Efficacy of guselkumab in subpopulations of patients with moderate-to-severe plaque psoriasis: a pooled analysis of the phase III VOYAGE 1 and VOYAGE 2 studies

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Summary

Background Significant advances have been made in the treatment of moderate-to-severe plaque psoriasis with biological therapies; however, these agents may not work equally in all populations.

Objectives To evaluate the efficacy of guselkumab in patient subgroups with moderate-to-severe psoriasis from the pooled guselkumab VOYAGE 1 and VOYAGE 2 phase III studies.

Methods Using data from the pooled VOYAGE 1 and VOYAGE 2 psoriasis studies, analyses were performed to evaluate the consistency of efficacy [Investigator’s Global Assessment (IGA) 0/1 (cleared or minimal psoriasis) and IGA 0 (cleared)] across subpopulations defined by demographics, baseline disease characteristics and previous psoriasis treatment.

Results A total of 1829 patients were randomized. Baseline demographics, disease characteristics and previous psoriasis treatment were comparable across treatment groups in the pooled population. Guselkumab, an anti-interleukin (IL)-23 monoclonal antibody that binds to the p19 subunit of IL-23, provided substantial benefit across almost all subpopulations, with greater proportions of patients achieving IGA 0/1 vs. placebo at week 16, and vs. adalimumab (an antitumour necrosis factor monoclonal antibody) at week 24. Patients treated with guselkumab achieved greater efficacy (IGA 0/1 and IGA 0) compared with adalimumab at week 24 across all weight quartiles, most notably among patients weighing ≥ 100 kg.

Conclusions This analysis demonstrates a high degree of efficacy with guselkumab treatment compared with placebo at week 16 and with adalimumab at week 24 among broad subpopulations of patients with varying baseline demographics, disease characteristics and previous psoriasis treatments.

What’s already known about this topic?
- Efficacy of biologics may vary among psoriasis subpopulations.

What does this study add?
- Guselkumab achieved superior efficacy vs. adalimumab across all subgroups of patients with psoriasis.
In the past decade, significant advances have been made in the treatment of moderate-to-severe plaque psoriasis with biological therapies, including inhibitors of tumour necrosis factor (TNF)-α, 1-3 interleukin (IL)-12/23, 4,5 IL-17 6-8 and IL-23.9-12 However, these agents may not work equally in all populations. Lower efficacy has been reported in patients with longer durations of psoriasis, a history of psoriatic arthritis or in individuals previously treated with or had failed treatments with biologics.5,13 Treatment response can also vary with ethnicity.14,15 Weight is also a critical variable that has been frequently reported to affect efficacy, as obesity is a common problem in patients with moderate-to-severe psoriasis. In particular, it has been challenging to achieve high efficacy with fixed-dose biologics in heavier patients.16-23

Clinical studies evaluating agents targeting the IL-23/IL-17 immune pathway have recently demonstrated that clear or almost clear skin is attainable in a high proportion of patients with psoriasis,6-12 allowing dermatologists to offer treatment options that provide patients with the outcomes that they most desire.24,25 Therefore, it is important for newer agents to provide high levels of clinical response across a broad spectrum of patient populations, and to try to identify subgroups of patients in which new treatments may be particularly more effective than the older alternatives.

Guselkumab, an IL-23 inhibitor that binds to the p19 subunit of IL-23, is highly efficacious and well tolerated in the treatment of moderate-to-severe plaque psoriasis.9,12,24 In two recent phase III studies, VOYAGE 19 and VOYAGE 212 guselkumab treatment (administered as a single 100-mg injection initially, 4 weeks later and subsequently every 8 weeks) resulted in statistically significant improvements in efficacy compared with placebo, and superiority to adalimumab (a TNF inhibitor). In the current report, we evaluated the consistency of efficacy of guselkumab across various subpopulations of patients with psoriasis using pooled data from the VOYAGE 19 and VOYAGE 212 trials. In these analyses, which combine data from these large, phase III head-to-head comparator trials, guselkumab was compared with placebo and adalimumab in subgroups defined by baseline demographics, psoriasis disease characteristics and previous psoriasis treatments. These data provide clinicians with a better understanding of how subgroups of patients with psoriasis may respond to guselkumab, and how they compare with responses to adalimumab.

**Patients and methods**

**Patients**

Detailed methodology and patient characteristics for the VOYAGE 19 and VOYAGE 212 studies have been reported previously. Major inclusion/exclusion criteria were identical for both studies. Patients were ≥ 18 years of age, had a diagnosis of plaque-type psoriasis for ≥ 6 months before the first administration of the study agent, had a baseline Psoriasis Area and Severity Index (PASI) score ≥ 12, Investigator’s Global Assessment (IGA) score ≥ 3, ≥ 10% involved body surface area, and had to be a candidate for phototherapy/systemic psoriasis treatments. The exclusion criteria have been described previously.9,12 The study protocols were approved by institutional review boards at each site, and all patients provided written informed consent prior to any study-related procedures.

**Efficacy assessments**

Efficacy was assessed through to week 24 using pooled data from VOYAGE 1 and VOYAGE 2 in the following subpopulations (detailed in Table 1): (i) baseline demographic characteristics (including weight); (ii) baseline psoriasis disease characteristics; and (iii) previous psoriasis treatments. End points included IGA 0/1 (cleared or minimal psoriasis) at week 16 compared with placebo (a primary end point in the VOYAGE 1 and VOYAGE 2 studies) and IGA 0 (no psoriasis; cleared) and IGA 0/1 at week 24 compared with adalimumab (two of the major secondary end points).

**Statistical analyses**

Analyses were performed on the pooled data for the identified subpopulations in the VOYAGE 1 and VOYAGE 2 studies for...
the end points described above. Differences in the proportion of patients achieving a clinical response and the associated 95% confidence intervals (CI) (provided when the number of patients was ≥ 10 in each treatment group) for the differences were calculated. Differences and 95% CIs were adjusted by study using Cochran–Mantel–Haenszel weights, whereas the proportions of responders were based on pooled data without adjustment by study. Data handling rules were the same as those used for the primary and major secondary analyses.9,12

Results

Patient baseline demographics, disease characteristics and previous psoriasis treatments

A total of 1829 patients were analysed in the pooled VOYAGE 19 and VOYAGE 212 studies. Baseline demographics, psoriasis disease characteristics and previous psoriasis treatments were comparable across the treatment groups of the pooled population (Table 1), and were similar to those for the treatment groups in the individual studies.9,12 Approximately 42% of the patients weighed > 90 kg (Table 1) and 26% weighed ≥100 kg, consistent with obesity, representing a common comorbidity among patients with moderate-to-severe psoriasis.

Efficacy results by subpopulations

Baseline demographic characteristics

Guselkumab provided a substantial benefit across diverse subgroups defined by demographic characteristics including sex, race, age, weight and body mass index (BMI). The lower limit of the 95% CI for all subgroups excluded 0, indicating that a greater proportion of patients in the guselkumab group achieved IGA 0/1 and IGA 0 responses at week 24 compared with the adalimumab group for all comparisons except for the black or African American subgroup (Fig. 2). However, the sample size was small for this group (guselkumab: n = 12; adalimumab: n = 13).

Efficacy responses across weight categories differed between treatment groups. The guselkumab group achieved higher clinical responses (IGA 0/1) compared with placebo at week 16 (Fig. S1; see Supporting Information) and the adalimumab group at week 24 (all 95% CI excluding 0) for all baseline weight strata, defined either by a cut-off of 90 kg or by weight quartiles (< 74.6 kg; ≥ 74.6 to < 86.4 kg; ≥ 86.4 to < 100 kg; and ≥ 100 kg) (Fig. 3), and most notably in patients weighing ≥100 kg. Although both compounds had lower response rates in heavier patients, responses were more consistent for guselkumab compared with adalimumab treatment across all weight quartiles and between the two strata (≤ 90 kg vs. > 90 kg).

Baseline disease characteristics

Statistically significant improvements in efficacy based on IGA 0/1 responses were observed for guselkumab compared with placebo at week 16 (Fig. S2; see Supporting Information), and in IGA 0/1 and IGA 0 (Fig. 4) responses compared with adalimumab at week 24, regardless of baseline disease characteristics. Furthermore, at week 24, the response rates for guselkumab were consistent for patients grouped by each of the baseline disease characteristics. Some of the differences observed in the treatment effect between guselkumab and adalimumab were because of high variability in the response rates of adalimumab (Fig. 4).

Previous psoriasis treatments

Previous psoriasis treatments received by patients participating in the VOYAGE 19 and VOYAGE 212 trials included: phototherapy [ultraviolet B or psoralen plus ultraviolet A

![Fig 1. Integrated study design.](https://example.com/figure1.png)

| Individual studies | Combined studies |
|-------------------|-----------------|
| VOYAGE 1 | VOYAGE 2 | VOYAGE 1 + VOYAGE 2 |
| n = | 329 | 496 | 825 |
| n = | 174 | 248 | 422 |
| n = | 334 | 248 | 582 |
| Total N = | 837 | 992 | 1829 |

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**Table 1** Baseline demographics, clinical disease characteristics, and previous psoriasis treatments for patients randomized at week 0

| Characteristics                              | Placebo       | Guselkumab    | Adalimumab   | Total          |
|----------------------------------------------|---------------|---------------|--------------|----------------|
| Patients randomized at week 0, n             | 422           | 825           | 582          | 1829           |
| Sex, men                                     | 292 (69-2)    | 589 (71-4)    | 419 (72-0)   | 1300 (71-1)    |
| Ethnicity                                    |               |               |              |                |
| White                                        | 351 (83-2)    | 670 (81-2)    | 477 (82-0)   | 1498 (81-9)    |
| Black or African American                    | 11 (2-6)      | 12 (1-5)      | 13 (2-2)     | 36 (2-0)       |
| Asian                                        | 50 (11-8)     | 123 (14-9)    | 84 (14-4)    | 257 (14-1)     |
| Other*                                       | 10 (2-4)      | 20 (2-4)      | 8 (1-4)      | 38 (2-1)       |
| Age, years                                   |               |               |              |                |
| Mean ± SD                                    | 43·9 ± 12·6   | 43·8 ± 12·4   | 43·0 ± 12·3  | 43·6 ± 12·4    |
| Median                                       | 44·0          | 44·0          | 43·0         | 44·0           |
| Weight, kg                                   |               |               |              |                |
| Mean ± SD                                    | 88·4 ± 21·9   | 89·3 ± 20·5   | 89·2 ± 21·5  | 89·1 ± 21·2    |
| Median                                       | 84·5          | 87·5          | 86·0         | 86·4           |
| < 90 kg                                      | 252 (59·7)    | 466 (56·5)    | 344 (59·3)   | 1062 (58·1)    |
| > 90 kg                                      | 170 (40·3)    | 359 (43·5)    | 236 (40·7)   | 765 (41·9)     |
| BMI, kg m⁻²                                   |               |               |              |                |
| Mean ± SD                                    | 29·3 ± 6·7    | 29·7 ± 6·4    | 29·7 ± 6·5   | 29·6 ± 6·5     |
| Median                                       | 28·1          | 28·6          | 28·4         | 28·4           |
| Normal (< 25)                                | 111 (26·3)    | 184 (22·3)    | 140 (24·1)   | 435 (23·8)     |
| Overweight (25 to < 30)                      | 151 (35·8)    | 308 (37·3)    | 198 (34·1)   | 657 (36·0)     |
| Obese (≥ 30)                                 | 160 (37·9)    | 333 (40·4)    | 242 (41·7)   | 735 (40·2)     |
| Psoriasis disease duration, years            |               |               |              |                |
| Mean ± SD                                    | 17·8 ± 12·1   | 17·9 ± 12·1   | 17·3 ± 11·4  | 17·7 ± 11·9    |
| Median                                       | 15·0          | 16·0          | 15·0         | 15·0           |
| Patients with psoriatic arthritis at baseline| 76 (18·0)     | 153 (18·5)    | 106 (18·2)   | 335 (18·3)     |
| BSA, % involvement                           |               |               |              |                |
| Mean ± SD                                    | 27·1 ± 16·3   | 28·4 ± 16·7   | 28·8 ± 16·7  | 28·2 ± 16·6    |
| Median                                       | 21·0          | 23·0          | 24·0         | 23·0           |
| PASI score (0–72)                            |               |               |              |                |
| Mean ± SD                                    | 21·1 ± 8·3    | 22·0 ± 9·1    | 22·1 ± 9·0   | 21·8 ± 8·9     |
| Median                                       | 18·3          | 19·0          | 19·5         | 19·0           |
| IGA score                                    |               |               |              |                |
| Moderate (3)                                  | 322 (76·3)    | 632 (76·6)    | 436 (74·9)   | 1390 (76·0)    |
| Severe (4)                                    | 100 (23·7)    | 192 (23·3)    | 143 (24·6)   | 435 (23·8)     |
| Phototherapy, ever used                      | 223 (52·8)    | 481 (58·4)    | 315 (54·2)   | 1019 (55·8)    |
| Systemic therapy, ever used                  | 241 (57·1)    | 541 (65·6)    | 374 (64·3)   | 1156 (63·2)    |
| Biologics, ever used                         | 88 (20·9)     | 172 (20·8)    | 119 (20·4)   | 379 (20·7)     |

Values are presented as n (%) unless otherwise indicated. BMI, body mass index; BSA, body surface area; PASI, Psoriasis Area and Severity Index; IGA, Investigator’s Global Assessment. *Other includes: American Indian or Alaska Native (n = 5); Native Hawaiian or other Pacific Islander (n = 6); other (n = 20); multiple (n = 7). ^Because of missing data for weight and BMI in the adalimumab group n = 580 and total n = 1827. †Because of missing data for phototherapy in the guselkumab group n = 824, in the adalimumab group n = 581 and total n = 1827. #Phototherapy includes psoralen plus ultraviolet A (PUVA) or ultraviolet B. ^Systemic therapies include PUVA, methotrexate, cyclosporin, acitretin, apremilast or tofacitinib. Biologics includes etanercept, infliximab, alefacept, efalizumab, ustekinumab, briakinumab, secukinumab, ixekizumab or brodalumab.

(PUVA)]; systemic therapy (PUVA, methotrexate, cyclosporin, acitretin, apremilast or tofacitinib); and biologics (including etanercept, infliximab, alefacept, efalizumab, ustekinumab, briakinumab, secukinumab, ixekizumab or brodalumab). Statistically significant improvements in IGA 0/1 responses were observed with guselkumab compared with placebo at week 16 (Fig. S3; see Supporting Information), and in IGA 0 and IGA 0/1 responses compared with adalimumab at week 24 (Fig. 5), regardless of previous psoriasis treatments.

**Discussion**

This analysis of the pooled subpopulations of VOYAGE 1⁹ and VOYAGE 2¹² demonstrates that high levels of efficacy were achieved with guselkumab treatment across all subgroups defined by different baseline demographics, disease characteristics and previous psoriasis treatments. In addition, among all subpopulations, guselkumab was superior to placebo at week 16, and superior to adalimumab at week 24 for all but one
| Baseline age (years) | IGA 0/1 | Adalimumab | Guselkumab | Difference and 95% CI | Guselkumab vs. adalimumab | Clearing (0) or minimal (1) | Clearing (0) | Adalimumab | Guselkumab |
|---------------------|---------|------------|------------|-----------------------|---------------------------|-----------------------------|---------------|------------|------------|
| < 45                | -       | -          | -          | -                     | -                         | 582 (63.1)                   | 582 (30.2)    | 825 (83.8) | 825 (52.1) |
| ≥ 45 to < 65        | -       | -          | -          | -                     | -                         | 419 (63.3)                   | 419 (30.1)    | 589 (83.9) | 589 (52.0) |
| ≥ 65                | -       | -          | -          | -                     | -                         | 163 (61.3)                   | 163 (30.7)    | 236 (83.5) | 236 (52.5) |
| Baseline weight (kg) | IGA 0   | Adalimumab | Guselkumab | Difference and 95% CI | Guselkumab vs. adalimumab | Clearing (0) or minimal (1) | Clearing (0) | Adalimumab | Guselkumab |
| ≤ 90                | -       | -          | -          | -                     | -                         | 477 (62.3)                   | 477 (31.2)    | 670 (84.6) | 670 (53.3) |
| > 90                | -       | -          | -          | -                     | -                         | 13 (69.2)                    | 13 (30.8)     | 12 (86.7)  | 12 (58.3)  |
| Baseline weight by quartiles (kg) | IGA 0 | Adalimumab | Guselkumab | Difference and 95% CI | Guselkumab vs. adalimumab | Clearing (0) or minimal (1) | Clearing (0) | Adalimumab | Guselkumab |
| < 74.6              | -       | -          | -          | -                     | -                         | 27 (55.6)                    | 27 (11.1)     | 41 (80.5)  | 41 (46.3)  |
| ≥ 74.6 to < 86.4    | -       | -          | -          | -                     | -                         | 321 (62.9)                   | 321 (30.8)    | 432 (87.0) | 432 (56.9) |
| ≥ 86.4 to < 100     | -       | -          | -          | -                     | -                         | 234 (64.1)                   | 234 (31.6)    | 352 (80.1) | 352 (46.9) |
| ≥ 100               | -       | -          | -          | -                     | -                         | 27 (55.6)                    | 27 (11.1)     | 41 (80.5)  | 41 (46.3)  |
| Baseline BMI | IGA 0/1 | Adalimumab | Guselkumab | Difference and 95% CI | Guselkumab vs. adalimumab | Clearing (0) or minimal (1) | Clearing (0) | Adalimumab | Guselkumab |
| Normal (<25)        | -       | -          | -          | -                     | -                         | 344 (72.4)                   | 344 (38.4)    | 466 (86.5) | 466 (57.3) |
| Overweight          | -       | -          | -          | -                     | -                         | 236 (50.0)                   | 236 (18.6)    | 359 (80.2) | 359 (45.4) |
| (25 to < 30)        | -       | -          | -          | -                     | -                         | 234 (62.5)                   | 234 (31.6)    | 352 (80.1) | 352 (46.9) |
| Obese (≥30)         | -       | -          | -          | -                     | -                         | 155 (45.2)                   | 155 (16.8)    | 207 (78.3) | 207 (44.0) |

* Other ethnicities were not listed due to the small sample sizes.

Fig 2. Proportion of patients achieving an Investigator’s Global Assessment (IGA) score of 0/1 or IGA 0 at week 24 by baseline demographics. CI, confidence interval; BMI, body mass index.

![Fig 3](image-url)  
Fig 3. Efficacy assessments by weight. Proportion of patients achieving an Investigator’s Global Assessment (IGA) score of (a) 0/1 or (b) IGA 0 at week 24 by weight.
subpopulation (black or African American population), which included few patients, using rigorous skin response criteria of clear or near clear skin. The efficacy in the pooled subpopulations was similar to the overall efficacy in each primary study. The uniformity and high proportions of patients responding in the subpopulations are notable, with

| Proportion of patients achieving IGA score at week 24 | Cleared (0) or minimal (1) | Cleared (0) | n (%) | n (%) | n (%) | n (%) |
|-----------------------------------------------------|-----------------------------|-------------|-------|-------|-------|-------|
| All patients                                        | Guselkumab vs. adalimumab   | Adalimumab  | n (%) | n (%) | n (%) | n (%) |
| Psoriasis duration (years)                          |                             |             |       |       |       |       |
| < 15                                                | 582 (63.1)                  | 825 (83.8)  | 582 (30.2) | 825 (52.1) |
| ≥ 15                                                | 281 (61.9)                  | 369 (83.7)  | 281 (28.7) | 369 (52.6) |
| PsA at baseline                                     |                             |             |       |       |       |       |
| Yes                                                 | 106 (53.8)                  | 153 (82.4)  | 106 (28.3) | 153 (51.6) |
| No                                                  | 476 (65.1)                  | 672 (84.1)  | 476 (30.7) | 672 (52.2) |
| Baseline BSA                                         |                             |             |       |       |       |       |
| < 20%                                                | 222 (56.8)                  | 309 (86.4)  | 222 (24.8) | 309 (54.0) |
| ≥ 20%                                                | 360 (66.9)                  | 516 (82.2)  | 360 (33.6) | 516 (51.0) |
| Baseline PASI score                                  |                             |             |       |       |       |       |
| < 20%                                                | 305 (60.0)                  | 462 (84.8)  | 305 (27.2) | 462 (54.1) |
| ≥ 20%                                                | 277 (66.4)                  | 363 (82.4)  | 277 (33.6) | 363 (49.6) |
| Baseline IGA score                                   |                             |             |       |       |       |       |
| < 4                                                  | 439 (66.5)                  | 633 (83.9)  | 439 (29.8) | 633 (53.9) |
| ≥ 4                                                  | 143 (52.4)                  | 192 (83.3)  | 143 (31.5) | 192 (46.4) |

Fig 4. Proportion of patients achieving an Investigator’s Global Assessment (IGA) score of 0/1 or IGA 0 at week 24 by baseline disease characteristics. CI, confidence interval; PsA, psoriatic arthritis; BSA, body surface area; PASI, Psoriasis Area and Severity Index.

| Proportion of patients achieving IGA score at week 24 | Cleared (0) or minimal (1) | Cleared (0) | n (%) | n (%) | n (%) | n (%) |
|-----------------------------------------------------|-----------------------------|-------------|-------|-------|-------|-------|
| All patients                                        | Guselkumab vs. adalimumab   | Adalimumab  | n (%) | n (%) | n (%) | n (%) |
| Phototherapy (UVB or PUVA)                          |                             |             |       |       |       |       |
| Never used                                          | 266 (59.8)                  | 343 (84.0)  | 266 (28.6) | 343 (51.0) |
| Ever used                                           | 315 (65.7)                  | 481 (83.6)  | 315 (31.4) | 481 (52.8) |
| Systemic therapy*                                   |                             |             |       |       |       |       |
| Never used                                          | 208 (60.6)                  | 284 (82.7)  | 208 (30.8) | 284 (51.4) |
| Ever used                                           | 374 (64.4)                  | 541 (84.3)  | 374 (29.9) | 541 (52.5) |
| Biologics†                                          |                             |             |       |       |       |       |
| Never used                                          | 463 (66.3)                  | 653 (84.7)  | 463 (30.9) | 653 (53.3) |
| Ever used                                           | 119 (50.4)                  | 172 (80.2)  | 119 (27.7) | 172 (47.7) |

* Systemic therapy included: psoralen plus ultraviolet A (PUVA), methotrexate, cyclosporine, acitretin, apremilast, or tofacitinib.
† Biologics included: etanercept, infliximab, alafacept, efalizumab, ustekinumab, briakinumab, secukinumab, ixekizumab, or brodalumab.

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guselkumab response rates of approximately 80% for IGA 0/1 and approximately 50% for IGA 0.

Efficacy is generally lower in patients who weighed more with fixed-dose biologics, such as secukinumab,17 which targets IL-17A, and ustekinumab.23 This issue is addressed with a higher dose of ustekinumab in patients weighing ≥ 100 kg.22 The current analysis confirms that adalimumab administered at labelled dosing displays lower efficacy in higher weight patients, while the 100-mg dose of guselkumab demonstrated a more consistent response among lighter and heavier patients. This is especially relevant as approximately 42% of the study population at baseline weighed greater than 90 kg and 26% weighed 100 kg or more, consistent with the recognized prevalence of obesity among patients with psoriasis.3,29

Although multiple biologics for psoriasis are available, many patients still experience residual disease and impaired functioning.30 With established psoriasis biologics, especially anti-TNF agents, dose escalation is common and discontinuation rates are high.31,32 New agents should demonstrate an advantage regarding efficacy and/or safety compared with existing agents. Additionally, it is important for new therapies to demonstrate high levels of efficacy across a broad spectrum of patient populations.

These analyses provide evidence indicating that guselkumab achieves high levels of clinical response across subpopulations of patients defined by widely varying demographics and disease characteristics, including patients who are heavier. These pooled analyses were limited by the duration of 24 weeks based on the study designs of VOYAGE 19 and VOYAGE 2.12 In addition, no pooled safety analysis was presented here; safety data from both studies have been previously reported.9,12

In summary, guselkumab administered at a dose of 100 mg at weeks 0, 4, and every 8 weeks thereafter, provided high response rates that were superior to placebo and adalimumab across subpopulations of patients with varying demographic features (including weight), psoriasis disease characteristics and previous psoriasis treatments. These data will assist dermatologists in optimizing their approach to biological therapy for psoriasis and outcomes for their diverse patient populations.

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Supporting Information

Additional Supporting Information may be found in the online version of this article at the publisher’s website:

- Fig S1. Proportion of patients achieving an Investigator’s Global Assessment score of 0/1 at week 16 by baseline demographics.
- Fig S2. Proportion of patients achieving an Investigator’s Global Assessment score of 0/1 at week 16 by baseline disease characteristics.
- Fig S3. Proportion of patients achieving an Investigator’s Global Assessment score of 0/1 at week 16 by previous psoriasis treatment.
- Video S1 Author video.
- Powerpoint S1. Journal Club Slide Set.