Impact of differential baseline utility values: atopic dermatitis

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Objectives

Randomisation should ensure similar baseline utilities for all treatments within a trial. However, imperfect randomisation can lead to differences. Applying relative changes to standardised baseline utilities is in keeping with guidance from the National Institute for Health and Care Excellence (NICE) Decision Support Unit. Using atopic dermatitis as an example, this research examines if differing baseline utilities have a meaningful impact in cost-utility analysis (CUA).

Methods

CUA was conducted on a monoclonal antibody (MABs) (dupilumab) and Janus Kinase inhibitors (JAKis) (abrocitinib and upadacitinib) in combination with topical corticosteroids (TCS) for the treatment of atopic dermatitis. The research focussed on a subgroup of adults who achieve inadequate response to, cannot tolerate, or are contraindicated to CsA.

Due to data availability, a **class-based** approach was used for the MA and JAKis. Mapped EQ-5D-3L utility values extracted from relevant trials were for baseline and responders to treatment, stratified by population subgroup and measure of treatment response.[1] In the CUA, baseline utility values informed the 16-week pre-assessment period. Additionally, utility values were used for responders to treatment, which reflect the absolute improvement observed in the trials. A scenario analysis, using a single baseline utility value, was conducted to facilitate a comparison of the two approaches.

Results

Compared to using the observed (class-based) values, when a single baseline utility was applied, the south-west quadrant incremental cost-effectiveness ratios (ICERs) for abrocitinib 100mg and upadacitinib 15 mg versus dupilumab (300 mg once every 2 weeks) increased by £15,293 and £16,165, respectively, the north-east quadrant ICER for upadacitinib 30mg versus dupilumab decreased by £7,096 and abrocitinib 200mg continued to dominate dupilumab.

Comparison vs dupilumab	Treatment specific baseline utility value	Common baseline utility value
Abrocitinib 100 mg + TCS	£169,480 (SW quadrant)	£184,773 (SW quadrant)
Abrocitinib 200 mg + TCS	Dominant	Dominant
Upadacitinib 15 mg + TCS	£181,649 (SW quadrant)	£197,814 (SW quadrant)
Upadacitinib 30 mg + TCS	£130,198 (NW quadrant)	£123,102 (NW quadrant)

Abbreviations: NW, north-west; SW, south-west; TCS, topical corticosteroids.

Conclusions

Applying the same baseline utility value had a large impact on the magnitude of the ICERs compared to using the observed values, but not the direction of the results. A limitation of the scenario analysis is that the absolute improvement observed in trials is lost. Standardising baseline utilities and applying relative changes derived from a meta-analysis would be the preferred option, subject to data availability.

[1]Edwards, S. E., Karner, C., Jhita, T., Barton, S., Marceniuk, G. Abrocitinib, tralokinumab and upadacitinib for treating moderate-to-severe atopic dermatitis: A multiple Technology Assessment. BMJ Technology Assessment Group, 2021; in press.

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