VACTS-Pso: A Payer-Oriented Value Framework Integrating Clinical Outcomes, Quality of Life, and Real-World Intensification Costs in Psoriasis

ACCEPTANCE CODE
PT19

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1 Background

- **Outcomes that matter.** PASI and DLQI are the main psoriasis endpoints and the criteria for biologic access in Brazil HTA agency. ANS DUT 65.5 treats them as independent criteria (PASI **OR** DLQI).
- **A hidden cost.** Many molecules need dose adjustment over time, which raises the annual cost of therapy. HTA and budget-impact analyses usually leave it out.
- **A practical gap.** Several anti-IL agents differ in price and outcomes, with few robust head-to-head comparisons. Private-market managers need a practical, pragmatic tool built on the data they already hold (their own **real-world data**), one that incorporates the patient perspective and aligns with **value-based health care (VBHC) concepts**.

2 Objective

To develop a pragmatic cost-effectiveness model that uses parameters common to the manager's routine (PASI, DLQI, costs), is replicable in Brazilian supplementary health, and accepts the institution's own real-world data.

3 Methods

3.1 The VACTS-Pso equation

VACTS-Pso

A proposal positioned between cost per response (CR) and the classic incremental cost-effectiveness ratio (ICER)

Cost per response
CR = annual cost ÷ CROM

VACTS-Pso
Real cost ÷ Clinical composite success

ICER
Δ cost ÷ Δ QALY

$$\text{VACTS-Pso} = \frac{\text{Adjusted annual cost}}{\text{CTSI}} = \frac{\text{Annual cost} \times \text{Intensification factor}}{(\%\text{PASI90} + \%\text{DLQI}\leq 1) / 2}$$

↓ VACTS-Pso ✓ ↓ Cost / ↑ Clinical success (CRO and PRO)

Read it like **ICER**: the lower the VACTS-Pso, the better. Lower numerator = lower real cost; higher denominator = better clinical outcome.

- **Adjusted annual cost:** label-regimen annual cost at the negotiated price × intensification factor (1 + % intensification seen in RWE: share of patients intensified × size of change, doses before and after, or the financial impact when reported directly).
- **CTSI (Composite Therapeutic Success Index):** (%PASI90 + %DLQI≤1) / 2 at week 52, pairing a clinician-reported outcome (CRO) with a patient-reported one (PRO). The simple mean follows the "**OR**" logic of DUT 65.5 (Brazilian ANS RoI – Private market rule access).

3.2 Evidence search and synthesis

1 – Search and select. PubMed and Elicit (semantic search): 6 molecules most-used in Brazilian private market. PASI90, DLQI≤1 and intensification outcomes, all assessed at week 52. **Real-world studies only**: observational, registries, cohorts.

2 – Weight. PASI90, DLQI≤1 and intensification calculated as sample-size-weighted means, establishing reference values for each of the 6 molecules.

Exploratory synthesis of heterogeneous RWE; not a meta-analysis or formally adjusted indirect comparison.

3.3 Model inputs (week 52, sample-size-weighted)

Molecule	Base cost/yr (R$)	PASI90 (%)	DLQI≤1 (%)	Dose intens. (%)
Risankizumab	126,342	87.95	73.30	0
Tildrakizumab	73,173	75.18	80.26	0
Guselkumab	113,028	73.36	53.90	3
Ustekinumab	128,034	57.89	64.40	35
Ixekizumab	99,607	61.16	48.00	13
Secukinumab	136,982	59.78	64.71	7

4 Results

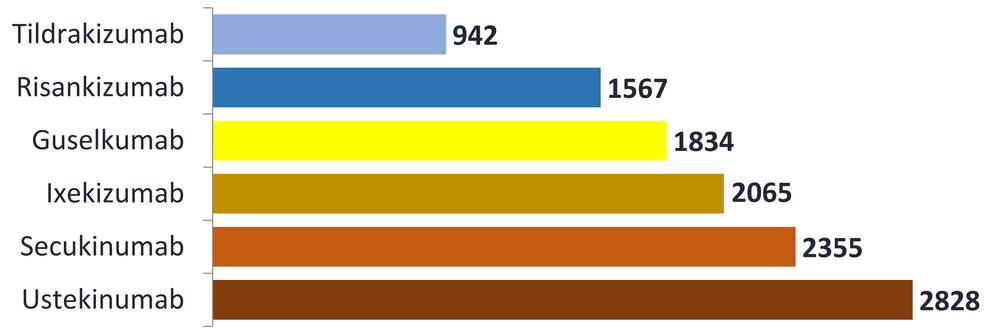
- **Tildrakizumab** and **Risankizumab** showed no dose intensification in the real-world studies reviewed, so their adjusted annual cost equals the standard cost and the VACTS-Pso numerator was not increased. Guselkumab showed mild intensification (+3%).
- Ustekinumab (+35%), Ixekizumab (+13%) and Secukinumab (+7%), although prescribed per label, showed relevant dose intensification in practice, which raised their adjusted annual cost and, consequently, their VACTS-Pso score.
- DLQI≤1 results reclassify the molecules beyond PASI90 alone, so the CTSI favors those that deliver both skin clearance and quality-of-life outcomes.

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lowest VACTS-Pso score: Tildrakizumab

80.6%
highest CTSI: Risankizumab

+35%
largest dose intensification: Ustekinumab

VACTS-Pso score (lower = greater value-efficiency)



Full results

Molecule	Adj. cost/yr (BRL R$)	Adj. cost/yr (US$)	CTSI (%)	NNT-CTSI	Sensitivity CTSI%	VACTS-Pso score Sensitivity min-max
Tildrakizumab	73,173	14,635	77.7	1.29	60.7–86.4	**847–1,206**
Risankizumab	126,342	25,268	80.6	1.24	64.5–83.6	**1,511–1,960**
Guselkumab	116,700	23,340	63.6	1.57	50.1–77.9	**1,498–2,331**
Ixekizumab	112,700	22,540	54.6	1.83	50.5–64.5	**1,747–2,232**
Ustekinumab	172,891	34,578	61.1	1.64	57.8–69.2	**2,499–2,992**
Secukinumab	146,575	29,315	62.2	1.61	56.2–71.0	**2,065–2,607**

Score = adjusted annual cost ÷ CTSI (% points). US$ at 1.0 US$ = 5.0 R$ (June 2026).

- **NNT-CTSI = 1/CTSI:** patients treated for 52 weeks per one composite-success equivalent.
- NNT-CTSI: Risankizumab 1.24 and Tildrakizumab 1.29, clearly apart from the others (1.57 to 1.83). It is descriptive, not the classic NNT: with single-arm real-world data the implicit comparator is "no success" (0%).

5 Conclusions

- **One value metric. VACTS-Pso integrates clinical response, patient-reported quality of life and real-world dose intensification, with data the manager already holds (VBHC and RWE concepts and criteria).**
- **Exploratory results:** Risankizumab achieved the highest CTSI, at a high annual cost but predictable. Tildrakizumab balanced predictable cost and clinical effectiveness, reaching the lowest VACTS-Pso. The other molecules showed cost escalation from dose intensification, without meaningful gains in CTSI. Tildrakizumab remained the lowest VACTS-Pso across the full CTSI sensitivity range.
- **Read it inside your own database.** Prices, population and intensification differ between institutions, so absolute values are not transferable.
- **Use it to compare alternatives** within one base, to sequence therapies. If institutions rank differently, check whether cost (numerator) or clinical result (denominator) drives the gap.

6 Evidence base and references

1-Anexo II RN 465/2021 DUT65.5 www.gov.br/ans; **2**- Elgaard, C. D. B., Iversen, L. and Hjuler, K. F. (2023) 'Guselkumab, tildrakizumab, and risankizumab in a real-world setting: drug survival and effectiveness in the treatment of psoriasis and psoriatic arthritis', *Journal of Dermatological Treatment*, 34(1); **3**- Zagni E, Bianchi L e. A real-world economic analysis of biologic therapies for moderate-to-severe plaque psoriasis in Italy: results of the CANOVA observational longitudinal study. BMC Health Serv Res. 2021 Sep 6;21(1):924.; **4**- Tada Y, Soliman AM. Dose escalation of biologic treatment in patients with moderate-to-severe psoriasis in Japan. Exp Dermatol. 2024 May;33(5):e15067; **5**-Wu JJ, Patel M, Zeng F, Huang A, Pan X, Cao Y, Chen N, Photowala H, Garg V, Crowley J. Real-world dose escalation of biologics for moderate-to-severe psoriasis in the United States. J Dermatolog Treat. 2023 Dec;34(1):2200869. **6**- Lakdawalla DN, Doshi JA, Garrison LP, et al. Defining elements of value in health care: a health economics approach. An ISPOR Special Task Force report [3]. Value Health. 2018;21(2):131-139

Abbreviations: ANS, Brazilian National Agency for Supplementary Health; ANVISA, Brazilian Health Regulatory Agency; CROM, clinician-reported outcome measure; CTSI, Composite Therapeutic Success Index; DLQI, Dermatology Life Quality Index; DUT, Diretriz de Utilização; HTA, health technology assessment; NNT, number needed to treat; PASI90, ≥90% improvement in Psoriasis Area and Severity Index; PROM, patient-reported outcome measure; RWE, real-world evidence; VACTS-Pso, Value-Adjusted Cost per Therapeutic Success in Psoriasis.

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