Efficacy of Deuruxolitinib and Ivarmacitinib, Two Recently Available Janus Kinase Inhibitors (JAKIs) for Severe Alopecia Areata (AA): A Bayesian Network Meta-Analysis (NMA) and Matching-Adjusted Indirect Comparison (MAIC)

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Background

Alopecia areata (AA) is a chronic autoimmune disease characterized by nonscarring hair loss and substantial psychosocial burden. Severe disease, defined by ≥50% scalp hair loss using the Severity of Alopecia Tool (SALT), is associated with impaired quality of life and limited therapeutic options. Janus kinase inhibitors (JAKis) have transformed AA management; however, currently approved agents demonstrate variable efficacy, and only a subset of patients achieve clinically meaningful hair regrowth. Deuruxolitinib, approved in the United States, and ivarmacitinib, approved in China, are two newly available oral JAKis. Direct head-to-head trials comparing these agents are lacking, creating uncertainty regarding their relative effectiveness.

Objectives

To compare the 24-week efficacy of ivarmacitinib (4 mg and 8 mg QD) versus deuruxolitinib (8 mg BID) in adults with severe AA using population-adjusted indirect comparison methods, with SALT ≤20 as the primary endpoint and SALT ≤10 as the secondary endpoint.

Study Design

Systematic review and Bayesian network meta-analysis (BNMA) were PROSPERO registered CRD420251156034) and conducted per PRISMA 2020.

Randomized controlled trials enrolling adults with severe AA and reporting 24-week outcomes were included. Comparative efficacy was assessed using BNMA, adjustment for baseline imbalances through multilevel network meta-regression (ML-NMR). Matching-adjusted indirect comparison (MAIC) using individual patient data was performed to improve cross-trial comparability. Treatment ranking probabilities were estimated with surface under the cumulative ranking (SUCRA) ranked treatments.

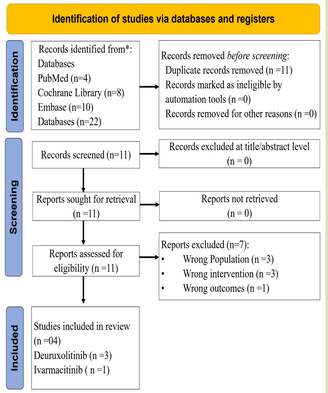

Figure 1. PRISMA Flow Diagram. Illustrating study identification, screening, eligibility assessment, & inclusion.

Results

Across BNMA and adjusted regression models, ivarmacitinib demonstrated greater efficacy than deuruxolitinib at 24 weeks. For SALT ≤20, ivarmacitinib 8 mg QD showed higher odds of response vs. deuruxolitinib 8 mg BID, with consistent directionality across all models. SALT ≤10 differences were nonsignificant, but effects consistently favored ivarmacitinib. SUCRA rankings identified ivarmacitinib 8 mg for achieving both SALT ≤20 and SALT ≤10 outcomes. MAIC analyses further confirmed the superiority of ivarmacitinib after reweighting for baseline disease severity, sex, and disease duration. Adjusted ORs for both SALT ≤20 and SALT ≤10 significantly favored ivarmacitinib over deuruxolitinib, demonstrating robustness across multiple analytic approaches.

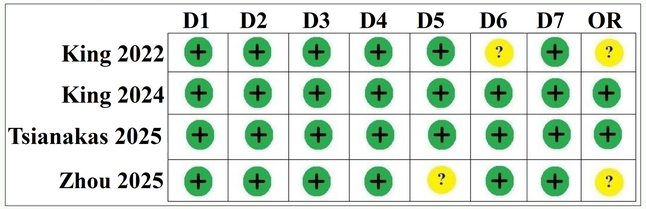

Figure 2. Risk of Bias Assessment (ROB) for Included RCTs. ROB for included randomized controlled trials using the Cochrane Risk of Bias 2 (ROB 2) tool. All studies showed low risk across random sequence generation, allocation concealment, blinding, and attrition bias domains.

Treatment	NMA OR (95% CrI)	Model 1 OR (95% CrI) (Base Case: Sex, Baseline SALT, Episode & Disease Duration)	Model 2 OR (95% CrI) (Baseline SALT Only)	Model 3 OR (95% CrI) (All Covariates)
SALT ≤ 10				
Ivarmacitinib 4 mg vs Deuruxolitinib 8 mg	1.08 (0.69–1.71)	1.00 (0.63–1.59)	0.96 (0.60–1.52)	0.92 (0.55–1.46)
Ivarmacitinib 8 mg vs Deuruxolitinib 8 mg	1.15 (0.85–1.56)	1.10 (0.74–1.65)	1.03 (0.70–1.61)	1.02 (0.62–1.70)
SALT ≤ 20				
Ivarmacitinib 4 mg vs Deuruxolitinib 8 mg	3.33 (0.88–12.68)	4.00 (1.00–14.50)	5.50 (1.20–18.00)	6.80 (1.40–21.00)
Ivarmacitinib 8 mg vs Deuruxolitinib 8 mg	4.18 (1.11–15.71)	5.00 (1.20–18.00)	6.50 (1.50–22.00)	8.00 (1.80–25.00)

Table 1. Adjusted OR from NMA and ML-NMR models comparing ivarmacitinib 4 mg and 8 mg QD and deuruxolitinib 8 mg BID

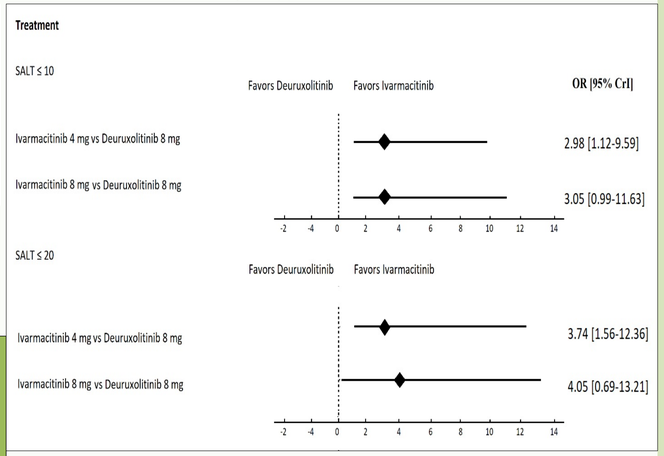

Figure 3. NMA Forest Plots displaying ORs and 95% credible intervals (CrI) for treatment response at Week 24 for ivarmacitinib 4 mg and 8 mg QD vs. deuruxolitinib 8 mg BID in achieving SALT ≤10 and SALT ≤20 responses.

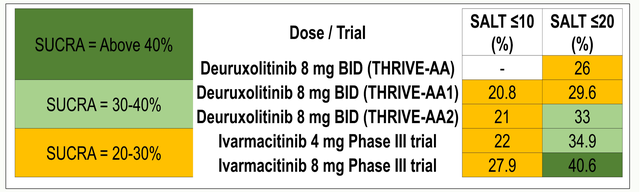

Figure 4. SUCRA Scores for deuruxolitinib 8 mg BID (THRIVE-AA, THRIVE-AA1, THRIVE-AA2) & ivarmacitinib 4 mg & 8 mg (Phase III trial). SUCRA values indicate relative ranking for SALT ≤10 and ≤20 endpoints

Results

Comparator	Naive OR (95% CI)	Base Case OR (95% CI)	SALT at Baseline OR (95% CI)	AIC Selected OR (95% CI)	All Possible OR (95% CI)
SALT ≤ 10					
Ivarmacitinib 4 mg vs Deuruxolitinib 8 mg	14.63 (6.32-25.63) (p<0.0001)	11.23 (6.21-21.62) (p<0.0001)	18.22 (4.61-25.32) (p<0.0001)	3.52 (1.35-6.32) (p=0.00081)	3.5 (1.65--6.35) (p=0.01)
Ivarmacitinib 8 mg vs Deuruxolitinib 8 mg	15.63 (7.32-29.32) (p<0.001)	9.62 (3.36-25.36) (p<0.001)	16.32 (6.35-27.62) (p<0.001)	1.169 (0.67-2.03) (p=0.5)	1.63 (0.52-2.74) (p=0.008)
SALT ≤ 20					
Ivarmacitinib 4 mg vs Deuruxolitinib 8 mg	15.74 (6.83-34.63) (p<0.0001)	13.46 (5.72-31.65) (p<0.0001)	16.89 (7.42-38.45) (p< 0.0001)	6.03 (2.47-14.71) (p=0.0001)	7.32 (2.98-17.98) (p=0.00006)
Ivarmacitinib 8 mg vs Deuruxolitinib 8 mg	12.41 (5.76-26.72) (p<0.0001)	10.78 (4.93-23.56) (p<0.0001)	14.26 (6.61-30.76) (p<0.0001)	3.45 (1.52-7.82) (p=0.002)	4.26 (1.84-9.86) (p=0.0007)

Table 2. MAIC for SALT ≤20 responses: Ivarmacitinib vs. Deuruxolitinib.

Conclusion

In a previous NMA, among the 3 US approved oral JAKis, deuruxolitinib 8 mg showed the highest short-term efficacy for severe AA (Babul et al, *J Dermatol*, 2025). In this study, using BNMA, ML-NMR, and MAIC, ivarmacitinib, particularly 8 mg QD demonstrated superior efficacy vs. deuruxolitinib 8 mg BID in adults with severe AA, supporting ivarmacitinib as a preferred oral JAKi where both drugs are available, while underscoring the need for long-term head-t-head studies.

References

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