W N=234
Placebo N=231

b

Randomized, treated, and provided WPAI-PsA data at baseline N=738

Employed at baseline N=475

GUS 100 mg Q4W N=153
GUS 100 mg Q8W N=151
Placebo N=171

Unemployed at baseline N=263

GUS 100 mg Q4W N=153
GUS 100 mg Q8W N=151
Placebo N=171

Any WPAI-PsA absenteeism, presenteeism, or work productivity loss measurements at week 16, 24, or 52 N=455

GUS 100 mg Q4W N=145
GUS 100 mg Q8W N=147
Placebo N=163

WPAI-PsA work productivity loss impairment ≥15% at baseline N=394

GUS 100 mg Q4W N=130
GUS 100 mg Q8W N=126
Placebo N=138

GUS, guselkumab; Q4W, every 4 weeks; Q8W, every 8 weeks; WPAI-PsA, Work Productivity and Activity Impairment Questionnaire for Psoriatic Arthritis