Alternative approaches to the analysis of utility data: atopic dermatitis

Karner C, Wakefield V, Edwards SJ – BMJ Technology Assessment Group MSR81

Objectives

Health-related quality of life (HRQoL) data are commonly collected as an outcome in clinical studies. However, unlike other outcomes, these data are rarely analysed using meta-analytic techniques – particularly when drawn from different yet related studies (e.g. when an indirect comparison of treatments is required). Using atopic dermatitis as an example, this research examines the impact of using data directly from studies or analysed as an absolute or relative effect measure in an indirect comparison.

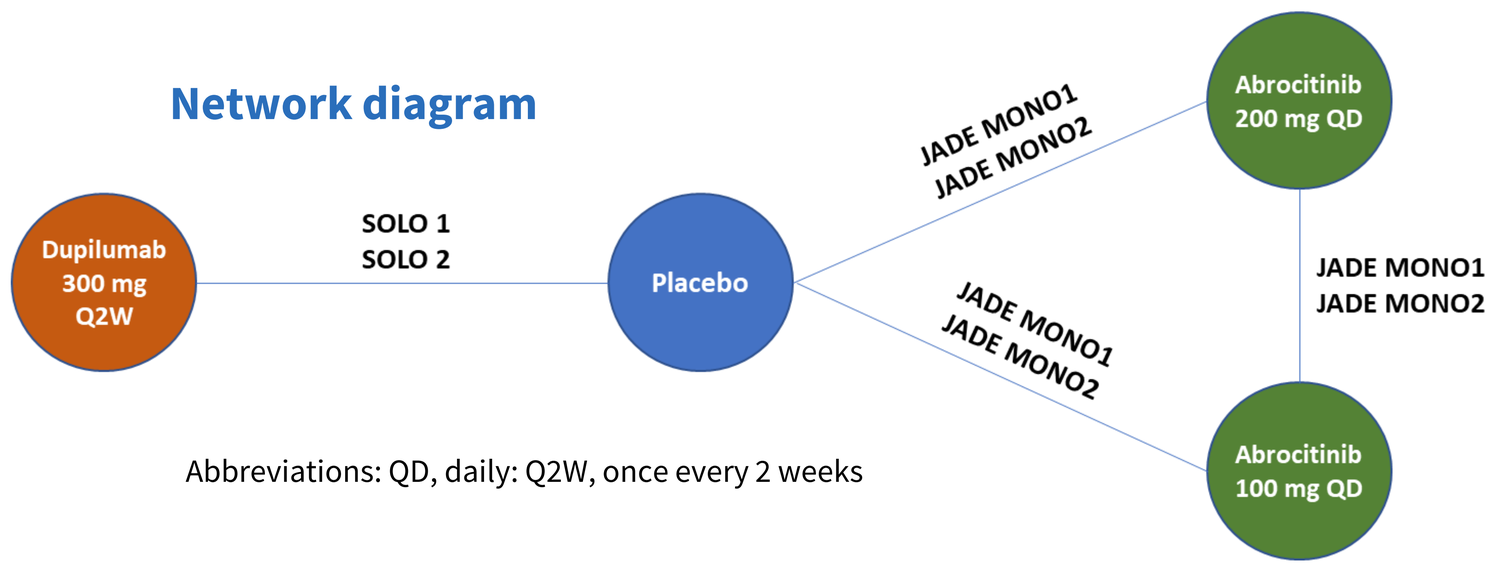
Methods

Using a pre-existing network of randomised controlled trials for the treatment of atopic dermatitis, available data were extracted on baseline utilities, utilities at 12/16 weeks, or change from baseline depending on availability. Utility data were converted to EQ-5D-3L if not already provided in that format.

Bayesian network meta-analyses (NMAs) were conducted in OpenBUGS. Due to the sparsity of the network, fixed effects models were used to calculate the absolute difference and relative difference from baseline for placebo (assumed to be equivalent of best supportive care), abrocitinib 100mg, abrocitinib 200mg and dupilumab 300mg. The differences generated by the NMAs were then applied to a BSC utility to estimate the impact of each treatment.

Results

Network diagram



Abbreviations: QD, daily: Q2W, once every 2 weeks

The network comprised of 4 studies connected via placebo. The baseline utility value was taken from the placebo group of SOLO 1 (0.753). Estimated utility values at 12 weeks for all active treatments were: 0.790 vs 0.693 vs 0.876 (abrocitinib 100mg), 0.790 vs 0.683 vs 0.876 (abrocitinib 200mg), and 0.873 vs 0.714 vs 0.888 (dupilumab 300mg), for observed data vs absolute difference NMA vs relative difference NMA, respectively.

Treatment	Observed data	Absolute difference NMA	Relative difference NMA
Placebo	0.753	0.753	0.753
Abrocitinib 100 mg QD	0.790	0.693	0.876
Abrocitinib 200 mg QD	0.790	0.683	0.876
Dupilumab 300mg Q2W	0.873	0.714	0.888

Conclusions

Utility values should be estimated based on the available data with a strong preference for meta-analytic techniques when multiple trials or indirect comparisons are required. Best practice suggests a relative treatment approach would be preferred.

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