EE9

# A Cost-Effectiveness Analysis of Abrocitinib Versus Upadacitinib and Baricitinib for the Treatment of Moderate-To-Severe Atopic Dermatitis

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## Background

- Atopic dermatitis (AD) is a chronic inflammatory skin disorder characterised by erythematous, painful, and pruritic lesions, often relapsing-remitting in nature[1,2].
- In the United Kingdom (UK), three Janus kinase inhibitors (JAKi; abrocitinib, baricitinib, and upadacitinib) are approved for treating moderate-to-severe AD in patients whose disease has not responded to at least one systemic immunosuppressant, or if immunosuppressants are not suitable[3,4].
- There are no published direct head-to-head clinical trials on JAKi in AD. However, network meta-analyses (NMA) have reported similar relative efficacy between abrocitinib and upadacitinib[3,5], while abrocitinib and upadacitinib were more effective versus baricitinib[3,5].
- Given the indirect efficacy estimates, cost is likely a key driver of clinical decision-making in AD[6], therefore, comparative cost-effectiveness analyses for JAKi in moderate-to-severe AD are vital to aid UK decision makers.

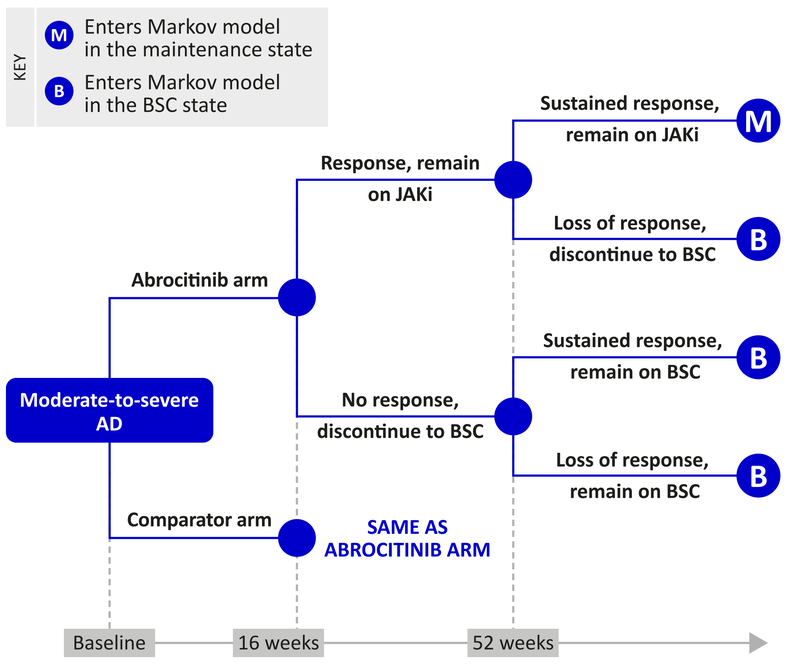
## Objective

- To evaluate the cost-effectiveness of abrocitinib compared with upadacitinib and baricitinib in patients with moderate-to-severe AD from the perspective of the National Health Service (NHS) in England, including the impact of varying drug discounts.

## Methods

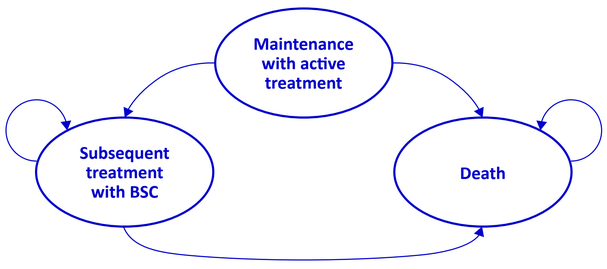
- A hybrid cost-effectiveness analysis (CEA) model captured short-term outcomes (1-year decision tree; **Figure 1**), before patients transitioned into a three-state Markov model (lifetime time horizon; 1-year cycle length; **Figure 2**).
- Response was measured as ≥75% improvement from baseline in Eczema Area and Severity Index (EASI-75) at Week 16. Non-responders stopped treatment and switched to best supportive care (BSC).
- At Week 52, patients either discontinued and switched to BSC alone, or continued treatment in the "maintenance therapy state" in the Markov model.
- Non-responders who discontinued treatment were assumed to have a) the average utility for a non-responder on treatment, then BSC utility, regardless of response between Week 16 and Week 52; and b) costs associated with BSC.
- Where two doses were licensed, patients received the lower dose, with up-titration by Week 12 in non-responders. The proportion of patients up-titrating (69.7%) was informed by the LEVEL-UP study[7], and was assumed to be the same for both upadacitinib and abrocitinb.
- Clinical efficacy, safety, and HRQoL data were obtained from an independent NMA from Drucker 2024[5], and JADE COMPARE[8].
- Outputs included cost per response at Week 16 (EASI-75), cost per sustained response at Week 52, and incremental cost-effectiveness ratios (ICER), with two-way sensitivity analyses applying 0–95% discounts to each JAKi.

### Figure 1: Model structure – decision tree




Abbreviations: AD, atopic dermatitis, BSC, best supportive care.

### Figure 2: Model structure – Markov component




Abbreviations: BSC, best supportive care.

## Results

- Cost per response (at drug list price) at Week 16 was £5,035 for abrocitinib, £5,396 for upadacitinib, and £7,609 for baricitinib (**Table 1**).
- Abrocitinib also had the lowest cost per sustained EASI-75 response at Week 52 (£14,141) compared with upadacitinib (£16,843) and baricitinib (£16,172) (**Table 1**).
- ICERs for abrocitinib versus upadacitinib were £422,933/QALY (–0.04 QALYs; –£16,243; South-West quadrant), and for abrocitinib versus baricitinib were £69,324/QALY (+0.26 QALYs; +£18,222; North-East quadrant) (**Table 2**).
- When identical discounts for each drug of ≤90% were applied, abrocitinib remained cost-effective versus upadacitinib at a willingness-to-pay (WTP) threshold of £20,000/QALY (**Table 3**).
- Abrocitinib was cost-effective versus baricitinib when both drugs were discounted by ≥63.1% at a WTP threshold of £20,000/QALY (**Table 4**).

### Table 1. Cost per response (EASI-75) analysis at list price

| | Abrocitinib | Upadacitinib | Baricitinib |
|---|---|---|---|
| Cost of treatment to Week 16 | £3,575 | £4,106 | £3,222 |
| Response rate (EASI-75) | 71.00% | 76.09% | 42.35% |
| Cost per EASI-75 response (Week 16) | £5,035 | £5,396 | £7,609 |
| Cost to Week 52 | £9,030 | £11,526 | £6,159 |
| Cost per sustained EASI-75 response at Week 52 | £14,141 | £16,843 | £16,172 |

Abbreviations: EASI-75, ≥75% reduction from baseline in Eczema Area and Severity Index.

### Table 2. Cost-effectiveness results for abrocitinib, upadacitinib and baricitinib at list price

| Results | Abrocitinib | Upadacitinib | Baricitinib |
|---|---|---|---|
| Total costs | £98,648 | £114,890 | £80,425 |
| Total QALYs | 15.59 | 15.63 | 15.33 |
| Incremental costs (abrocitinib vs) | – | –£16,243 | £18,222 |
| Incremental QALYs (abrocitinib vs) | – | –0.04 | 0.26 |
| ICER (abrocitinib vs) | – | £422,933 | £69,324 |

Note: patients that did not respond on abrocitinib were up-titrated by Week 12 from 100 mg to 200 mg, while patients that did not respond on upadacitinib were up-titrated from 15 mg to 30 mg.

Abbreviations: ICER, incremental cost-effectiveness ratio; QALY, quality-adjusted life-year.

### Table 3. Discount threshold analysis for abrocitinib versus upadacitinib

Cost-effective <£20,000 | Cost-effective <£30,000 | Not cost-effective

| | Upadacitinib discount | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 95% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abrocitinib discount | Annual cost per patient | £14,833 | £13,350 | £11,866 | £10,383 | £8,900 | £7,416 | £5,933 | £4,450 | £2,967 | £1,483 | £742 |
| 0% | £11,659 | | | | | | | | | | | |
| 10% | £10,493 | | | | | | | | | | | |
| 20% | £9,327 | | | | | | | | | | | |
| 30% | £8,161 | | | | | | | | | | | |
| 40% | £6,995 | | | | | | | | | | | |
| 50% | £5,829 | | | | | | | | | | | |
| 60% | £4,664 | | | | | | | | | | | |
| 70% | £3,498 | | | | | | | | | | | |
| 80% | £2,332 | | | | | | | | | | | |
| 90% | £1,166 | | | | | | | | | | | |
| 95% | £583 | | | | | | | | | | | |

### Table 4. Discount threshold analysis for abrocitinib versus baricitinib

Cost-effective <£20,000 | Cost-effective <£30,000 | Not cost-effective

| | Baricitinib discount | 0% | 10% | 20% | 30% | 40% | 50% | 60% | 70% | 80% | 90% | 95% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Abrocitinib discount | Annual cost per patient | £10,508 | £9,457 | £8,407 | £7,356 | £6,305 | £5,254 | £4,203 | £3,152 | £2,102 | £1,051 | £525 |
| 0% | £11,659 | | | | | | | | | | | |
| 10% | £10,493 | | | | | | | | | | | |
| 20% | £9,327 | | | | | | | | | | | |
| 30% | £8,161 | | | | | | | | | | | |
| 40% | £6,995 | | | | | | | | | | | |
| 50% | £5,829 | | | | | | | | | | | |
| 60% | £4,664 | | | | | | | | | | | |
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| 80% | £2,332 | | | | | | | | | | | |
| 90% | £1,166 | | | | | | | | | | | |
| 95% | £583 | | | | | | | | | | | |

## Conclusions

- Abrocitinib had the lowest cost per EASI-75 response at Week 16 and the lowest cost per sustained response at Week 52 amongst all JAKi assessed for treating moderate-to-severe AD.
- Abrocitinib was more cost-effective than upadacitinib at list price; driven by upadacitinib-treated patients up-titrating to the more expensive 30 mg dose early in their treatment course[7]. Abrocitinib remained cost-effective when confidential discounts up to 90% were considered for each drug.
- Abrocitinib was not cost-effective compared with baricitinib at list price, as lower response rates with baricitinib at Week 16 led to almost twice as many patients discontinuing baricitinib and switching to less costly BSC after failing treatment. Abrocitinib became cost-effective when considering a discount of ≥63.1% for each drug.
- Key limitations of this analysis include the lack of head-to-head data and the assumption that non-responders move to BSC.
- These findings will aid payers, commissioners, clinicians, and other healthcare professionals when prescribing JAKi to patients with moderate-to-severe AD in the NHS.

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