# The PASI-HD Improved Precision in Measuring Disease Severity in Subjects With Mild to Moderate Plaque Psoriasis Treated with Roflumilast Cream, a Phosphodiesterase-4 Inhibitor

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# PASI-HD is a new assessment developed to more precisely measure severity of psoriasis patients in regions where the area of involvement is <10%

**Psoriasis Area and Severity Index (PASI)** is a gold standard measure in psoriasis clinical trials but lacks sensitivity in affected areas <10%

- It does not distinguish disease regardless of severity in cases of low Body Surface Area (BSA)
- Area of involvement of the body region is estimated and given a score. For areas <10%, the score is 1 regardless if the area affected is 1% or 9%

**PASI-HD** is proposed as a modification to the PASI to provide higher discrimination of the effects of treatment in areas with <10% involvement

- Areas of involvement in <10% of the anatomical region are given a score of 0.1 to 0.9 (versus a score of 1 with PASI)
- Areas of involvement >10% of the anatomical region were rated as normal

> This post-hoc analysis evaluated the precision of PASI-HD by assessing PASI and PASI-HD scores by percent area involvement and severity scores in a randomized, vehicle-controlled, double-blind, phase 2b, 12-week study of once-daily roflumilast cream, a potent, non-steroidal phosphodiesterase-4 (PDE-4) inhibitor[1]

## PASI underestimates the treatment effect in patients where the percent area of involvement is <10%



**Proportion of Patients Achieving a PASI-75** / **Proportion of Patients Achieving a PASI-HD75**

Roflumilast 0.3% (n=109) · Roflumilast 0.15% (n=113) · Vehicle (n=109)
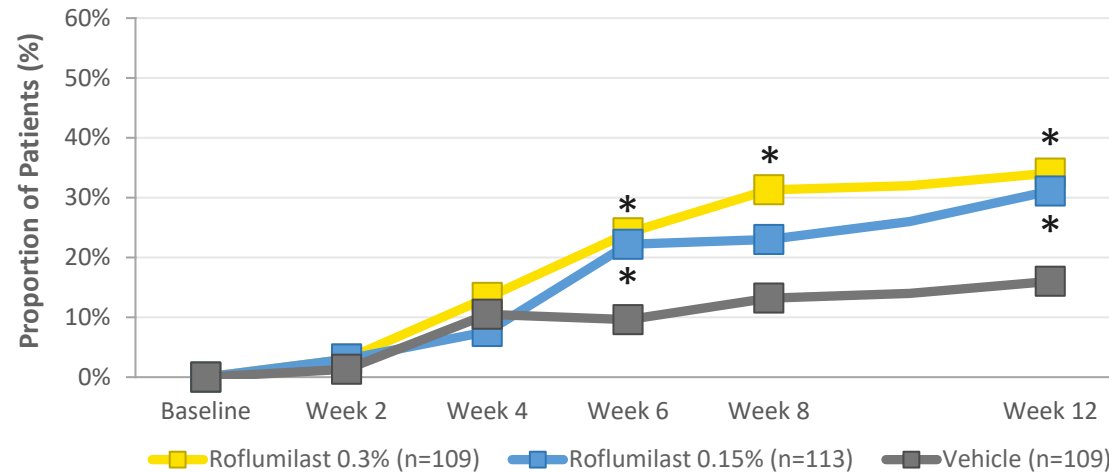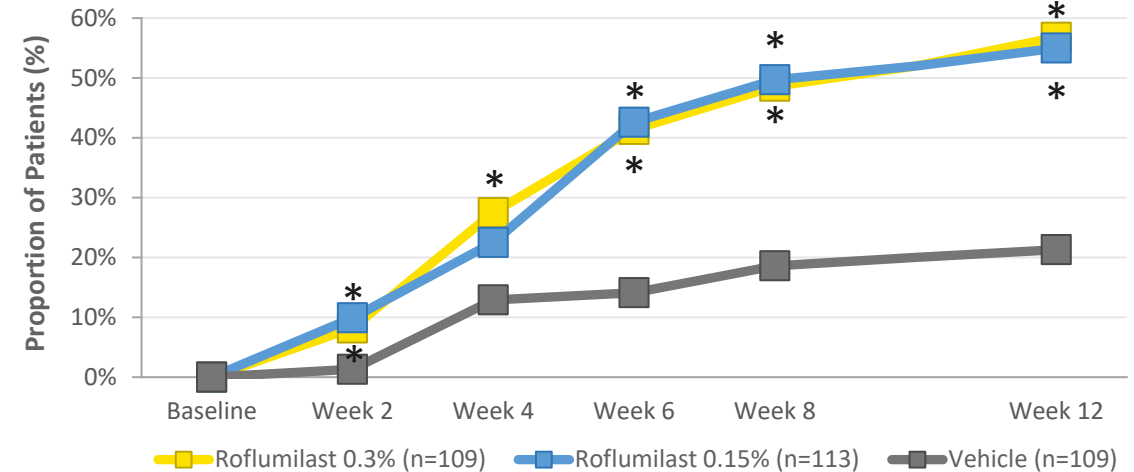
*P<0.05 vs vehicle. Data are presented for intent-to-treat population. CI: confidence interval; LS: least squares; PASI: Psoriasis Area and Severity Index.

1. Lebwohl MG et al. NEJM 2020;383:229-39

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# The distribution of scores for PASI-HD is wider and median score lower than PASI representing the more precise measurement where percent area involvement is small

## Baseline
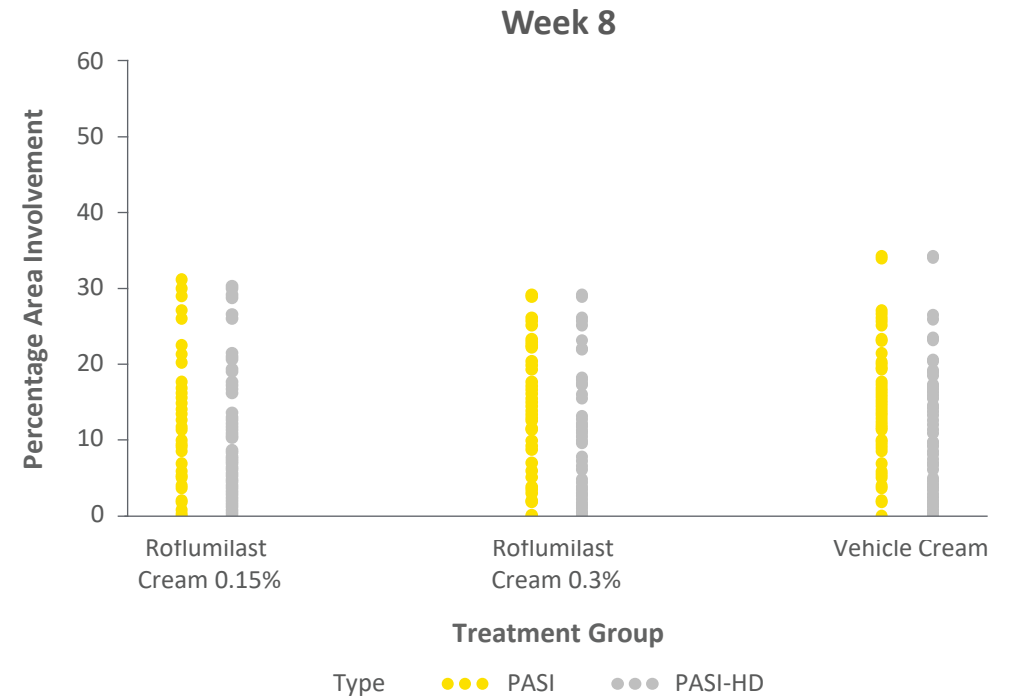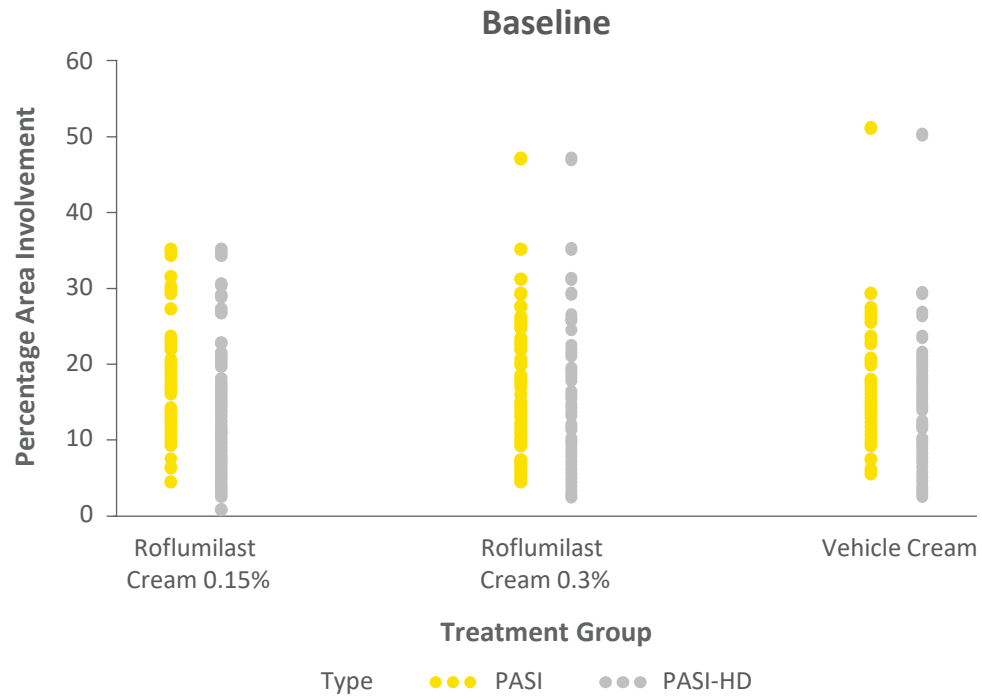


| Treatment Group | Measure | n | SD | Median |
|---|---|---|---|---|
| **Roflumilast 0.15%** | PASI | 113 | 7.405 | 12.80 |
| **Roflumilast 0.15%** | PASI-HD | 113 | 8.447 | 9.70 |
| **Roflumilast 0.3%** | PASI | 109 | 7.264 | 13.60 |
| **Roflumilast 0.3%** | PASI-HD | 109 | 8.362 | 10.80 |
| **Vehicle** | PASI | 109 | 6.525 | 11.90 |
| **Vehicle** | PASI-HD | 109 | 7.559 | 9.00 |

## Week 8



| Treatment Group | Measure | n | SD | Median |
|---|---|---|---|---|
| **Roflumilast 0.15%** | PASI | 105 | 5.967 | 9.00 |
| **Roflumilast 0.15%** | PASI-HD | 105 | 6.824 | 2.61 |
| **Roflumilast 0.3%** | PASI | 103 | 7.083 | 7.00 |
| **Roflumilast 0.3%** | PASI-HD | 103 | 7.626 | 3.00 |
| **Vehicle** | PASI | 90 | 6.814 | 10.00 |
| **Vehicle** | PASI-HD | 90 | 7.469 | 7.60 |

Dot Plot of Percent Area Involvement at Each Visit (Intent-to-Treat Population)
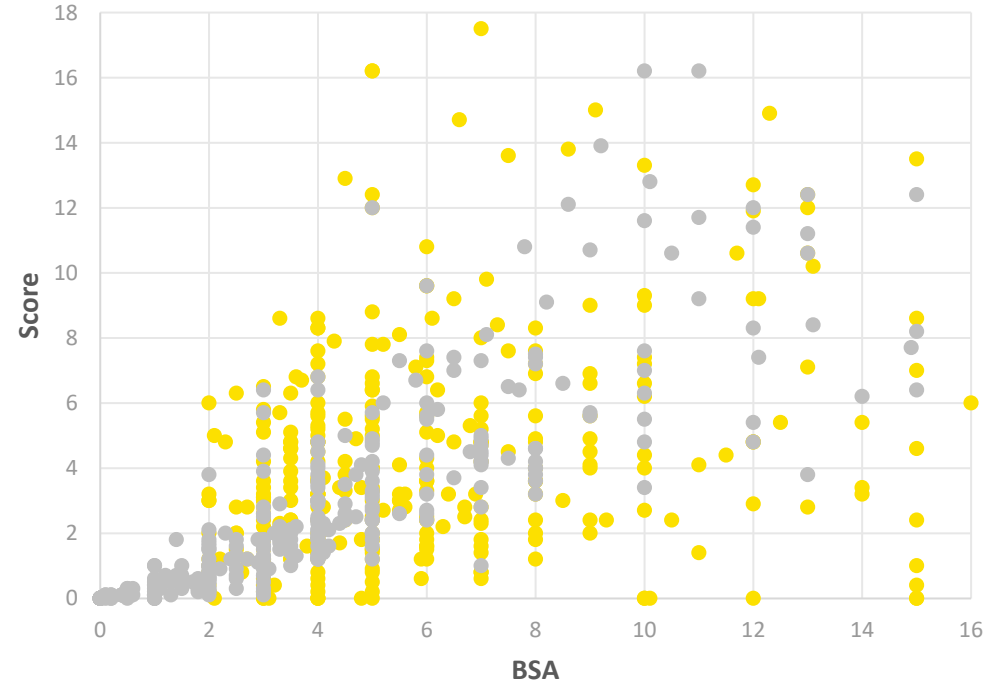
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# The PASI-HD is more linear and has a higher correlation with Body Surface Area (BSA) than PASI

## Baseline PASI and PASI-HD by Baseline BSA
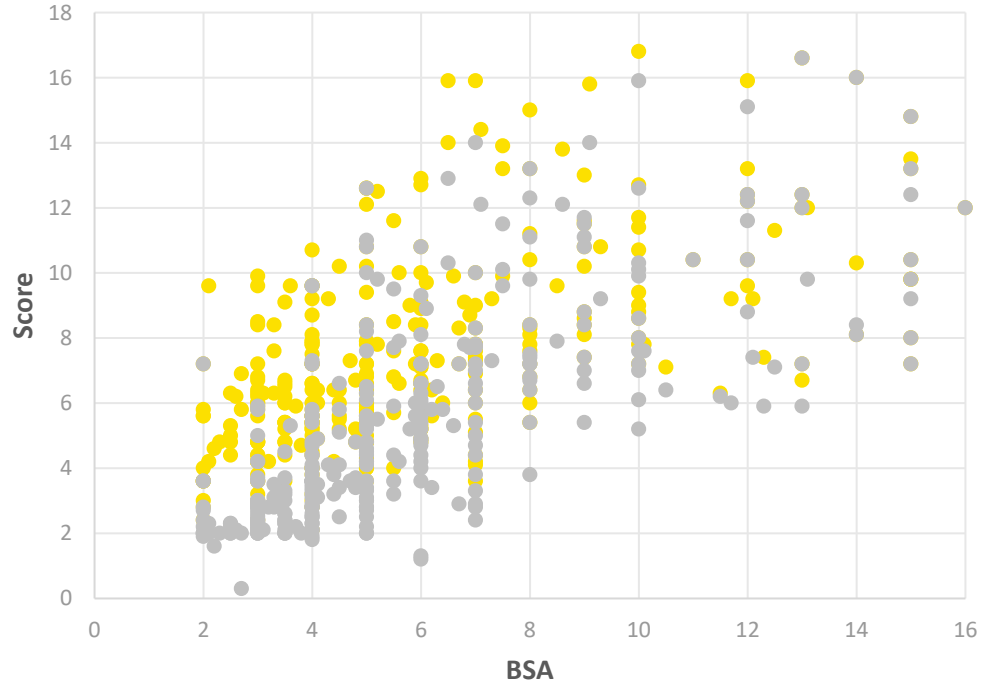


| Measure | Median (min, max) | Spearman Correlation with BSA |
|---------|-------------------|-------------------------------|
| PASI | 7.1 (2.1, 24.9) | 0.66 (p< 0.001) |
| PASI-HD | 5.0 (0.3, 24.9) | 0.79 (p < 0.001) |

## Week 8 PASI and PASI-HD by Week 8 BSA



| Measure | Median (min, max) | Spearman Correlation with BSA |
|---------|-------------------|-------------------------------|
| PASI | 3.6 (0, 17.5) | 0.83 (p < 0.001) |
| PASI-HD | 1.8 (0, 16.5) | 0.93 (p < 0.001) |

**The median score was lower and standard deviation higher for PASI-HD as compared to PASI across each domain of PASI (erythema, induration, desquamation) regardless of disease severity.**

# Conclusion

- The PASI-HD is more precise as compared to PASI for scoring disease severity in areas of disease involvement <10%

  - The PASI-HD has a higher correlation with BSA and is more linear than PASI
  - The distribution of scores for PASI-HD is wider and median score lower than PASI representing the more precise measurement where percent area involvement is small

- PASI underestimates the treatment effect in patients where the percent area of involvement is <10%

- Most patients with chronic plaque psoriasis have mild to moderate disease, thus a higher level of discrimination for the assessment of severity with PASI-HD is needed to capture disease flaring as well as treatment effects in anatomical regions with <10% involvement