EVALUATING THE SOCIETAL BURDEN OF PSORIASIS AND THE INDIRECT COST IMPACT OF TILDRAKIZUMAB IN EUROPE: A REAL-WORLD EVIDENCE–BASED MODELING STUDY

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Matthias Augustin[1], Rachel Sommer[1], Bjoern Schwander[2]*, York Zoellner[3], Buelent Akmaz[4], Antonio Sarno[4], Ulrich Mrowietz[5]

[1]University Medical Center Hamburg-Eppendorf (UKE), Hamburg, Germany; [2]AHEAD GmbH, Bietigheim-Bissingen, Germany; [3]Hamburg University of Applied Sciences, Hamburg, Germany; [4]Almirall S.A., Barcelona, Spain; [5]University Hospital Schleswig-Holstein (UKSH), Campus Kiel, Kiel, Germany; *Presenting author.

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OBJECTIVES & METHODS

- To quantify the 2-year societal productivity burden of moderate-to-severe plaque psoriasis and estimate the potential reduction in indirect costs associated with tildrakizumab using European real-world evidence (RWE).
- An Excel-based economic model was developed using 24-month data from the European POSITIVE RWE study[1–3].
- Work Productivity and Activity Impairment (WPAI) outcomes (absenteeism, presenteeism, and overall work impairment) were collected at baseline and Weeks 16, 28, 52, 78, and 104 (Figure 1)[4,5].
- WPAI trajectories between assessments were estimated using linear interpolation; multiple imputation (MI) served as the base case for missing data.
- Indirect costs were calculated using a human capital approach across nine European countries: Austria, Belgium, France, Germany, Italy, Spain, Switzerland, the Netherlands, and the UK.

METHODS & KEY INPUT DATA

- Indirect cost calculations used country-specific working-age population, moderate-to-severe plaque psoriasis prevalence, current biologic uptake, unemployment, and labor cost data (Table 1).
- Baseline productivity in biologic-naïve patients eligible for biologic treatment was compared with productivity following tildrakizumab over two years; population-level burden was estimated for this population; potential indirect cost reduction was estimated assuming adequate biologic treatment, represented by the tildrakizumab-associated productivity trajectory observed in POSITIVE.
- A 0% biologic uptake scenario estimated full productivity burden; LOCF/OC assessed missing-data robustness, and PSA (20,000 iterations) assessed parameter uncertainty. Reported economic point estimates are PSA means.
- Year 2 effects and resulting costs were discounted at 3%.

Figure 1: WPAI Data from the POSITIVE Study

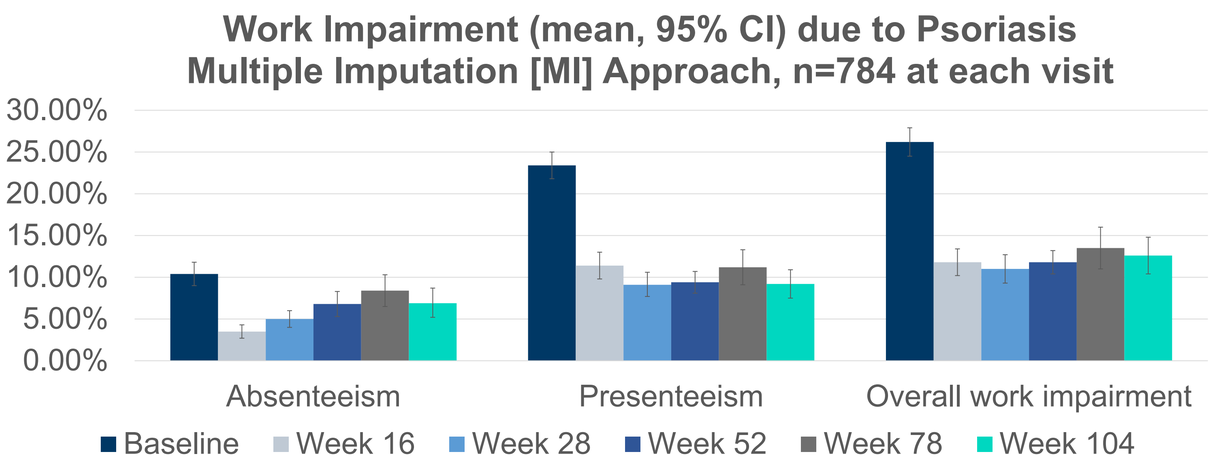


Table 1: Key Country-Specific Input Data

Country	Working-age population, n	Moderate-to-severe plaque psoriasis prevalence*, % (95% CI)	Current biologic uptake, %	Unemployment rate, %	Annual labor cost per employee, €
Austria	6,150,436	0.55 (0.21–1.44)	40.13	5.3	53,320
Belgium	7,598,912	0.55 (0.21–1.44)	33.08	5.7	59,130
France	41,515,682	0.53 (0.42–0.66)	18.74	7.4	49,070
Germany	53,416,276	0.63 (0.57–0.70)	25.53	3.4	51,160
Italy	37,376,124	0.59 (0.50–0.71)	18.95	6.5	32,680
Spain	31,147,009	0.49 (0.42–0.57)	36.53	11.4	34,710
Switzerland	5,742,318	0.55 (0.21–1.44)	33.19	4.4	96,790
Netherlands	11,407,635	0.51 (0.41–0.63)	26.44	3.7	51,200
United Kingdom	43,785,412	0.65 (0.58–0.72)	13.52	4.3	57,302

Sources: Working-age population[8,9]; psoriasis prevalence[6,7]; biologic uptake[13]; unemployment[10–12]; annual labor cost[10,11]; currency conversion[14].
*Moderate-to-severe plaque psoriasis prevalence was based on adult physician-/dermatologist-diagnosed psoriasis prevalence estimates from the Global Psoriasis Atlas[6,7], applying a 25% share as a pragmatic approximation of moderate-to-severe plaque psoriasis relevant to biologic treatment.

CURRENT 2-YEAR PRODUCTIVITY BURDEN

€25.7bn
2-year productivity burden across nine countries (95% CI: €19.9–€32.9bn)

€23.6k
average burden per patient (95% CI: €22.1–€25.1k)

POTENTIAL 2-YEAR INDIRECT COST REDUCTION

49%
relative reduction in total indirect costs with tildrakizumab

€12.6bn
potential 2-year indirect cost reduction (95% CI: €11.9–€13.2bn)

2-Year BURDEN – Estimated Current Productivity Burden

- Country-level 2-year productivity burden ranged from €15.8k in Italy to €47.7k in Switzerland per patient, and from €0.6bn in Austria to €6.9bn in the UK at the population level (Figure 2).
- Across all nine European countries, cumulative discounted productivity losses averaged **€23.6k per patient** (95% CI: €22.1–€25.1k) and approximately **€25.7bn overall (95% CI: €19.9–€32.9bn)** (Figure 2).
- In an **exploratory scenario** assuming 0% biologic uptake, total baseline productivity burden increased to approximately **€33.3bn (€25.5–€43.2bn)** across the nine-country population.

2-Year REDUCTION – Potential 2-Year Indirect Cost Reduction

- Country-level potential 2-year indirect cost reductions ranged from €7.8k in Italy to €23.5k in Switzerland per patient, and from €0.3bn in Austria to €3.4bn in the UK at the population level (Figure 3).
- Across all nine European countries, the potential 2-year indirect cost reduction was **€11.6k per patient** and approximately **€12.6bn overall, corresponding to a 49% reduction in indirect costs** (Figure 3).
- Patient- and population-level results remained directionally consistent across Year 1 and Year 2, supporting sustained reductions over time.

Figure 2: Current 2-Year Productivity BURDEN

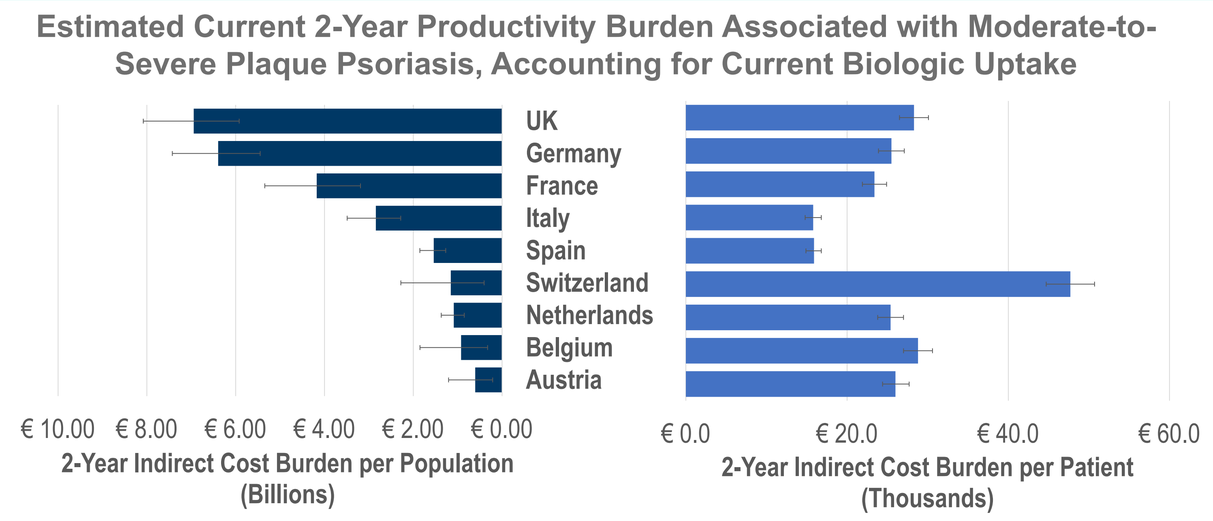
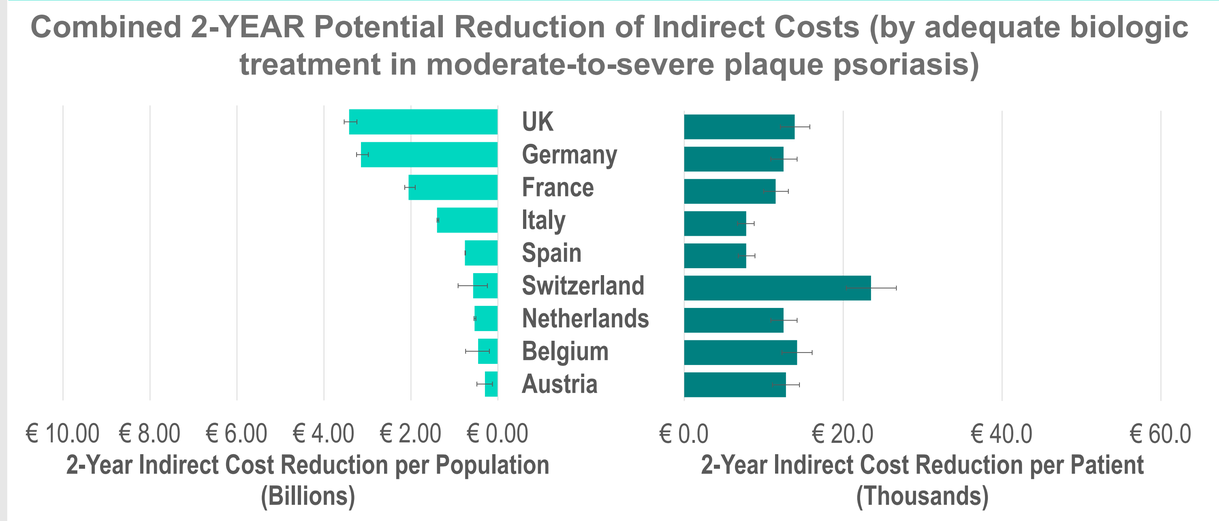


Figure 3: Potential 2-Year Indirect Cost REDUCTION



LIMITATIONS & CONCLUSIONS

- As POSITIVE was a single-arm observational study without a comparator, modeled economic outcomes reflect WPAI changes over time rather than a comparative treatment effect.
- Our modeling study indicates substantial modeled reductions in societal costs related to work impairment when applying the WPAI trajectory observed with tildrakizumab in POSITIVE (mean overall work impairment: 26.2% at baseline vs 12.6% at Week 104).
- These findings highlight the potential societal value of productivity improvements with tildrakizumab and the relevance of incorporating indirect costs in payer decision-making.

Abbreviations: CI=confidence interval; LOCF=last observation carried forward; MI=multiple imputation; OC=observed cases; PSA=probabilistic sensitivity analysis; RWE=real-world evidence; UK=United Kingdom; WPAI=Work Productivity and Activity Impairment.

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References: 1. Augustin M, et al. BMJ Open. 2023;13:e060536. 2. Mrowietz U, et al. Psoriasis (Auckl). 2025;15:243–259. 3. Mrowietz U, et al. Psoriasis (Auckl). 2026;16:590189. 4. POSITIVE final WPAI analysis. Almirall data on file, 2026. 5. Reilly MC, et al. Pharmacoeconomics. 1993;4:353–365. 6. Global Psoriasis Atlas. Psoriasis prevalence by country, 2024. 7. Parisi R, et al. BMJ. 2020;369:m1590. 8. Eurostat. demo_pjan, 2024. 9. ONS. Population estimates, mid-2024. 10. Eurostat. une_rt_a; tec00013; nama_10_a10_e, 2024. 11. ONS. Labour Force Survey and compensation/employment series, 2024. 12. Swiss Federal Statistical Office. ILO unemployment rate, 2024. 13. IQVIA. Country-specific biologic-treated patient data, 2024; data on file. 14. European Central Bank. Annual average exchange rates, 2024.