# Patient Preferences for Features of Systemic Atopic Dermatitis Therapies: A Discrete-Choice Experiment Study

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## OBJECTIVE

To assess patient preferences regarding the attributes of systemic AD treatment using a discrete-choice experiment (DCE) in the United States

## CONCLUSIONS

Patients with AD prefer systemic treatments that provide greater itch improvement, greater likelihood of clear or almost clear skin, and faster itch reduction for the range of improvements studied

Acne and serious infection risk were relatively less important for the risk ranges studied

Greater understanding of patient preferences can enable healthcare providers and decision makers to select treatment options that align with patients' treatment goals while appropriately balancing associated risks

AbbVie Inc. participated in the study design; study research; collection, analysis, and interpretation of data; and writing, reviewing, and approving this e-poster. All authors had access to the data; participated in the development, review, and approval of the e-poster; and agreed in the decision to submit this e-poster to the 3rd Annual Revolutionizing Atopic Dermatitis Conference. AbbVie and the authors thank all the study investigators for their contributions and the patients who participated in these studies. AbbVie funded the research for this study and provided writing support for this e-poster. Medical writing assistance, funded by AbbVie, was provided by Lamara D. Shrode, PhD, ISMPP CPP™, of JB Ashtin.

SK is an advisory board member/consultant for AbbVie, Celldex Therapeutics, Galderma, Incyte Corporation, Johnson & Johnson, Novartis Pharmaceuticals Corporation, Pfizer, Regeneron Pharmaceuticals, Sanofi, and Kiniksa Pharmaceuticals, and has served as an investigator for Galderma, Pfizer, and Sanofi. PL has received research grants/funding from Regeneron/Sanofi Genzyme, AOBiome, and AbbVie; is on the speaker's bureau for Regeneron/Sanofi Genzyme, LEO Pharma, Incyte, Eli Lilly, Pfizer, and Galderma; reports consulting/advisory boards for Almirall, ASLAN Pharmaceuticals, Dermavant, Regeneron/Sanofi Genzyme, Pfizer, LEO Pharma, AbbVie, Kiniksa, Eli Lilly, Menlo Therapeutics, Galderma, IntraDerm, Exeltis, and Realm Therapeutics. SW is a speaker, advisory board member, and/or investigator for AbbVie, Janssen, Kymab, LEO Pharma, Eli Lilly, Novartis, Pfizer, Regeneron, and Sanofi-Genzyme. He has received research grants from La Roche Posay, LEO Pharma, Pfizer, and Sanofi Germany. WB and CM are employees of RTI Health Solutions, which received funding from AbbVie to conduct the study. BC, BL, and JD are full-time employees of AbbVie, and may own AbbVie stock or options.

## References

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*Presented at the 3rd Annual Revolutionizing Atopic Dermatitis (RAD) Virtual Conference, December 11–13, 2021*

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## INTRODUCTION

- Atopic dermatitis (AD) is a chronic skin disorder characterized by dry skin, eczematous lesions, pruritus, and skin pain
- With the development of new systemic therapies, physician understanding of the relative importance of treatment attributes to patients can help guide treatment decisions[1]

## METHODS

- An online DCE survey was conducted among adults (aged ≥18 years) with AD in the United States
  - Full fractional design contained 72 DCE questions, which were used to create 8 blocks of 9 questions; respondents were randomly assigned to 1 block of 9 randomly ordered questions to avoid ordering effect
  - A DCE survey instrument and experimental design were developed following good research practice guidelines[2,3]
- Respondents were asked to assume their doctor had offered a new medicine to treat their AD and were instructed to choose between a series of 2 hypothetical AD treatments characterized by 6 treatment-related attributes with varying levels **(Table 1)**
  - Preference weights were estimated by a random-parameters logit (RPL) model[4]
  - Conditional relative importance was assessed for each attribute across its specified range
- RPL model estimates were used to estimate the minimum acceptable benefit specified as an improvement in itch for worse levels of other treatment attributes
- RPL model estimates were also used to calculate the maximum acceptable risks of treatment-related adverse events for specific changes in other treatment attributes

### Table 1. Attributes and Levels for the Choice Questions

| Attribute | Levels Used to Create Hypothetical Treatment |
|---|---|
| Improvement in level of itch after 4 months of treatment | 100%<br>80%<br>30%<br>10% |
| Time until a noticeable itch reduction after treatment starts | 1 day<br>2 days<br>7 days<br>14 days |
| Separate from itch improvement, the chance of clear or almost clear skin after using the medicine for 4 months | 700 of 1000 people (70%)<br>550 of 1000 people (55%)<br>300 of 1000 people (30%)<br>50 of 1000 people (5%) |
| Annual risk of a serious infection from treatment | 0 of 1000 people (0%)<br>8 of 1000 people (0.8%)<br>20 of 1000 people (2%)<br>50 of 1000 people (5%) |
| Annual risk of developing acne from treatment | 0 of 1000 people (0%)<br>50 of 1000 people (5%)<br>160 of 1000 people (16%)<br>250 of 1000 people (25%) |
| Need to use prescription topical steroids | No<br>Yes |

## RESULTS

- 200 respondents participated in the survey **(Table 2)**

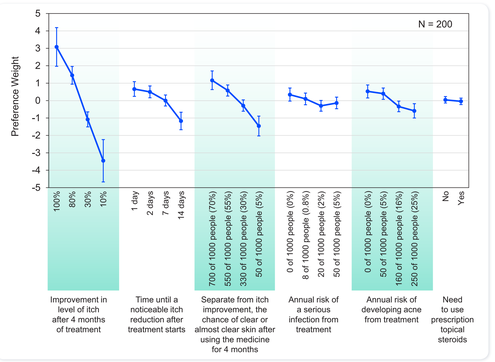
### Table 2. Respondent Demographics and Disease Characteristics

| Parameter | N = 200 |
|---|---|
| Age, years, median (range) | 44.0 (18, 72) |
| Sex, n (%) | |
| *Female* | 119 (59.5) |
| *Male* | 81 (40.5) |
| Race or ethnicity,[a] n (%) | |
| *White or Caucasian* | 99 (49.5) |
| *Black or African American* | 47 (23.5) |
| *Hispanic or Latino* | 30 (15.0) |
| *Asian* | 14 (7.0) |
| *Middle Eastern/North African* | 2 (1.0) |
| *Native Hawaiian/Pacific Islander* | 2 (1.0) |
| *American Indian/Alaska Native* | 0 |
| *Other* | 7 (3.5) |
| *Prefer not to answer* | 12 (6.0) |
| Severity of AD symptoms | |
| *Absent* | 17 (8.5) |
| *Minimal* | 17 (8.5) |
| *Mild* | 17 (8.5) |
| *Moderate* | 77 (38.5) |
| *Moderately severe* | 10 (5.0) |
| *Severe* | 42 (21.0) |
| *Very severe* | 20 (10.0) |
| Body surface area affected, n (%) | |
| *≤2%* | 83 (41.5) |
| *3%–10%* | 92 (46.0) |
| *>10%* | 22 (11.0) |
| Worst pruritus NRS during the past 7 days[b] | |
| *Mean (SD)* | 5.7 (2.9) |
| *Median (range)* | 6.0 (0, 10) |
| Days of itch during the last week | |
| *No days* | 19 (9.5) |
| *1–2 days* | 51 (25.5) |
| *3–4 days* | 51 (25.5) |
| *5–6 days* | 22 (11.0) |
| *Every day* | 57 (28.5) |

[a]Respondents could provide multiple responses; totals may exceed the total number of respondents.
[b]Numerical rating scale of 0 to 10, with 0 being "no itch" and 10 being "worst imaginable itch."
At the time of the survey, 15 (7.5%) respondents rated their itch to be 0 during the past 7 days.
AD, aotopic dermatitis; NRS, numeric rating scale.

- Preference weights of the treatment attributes are shown in **Figure 1**
  - Overall, respondents preferred treatment:
    - With greater improvement in itch after 4 months
    - That acts sooner in terms of itch reduction
    - That provides a greater chance of clear or almost clear skin after 4 months
    - With less annual risk of developing acne from treatment
    - With less annual risk of serious infection
  - Respondents were generally indifferent regarding treatment that requires use of topical steroids

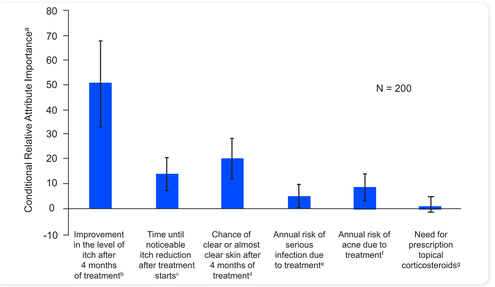
### Figure 1. Attribute Preference Weights for Respondents




The parameter estimates are the preference weights corresponding to the effects-coded attribute levels. The effects-coded variables are categorical variables ranging from −1 to 1. The preference weights corresponding to the effects-coded variables are log odds, which are distributed symmetrically around zero. The vertical bars surrounding each mean preference weight denote the 95% confidence interval of the point estimate.

- Conditional relative importance estimates indicated that improving itch from a 10% to 100% improvement was the most important change to patients given the range of levels included in the study **(Figure 2)**
  - Improvement in itch was followed by a change in the chance of clear or almost clear skin from 5% to 70%, faster itch relief in 1 day instead of 14 days, avoiding 25% risk of acne, avoiding a 5% risk of serious infection, and avoiding the need for prescription topical corticosteroids

### Figure 2. Conditional Relative Attribute Importance for Respondents




[a]A greater value represented a greater importance to patients, conditional on the attributes and levels included in the survey. [b]Improvement in itch was assessed from levels of 10% to 100%. [c]Time until itch reduction was noticeable was assessed from levels of 1 to 14 days. [d]Chance of clear or almost clear skin was assessed from levels of 5% to 70%. [e]Annual risk of a serious infection due to treatment was assessed from levels of 0% to 5%. [f]Annual risk of acne due to treatment was assessed from levels of 0% to 25%. [g]Need for topical corticosteroids was assessed from levels of "yes" or "no." Vertical bars surrounding each relative importance weight estimate denotes the 95% CI around the point estimate (computed by the delta method).

- Minimum acceptable benefits analyses indicated that respondents on average required an increase in itch improvement of 25 percentage points to accept a decreased chance of clear or almost clear skin from 70% to 5%; an increase in itch improvement of 15 percentage points to accept an increase in time until noticeable itch improvement after starting the medicine from 1 day to 14 days; and an increase in itch improvement of 9 percentage points to accept an increased acne risk from 0% to 25% **(Table 3)**

### Table 3. Minimum Acceptable Benefit as a Percentage-Point Increase in Improvement in Level of Itch after 4 Months of Treatment for a Given Change in Treatment Attributes

| Attribute | From Level | To Level | MAB |
|---|---|---|---|
| Time until a noticeable itch reduction after treatment starts | 1 day | 2 days | 1.38 (-3.23, 6.00) |
| | 1 day | 7 days | 5.55 (0.96, 10.15) |
| | 1 day | 14 days | 15.42 (9.00, 21.84) |
| | 2 days | 7 days | 4.17 (-0.09, 8.43) |
| | 2 days | 14 days | 14.04 (8.07, 20.01) |
| | 7 days | 14 days | 9.87 (4.37, 15.37) |
| Separate from itch improvement, the chance of clear or almost clear skin after using the medicine for 4 months | 700 of 1000 people (70%) | 550 of 1000 people (55%) | 4.88 (-0.16, 9.93) |
| | 700 of 1000 people (70%) | 300 of 1000 people (30%) | 12.22 (6.16, 18.27) |
| | 700 of 1000 people (70%) | 50 of 1000 people (5%) | 24.93 (5.54, 44.32) |
| | 550 of 1000 people (55%) | 300 of 1000 people (30%) | 7.33 (2.67, 12.00) |
| | 550 of 1000 people (55%) | 50 of 1000 people (5%) | 17.22 (10.67, 23.77) |
| | 300 of 1000 people (30%) | 50 of 1000 people (5%) | 9.89 (4.30, 15.47) |
| Annual risk of a serious infection from treatment | 0 of 1000 people (0%) | 8 of 1000 people (0.8%) | 2.08 (-2.77, 6.92) |
| | 0 of 1000 people (0%) | 20 of 1000 people (2%) | 5.43 (0.42, 10.44) |
| | 0 of 1000 people (0%) | 50 of 1000 people (5%) | 4.06 (-1.12, 9.25) |
| | 8 of 1000 people (0.8%) | 20 of 1000 people (2%) | 3.36 (-1.23, 7.94) |
| | 8 of 1000 people (0.8%) | 50 of 1000 people (5%) | 1.99 (-2.77, 6.75) |
| | 20 of 1000 people (2%) | 50 of 1000 people (5%) | NA[a] |
| Annual risk of developing acne from treatment | 0 of 1000 people (0%) | 50 of 1000 people (5%) | 1.10 (-3.30, 5.50) |
| | 0 of 1000 people (0%) | 160 of 1000 people (16%) | 7.27 (2.52, 12.03) |
| | 0 of 1000 people (0%) | 250 of 1000 people (25%) | 9.41 (4.01, 14.80) |
| | 50 of 1000 people (5%) | 160 of 1000 people (16%) | 6.18 (1.65, 10.70) |
| | 50 of 1000 people (5%) | 250 of 1000 people (25%) | 8.31 (3.44, 13.18) |
| | 160 of 1000 people (16%) | 250 of 1000 people (25%) | 2.13 (-2.37, 6.63) |
| Need to use prescription topical steroids | No | Yes | 0.70 (-2.39, 3.79) |

MAB, minimum acceptable benefit; NA, not available.
[a]MAB is undefined because none of the attribute levels affected treatment choices.

- Maximum acceptable risk analyses indicated that respondents on average were willing to accept a >5% serious infection risk to achieve almost every improvement offered in the DCE choice tasks, such as a 20 percentage-point increase in itch reduction from 10% to 30%, a 5-day reduction in time to itch improvement from 7 days to 2 days, or a 15 percentage-point increase in the chance of achieving clear or almost clear skin from 55% to 70% **(Table 4)**

### Table 4. Maximum Acceptable Risk of Serious Infection from Treatment for a Given Change in Treatment Attributes

| Attribute | From Level | To Level | MAR |
|---|---|---|---|
| Improvement in level of itch after 4 months of treatment | 80% | 100% | >5% (NA) |
| | 30% | 100% | >5% (NA) |
| | 10% | 100% | >5% (NA) |
| | 30% | 80% | >5% (NA) |
| | 10% | 80% | >5% (NA) |
| | 10% | 30% | >5% (NA) |
| Time until a noticeable itch reduction after treatment starts | 2 days | 1 day | 0.53 (-1.73, 2.80) |
| | 7 days | 1 day | >5% (NA) |
| | 14 days | 1 day | >5% (NA) |
| | 7 days | 2 days | >5% (NA) |
| | 14 days | 2 days | >5% (NA) |
| | 14 days | 7 days | >5% (NA) |
| Separate from itch improvement, the chance of clear or almost clear skin after using the medicine for 4 months | 550 of 1000 people (55%) | 700 of 1000 people (70%) | >5% (NA) |
| | 300 of 1000 people (30%) | 700 of 1000 people (70%) | >5% (NA) |
| | 50 of 1000 people (5%) | 700 of 1000 people (70%) | >5% (NA) |
| | 300 of 1000 people (30%) | 550 of 1000 people (55%) | >5% (NA) |
| | 50 of 1000 people (5%) | 550 of 1000 people (55%) | >5% (NA) |
| | 50 of 1000 people (5%) | 300 of 1000 people (30%) | >5% (NA) |
| Annual risk of developing acne from treatment | 50 of 1000 people (5%) | 0 of 1000 people (0%) | 0.42 (-1.45, 2.30) |
| | 160 of 1000 people (16%) | 0 of 1000 people (0%) | >5% (NA) |
| | 250 of 1000 people (25%) | 0 of 1000 people (0%) | >5% (NA) |
| | 160 of 1000 people (16%) | 50 of 1000 people (5%) | >5% (NA) |
| | 250 of 1000 people (25%) | 50 of 1000 people (5%) | >5% (NA) |
| | 250 of 1000 people (25%) | 160 of 1000 people (16%) | 0.92 (-12.16, 14.01) |
| Need to use prescription topical steroids | Yes | No | 0.27 (-1.06, 1.60) |

MAR, maximum acceptable risk; NA, not available.

- Subgroup analyses showed no notable differences in preferences based on AD location, history of acne, body surface area, or severity (moderate or severe)