

Comparison of cost per response between deucravacitinib and apremilast/biologics in patients with moderate to severe plaque psoriasis

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Background

- The average cost of treatment for psoriasis (PsO) in US patients is high, with per-patient per-year costs estimated to be \$12,523¹
 - Healthcare costs are estimated to be 2.5 times higher for patients with moderate to severe PsO than those for patients with mild PsO¹
- Deucravacitinib, an oral, selective, allosteric tyrosine kinase 2 (TYK2) inhibitor, is approved by the US Food and Drug Administration for the treatment of adults with moderate to severe plaque PsO who are candidates for systemic therapy or phototherapy²
- In the pivotal clinical trials POETYK PSO-1 and PSO-2, greater proportions of patients treated with deucravacitinib achieved static Physician's Global Assessment scores of 0 or 1 (O/1) and/or 75% reduction in baseline Psoriasis Area and Severity Index score (PASI 75) than those treated with placebo or apremilast at Week 16³

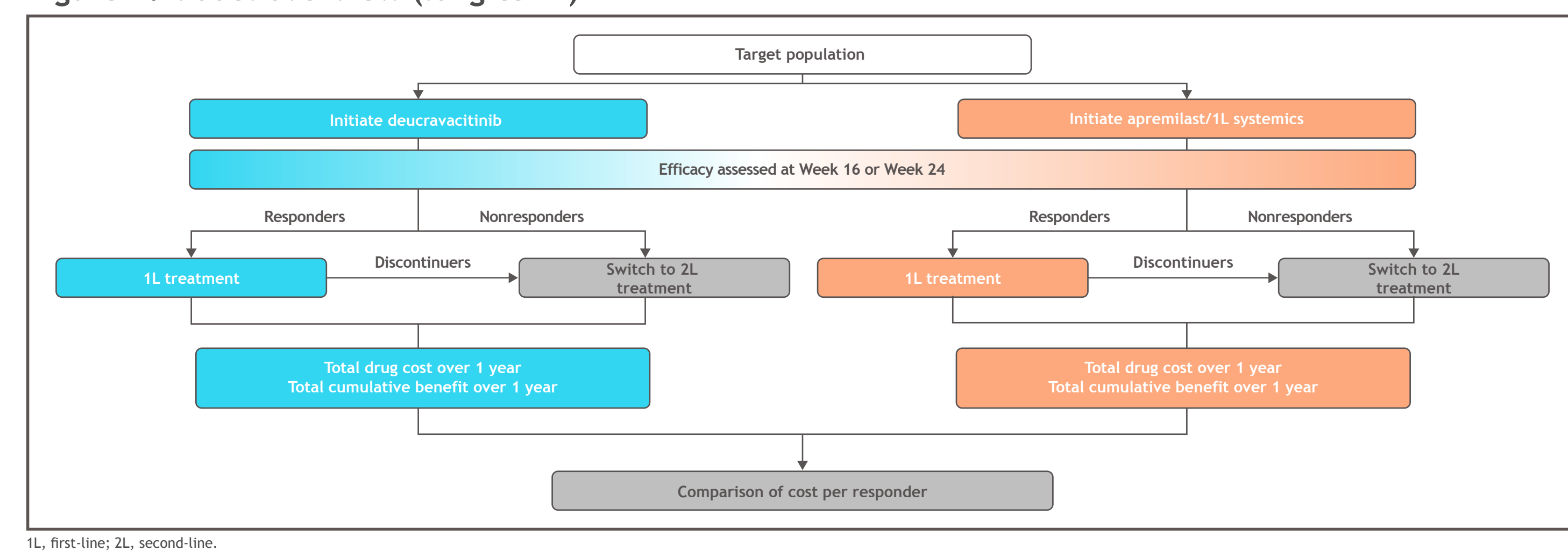
Objectives

- ### Primary
- To estimate and compare the cost per response (CPR) of deucravacitinib vs apremilast for patients with moderate to severe PsO from a US commercial payer perspective
- ### Secondary
- To estimate and compare the CPR of deucravacitinib vs first-line (1L) branded systemic treatments for patients with moderate to severe PsO from a US commercial payer perspective

Methods

- A model was developed in Microsoft Excel to assess CPR from a US commercial payer perspective (Figure 1)
- CPR was compared between deucravacitinib and apremilast/1L branded systemics across 2 time frames:
 - Short-term (16 or 24 weeks), assuming patients continue treatment for 16 or 24 weeks after initiation with deucravacitinib or apremilast/1L branded systemics
 - Long-term (52 weeks), assuming patients continue index treatment if they achieve response at 16 or 24 weeks, or switch from index to second-line (2L) biologic therapy if they do not achieve response at 16 or 24 weeks
- The number needed to treat (NNT), representing the number of patients who would need to be treated with a less efficacious treatment vs a more efficacious treatment to achieve one additional patient response, was estimated as an exploratory endpoint

Figure 1. Model overview (long-term)



Model assumptions

- Pharmacy (wholesale acquisition costs, derived from Merative™ MicroMedex® Red Book, September 2022) and administration costs (based on Practice Management Information Costs Medical Fees 2021) are the only costs accounted for in the model
- All patients receive treatment according to prescribing information and adhere 100% to assigned treatment

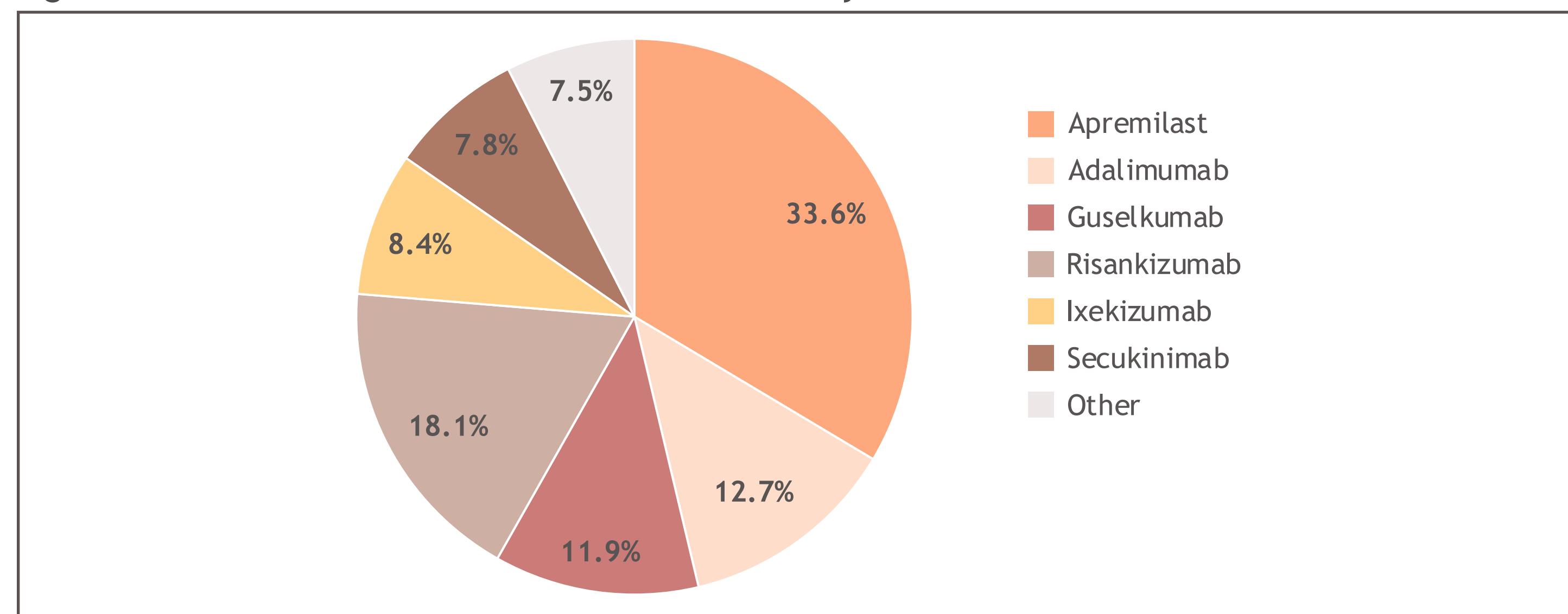
Definition of response

- Short-term: achieving sPGA 0/1 or PASI 75 at 16 or 24 weeks for deucravacitinib vs apremilast, and PASI 75 at 16 or 24 weeks for deucravacitinib vs 1L branded systemics
 - Deucravacitinib vs apremilast: based on pooled efficacy demonstrated by deucravacitinib and apremilast in POETYK PSO-1 and PSO-2³
 - Deucravacitinib vs 1L branded systemics: based on a weighted average of treatment efficacy shown in a network meta-analysis (NMA)⁴ and respective market share
 - Market share for 1L branded systemics was based on real-world market share distribution estimated in an internal claims analysis (Figure 2)
- Long-term: cumulative time spent in PASI 75 response over 52 weeks,^{4,5} with efficacy assessed at Week 16 or Week 24; nonresponders were assumed to switch to subsequent treatment based on market share (Figure 3)
 - Measured as the area under the curve of PASI 75 response over 52 weeks using the trapezoidal rule
 - Assumes a linear increase in percentage of patients responding
 - Deucravacitinib vs apremilast: based on pooled efficacy demonstrated by deucravacitinib and apremilast in POETYK PSO-1 and PSO-2^{3,6}
 - Deucravacitinib vs 1L branded systemics: based on an NMA of treatment efficacy³

Treatment discontinuation

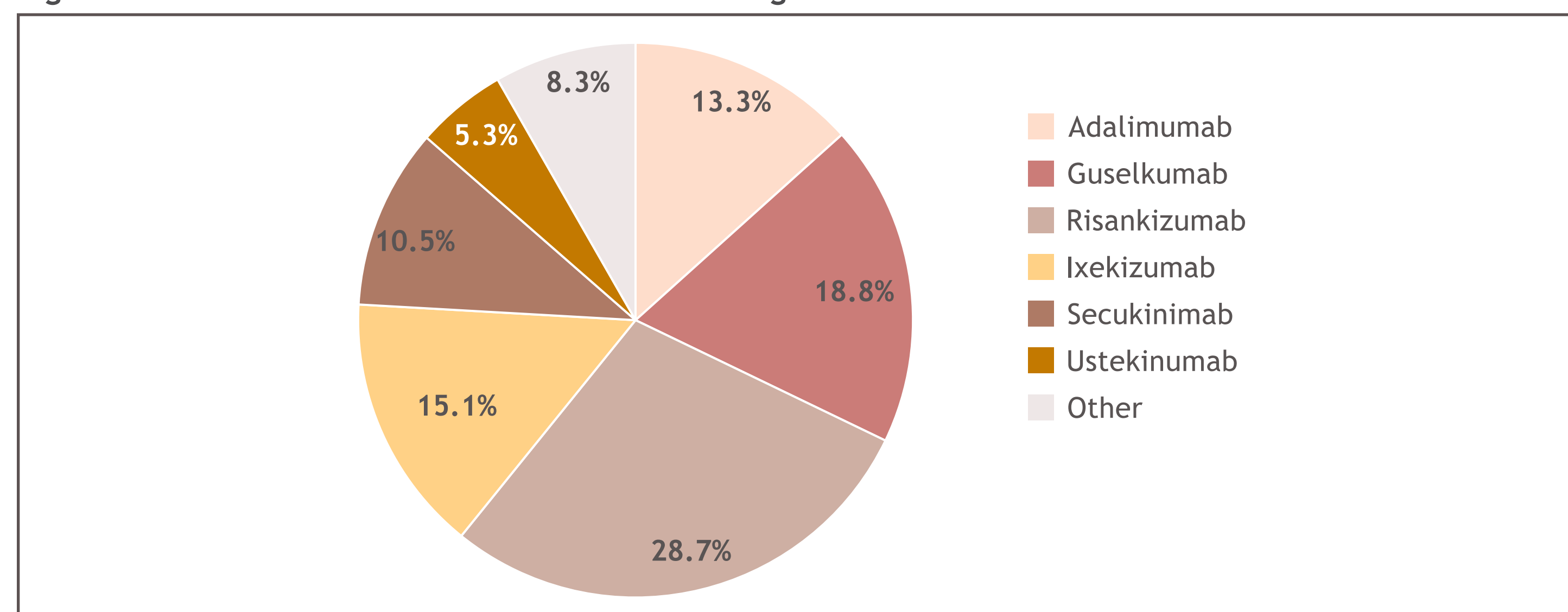
- For the long-term analysis of deucravacitinib vs apremilast, in addition to treatment switch in the event of failure to respond at 16 or 24 weeks, index treatments were assumed to incur a discontinuation rate after Week 16 or 24, based on the rates observed in the POETYK PSO-1 and PSO-2 trials (4.4% for deucravacitinib; 11.6% for apremilast)
- For the long-term analysis of deucravacitinib vs 1L branded systemics, in addition to treatment switch in the event of failure to respond at 16 or 24 weeks, index treatments were assumed to incur a discontinuation rate after Week 16 or 24, based on real-world discontinuation rates⁷
 - The discontinuation rate for 1L branded systemics was 22.4%
 - As there is no current real-world discontinuation rate for deucravacitinib, branded oral treatments were assumed to have the same discontinuation rate (16.5%)
- Patients who discontinued were assumed to switch to 2L biologic treatment

Figure 2. US market share distribution for 1L branded systemics for PsO^a



Market share was based on real-world market share distribution estimated in an internal claims analysis.
1L, first-line; PsO, psoriasis.

Figure 3. US market share distribution for 2L biologic treatments^a



One patient discontinued the initial treatment because of nonresponse at Week 16, 24, or discontinuation; they were assumed to switch to subsequent biologic treatment. The basket composition of 2L biologics is based on real-world market share distribution, estimated in an internal claims analysis.
2L, second-line.

Definitions and formulas

- CPR for short-term: Calculated with total cost and clinical response (defined as achieving sPGA 0/1 or PASI 75 at 16 or 24 weeks for deucravacitinib vs apremilast, and PASI 75 for deucravacitinib vs 1L branded systemics)

$$\frac{\text{Cost per patient at the end of time horizon}}{\text{Clinical response rate at the end of time horizon}}$$

$$\frac{\text{CPR for long-term: Calculated with total cost and cumulative PASI 75 response over 52 weeks}}{\text{Cost per patient over 52 weeks}} \quad \frac{\text{CPR for long-term: Calculated with total cost and cumulative PASI 75 response over 52 weeks}}{\text{Cumulative clinical response over 52 weeks}}$$

- Difference in CPR = CPR of deucravacitinib - CPR of comparators
- NNT = $\frac{1}{\text{Treatment 1 (higher response rate)} - \text{Treatment 2 (lower response rate)}}$

Scenario analyses

- Comparator treatment prices increase by 10% (deucravacitinib price remains the same)
- Discontinuation rate set to 0 for all treatments
- Cumulative response over 52 weeks with all patients receiving only one 2L treatment: (a) adalimumab, (b) risankizumab, (c) guselkumab, (d) ixekizumab, or (e) secukinumab

Results

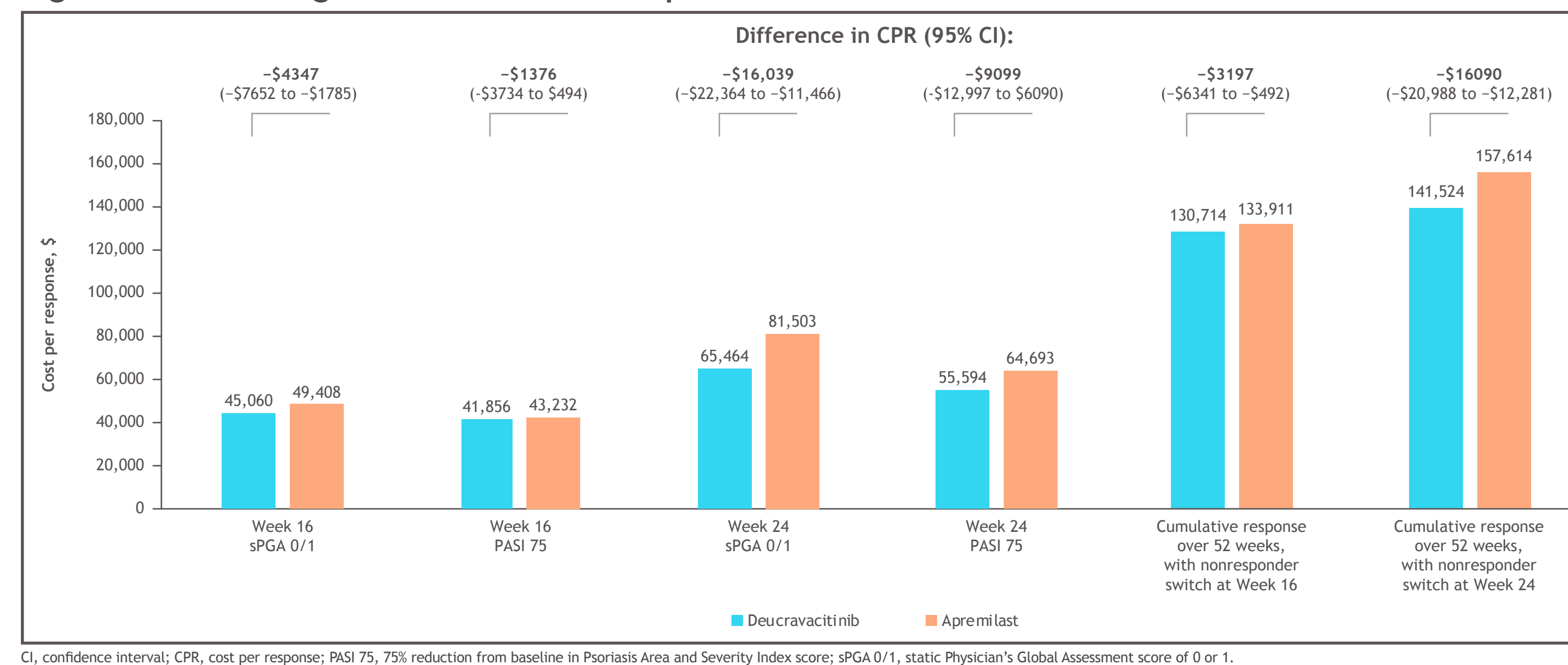
Deucravacitinib vs apremilast

- At Week 16, patients initiating deucravacitinib had a numerically or statistically significantly lower CPR than apremilast initiators (Figure 4)
 - sPGA 0/1: -\$4347 (95% confidence interval [CI], -\$7652 to -\$1785)
 - PASI 75: -\$1376 (95% CI, -\$3734 to \$494)
- At Week 24, the difference in CPR was greater than at Week 16, with statistically significant results
 - sPGA 0/1: -\$16,039 (95% CI, -\$22,364 to -\$11,466)
 - PASI 75: -\$9099 (95% CI, -\$12,997 to -\$6090)
- Over 52 weeks, with efficacy assessed at Week 16, CPR was -\$3197 lower for deucravacitinib vs apremilast (95% CI, -\$6341 to -\$492)
- Over 52 weeks, with efficacy assessed at Week 24, the difference in CPR with deucravacitinib was greater, at -\$16,090 (95% CI, -\$20,988 to -\$12,281)

Deucravacitinib vs 1L branded systemics

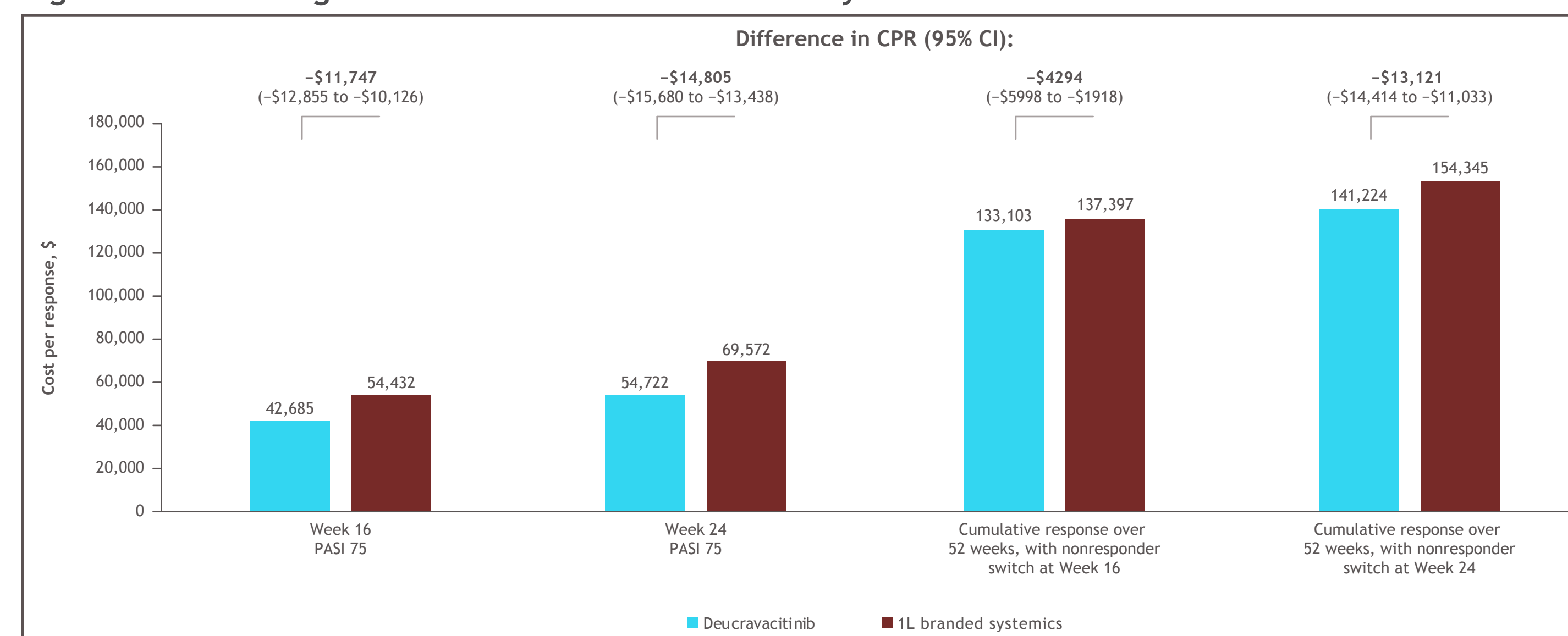
- At Week 16, patients initiating deucravacitinib had a lower CPR than initiators with 1L branded systemics (-\$11,747 [95% CI, -\$12,855 to -\$10,126]) (Figure 5)
- At Week 24, deucravacitinib had a lower CPR than 1L branded systemics: -\$14,805 (95% CI, -\$15,680 to -\$13,438) (Figure 5)
- Over 52 weeks, with efficacy assessed at Week 16, CPR was -\$4294 lower for deucravacitinib vs 1L branded systemics (95% CI, -\$5998 to -\$1918)
- Over 52 weeks, with efficacy assessed at Week 24, CPR was -\$13,121 with deucravacitinib vs 1L branded systemics (95% CI, -\$14,414 to -\$11,033)

Figure 4. CPR savings: deucravacitinib vs apremilast



CI, confidence interval; CPR, cost per response; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

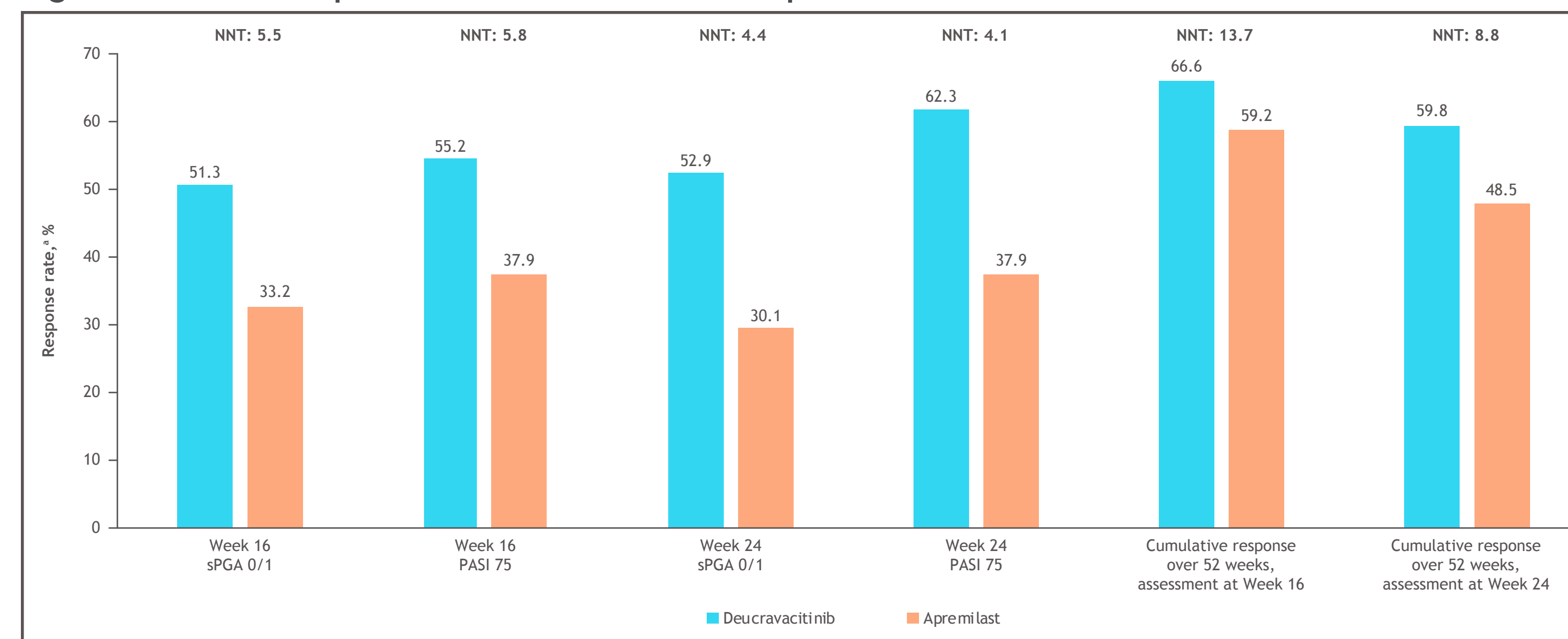
Figure 5. CPR savings: deucravacitinib vs 1L branded systemics



1L, first-line; CI, confidence interval; CPR, cost per response; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

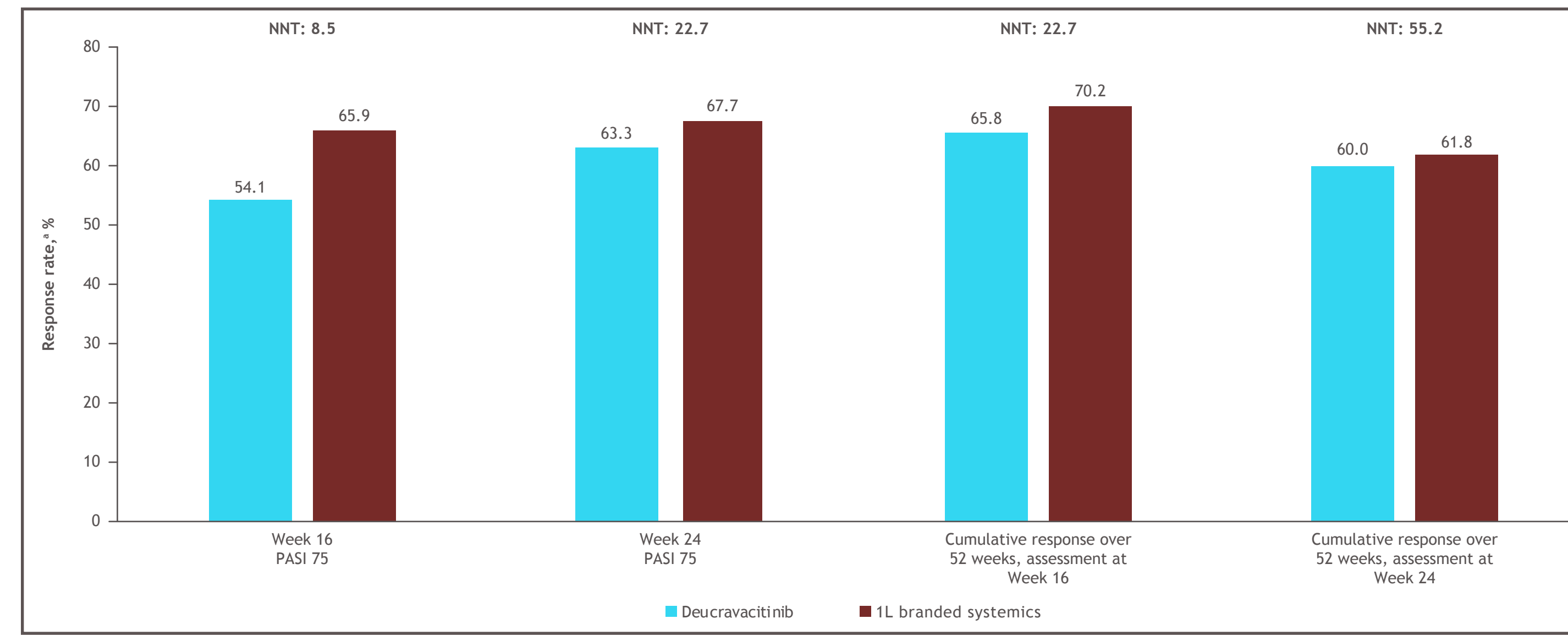
- When compared with apremilast, deucravacitinib had an NNT of 4.1 to 5.8 in the short term (16 or 24 weeks) and 8.8 to 13.7 in the long term (52 weeks) to achieve one additional patient response (Figure 6)
- When compared with deucravacitinib, 1L branded systemics had an NNT of 8.5 to 22.7 in the short term, and 22.7 to 55.2 in the long term to achieve one additional patient response (Figure 7)

Figure 6. Clinical response for deucravacitinib vs apremilast and NNT for deucravacitinib



Response rates for deucravacitinib and apremilast were based on treatment efficacy demonstrated in POETYK PSO-1 and PSO-2.
NNT, number needed to treat; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

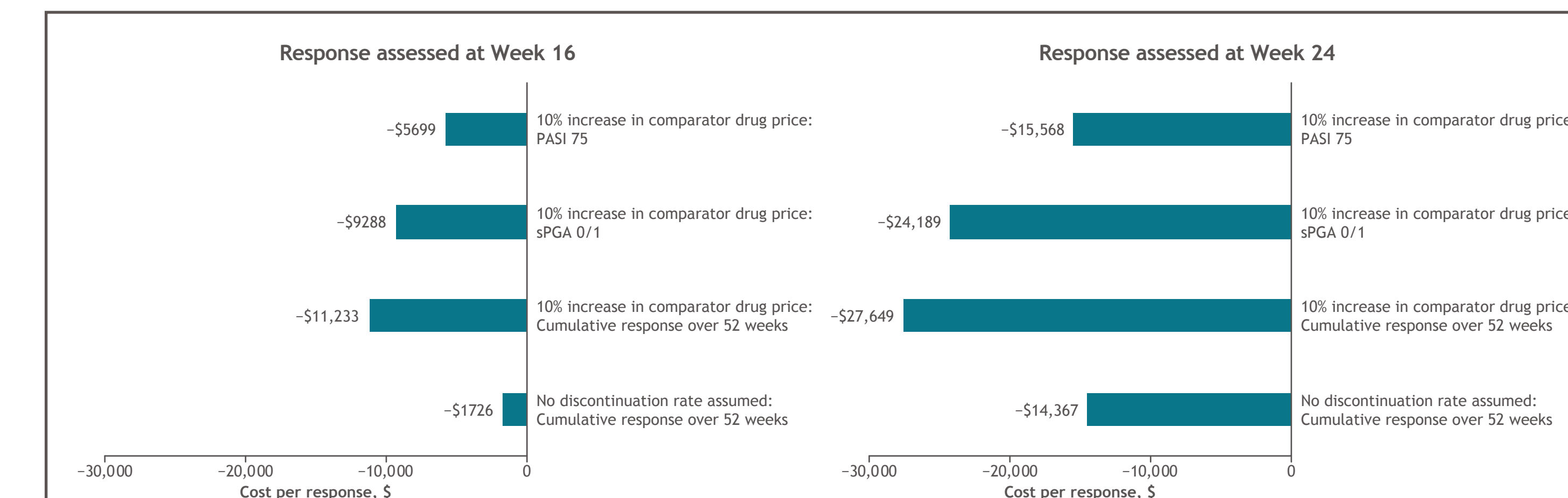
Figure 7. Clinical response for deucravacitinib vs 1L branded systemics and NNT for 1L branded systemics



The response rate for 1L branded systemics is based on a weighted average of efficacy determined in an NMA and market share. The response rate for deucravacitinib is based on the efficacy determined in the NMA.
1L, first-line; NNT, number needed to treat; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

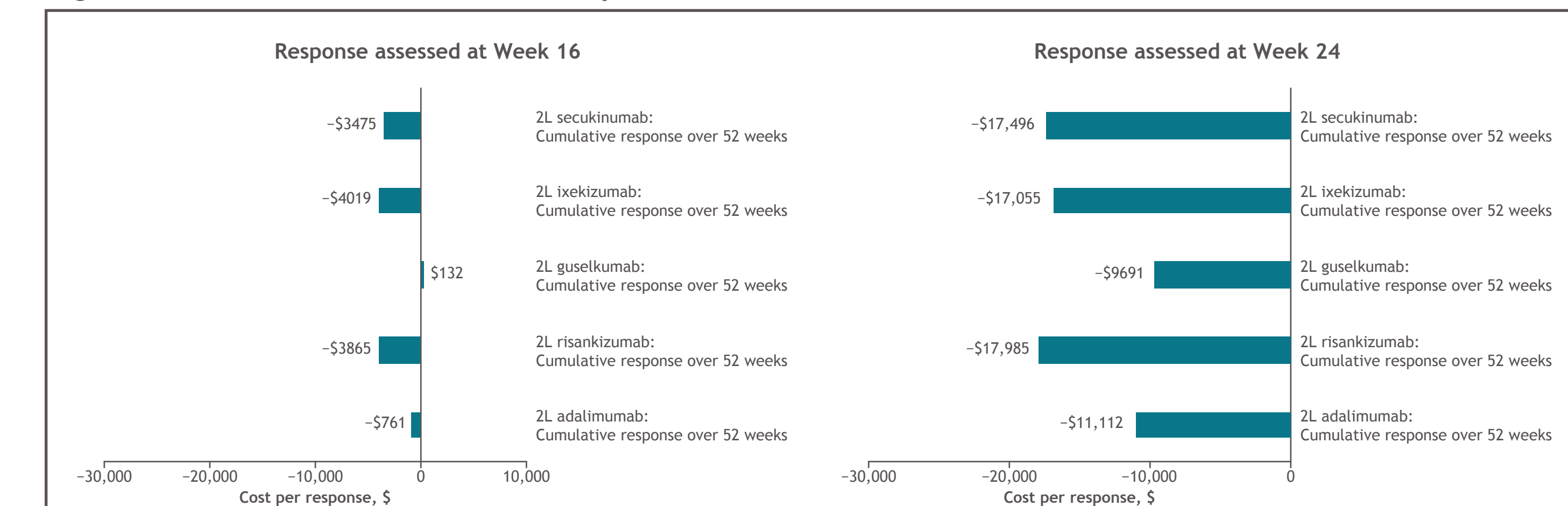
- Scenario analysis confirmed the robustness of results (Figures 8-11)

Figure 8. CPR for deucravacitinib vs apremilast: 10% increase in comparator drug prices^a or no discontinuation rate assumed



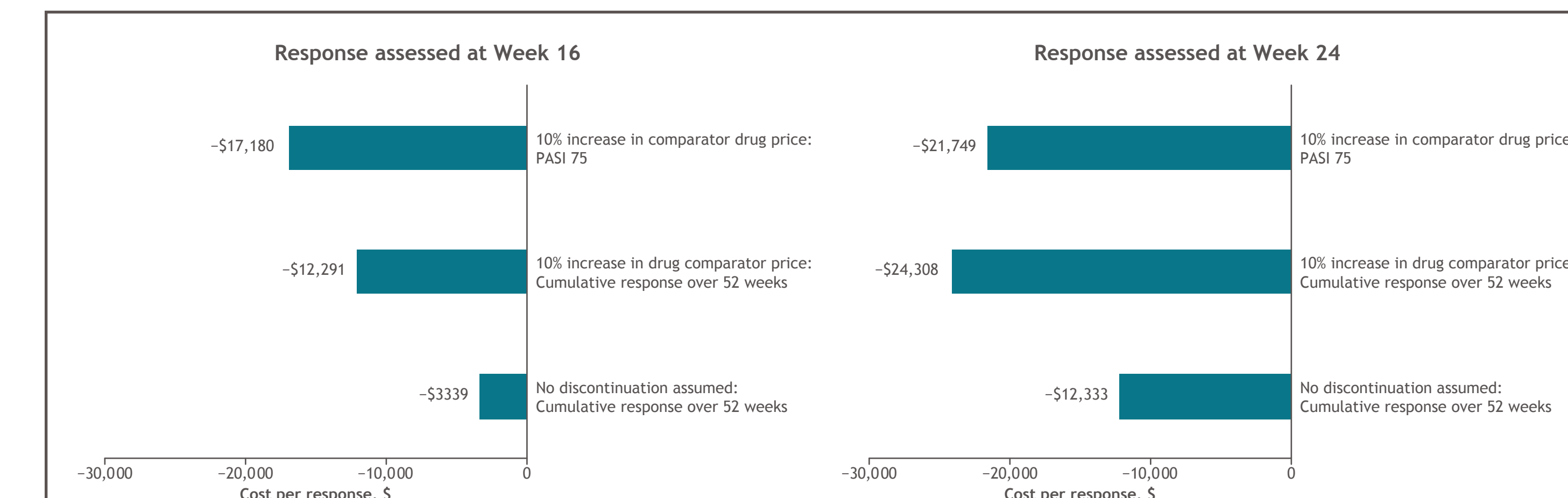
Deucravacitinib price does not increase.
CPR, cost per response; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

Figure 9. CPR for deucravacitinib vs apremilast: 2L treatments



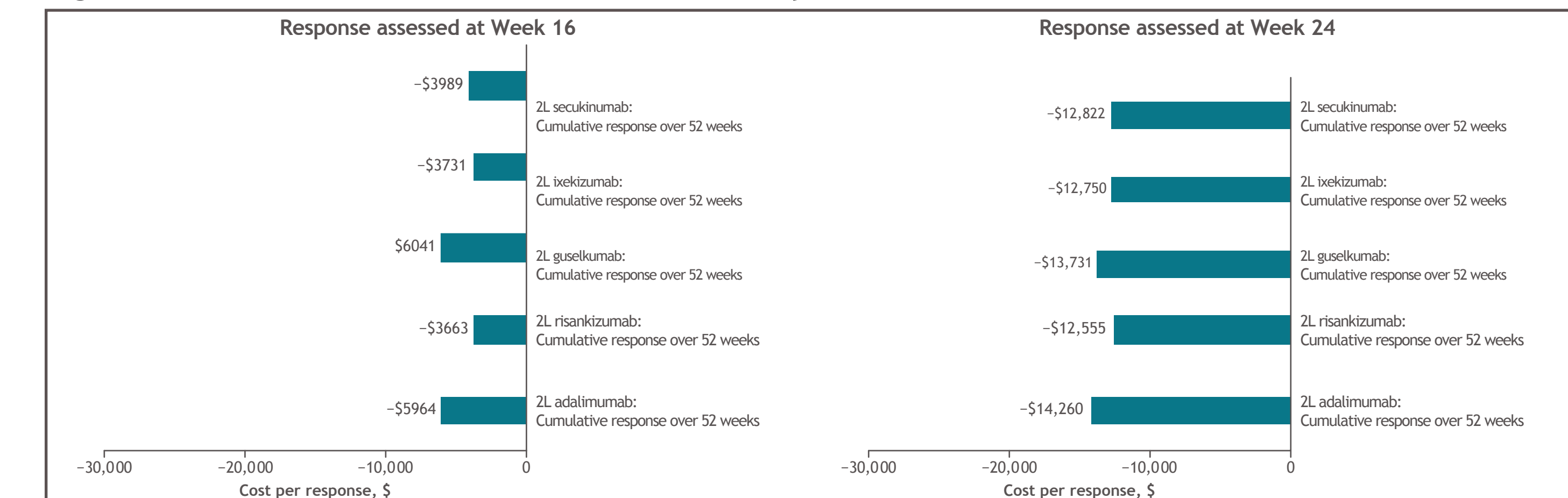
1L, second-line; CPR, cost per response.

Figure 10. CPR for deucravacitinib vs 1L branded systemics: 10% increase in comparator drug prices^a or no discontinuation rate assumed



Deucravacitinib price does not increase.
1L, first-line; CPR, cost per response; PASI 75, 75% reduction from baseline in Psoriasis Area and Severity Index score; sPGA 0/1, static Physician's Global Assessment score of 0 or 1.

Figure 11. CPR for deucravacitinib vs 1L branded systemics: 2L treatments



1L, first-line; 2L, second-line; CPR, cost per response.

Conclusion

- For patients with moderate to severe plaque PsO, deucravacitinib is associated with a lower CPR compared with apremilast and 1L branded systemics in both the short term and the long term

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Acknowledgments

- This study was sponsored by Bristol Myers Squibb
- Laetitia N'Dri of Bristol Myers Squibb, Princeton, NJ, assisted the authors with the preparation of the data presented
- Writing and editorial assistance was provided by Tulika Bhushan Balaiahandi, RPh, MS, of Peloton Advantage, LLC, an OPEN Health company, and funded by Bristol Myers Squibb

Disclosures

- SP, SH, KW, and VP: Employees of and may own stock options in Bristol Myers Squibb
- AL, JS, and DP: Employees of OPEN Health, which received consulting fees from Bristol Myers Squibb