

# Lebrikizumab for treating moderate to severe atopic dermatitis in people 12 years and over

For public –  
CON information redacted

**Technology appraisal committee B 11 April 2024**

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# Lebrikizumab for treating moderate to severe atopic dermatitis in people 12 years and over

- ✓ **Background and key issues**
- Clinical effectiveness
- Modelling and cost effectiveness
- Summary

# Background on atopic dermatitis

More common in childhood - dry skin and itch are common symptoms of AD

## Causes

- Exact cause unknown – related to disruption in skin barrier
  - leading to increased water loss and increased penetration of allergens and irritants

## Epidemiology

- More common in childhood, affects 1 in 5 children and 1 in 10 adults
- 7% of people who require treatment have moderate to severe atopic dermatitis

## Diagnosis and classification

- Mild, moderate, and severe diagnosis based on assessment tools including EASI

## Symptoms and prognosis

- Blotchy rash, dry skin, itchy and inflamed skin
- No cure, treatments reduce symptoms and flare ups

[EASI description \(see slide\)](#)

# Patient and clinical perspective

A heterogenous and misunderstood disease, having variety of treatments is useful

## Patient perspective: Eczema Outreach Support

- AD is a misunderstood condition that is often minimised as “a bit of itchy skin”
- Moderate and severe AD has psychosocial impact on young people
- People with AD question the safety of topical corticosteroids and want other options

“...far more than dry skin or a bit of an itch...can demand an all-consuming lifestyle and coping techniques”

## Patient perspective: National Eczema Society

- Better safety profile than immunosuppressants could likely reduce hospital visits

“has significant psychosocial impacts on children and young people, including low self-confidence, friendship difficulties, and school attendance problems”

## Clinical perspective: British Association of Dermatologists

- Lebrikizumab an additional biological treatment
- Variety of treatments useful because AD is a heterogenous condition

# Equality considerations

Skin type can impact atopic dermatitis assessment

## Company

- Assessment\* of atopic dermatitis in people with darker skin type may be more challenging

## Clinical expert

- People with darker skin types may be undertreated due to assessment challenges

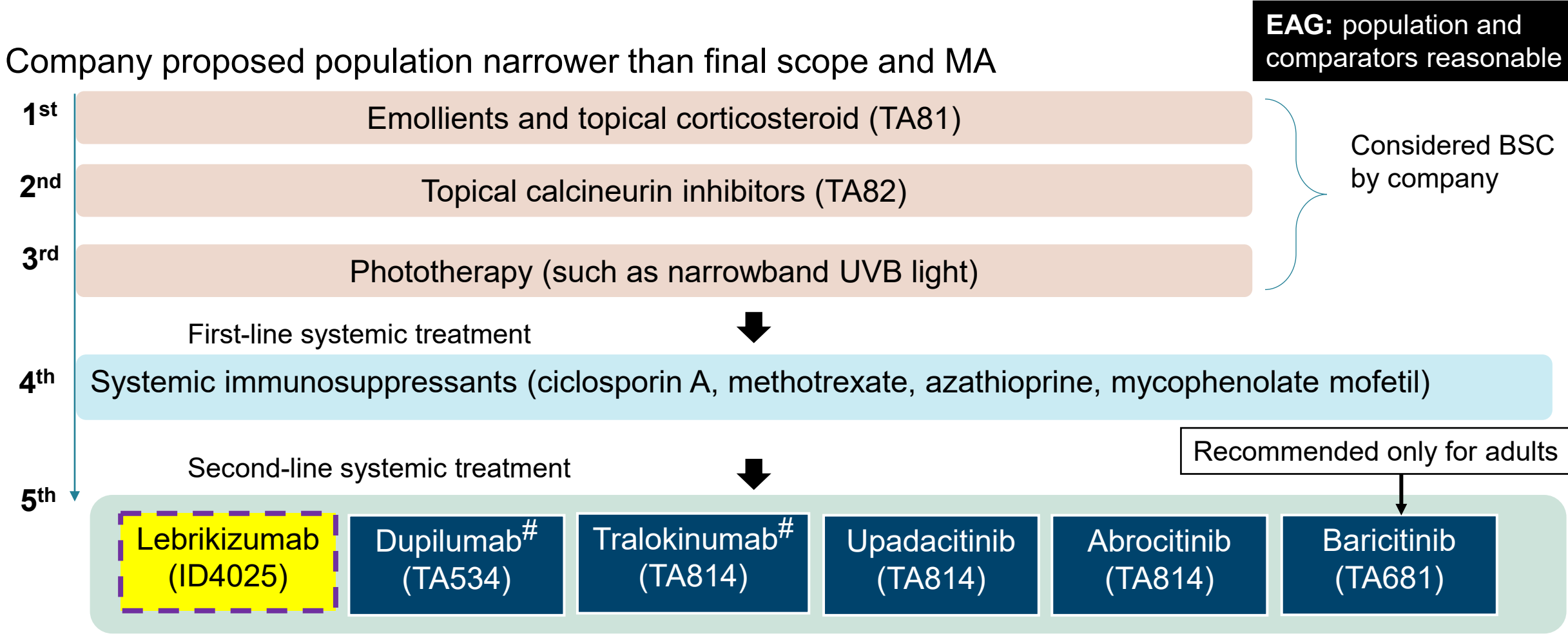
## Eczema Outreach Support

- People on low income may not be able to cover transport costs to receive treatment
- Language barrier could prevent certain people understanding treatment side effects
- Additional support may be needed for some young people whose developmental age are lower than their chronological age

## British Association of Dermatologists and National Eczema Society:

- No equality concerns raised

# Treatment pathway for atopic dermatitis in people 12 years and over



# Available for adolescents through NHS England






Is the company's positioning of lebrikizumab appropriate? What is the treatment sequence for second-line systemic treatments? Does treatment effect differ for adults and adolescents?

# Technology (Ebglyss, Almirall)

## Technology details

<b>Marketing authorisation</b>	<ul style="list-style-type: none"><li>• ‘treatment of moderate-to-severe atopic dermatitis in adults and adolescents 12 years of age and older with a body weight of at least 40 kg who are candidates for systemic therapy’</li><li>• UK MA granted in December 2023 through EMA reliance route</li></ul>
<b>Mechanism of action</b>	<ul style="list-style-type: none"><li>• Binds to IL-13 (cytokine) to reduce inflammation and itch</li></ul>
<b>Administration</b>	<ul style="list-style-type: none"><li>• Subcutaneous injection<ul style="list-style-type: none"><li>• <b>Induction:</b> 500 mg (two 250 mg injections) at Week 0 and Week 2, followed by 250 mg every other week (Q2W) up to Week 16</li><li>• <b>Maintenance:</b> Once clinical response is achieved, maintenance dose is 250 mg every four weeks (Q4W)</li></ul></li></ul>
<b>Price</b>	<ul style="list-style-type: none"><li>• £2,271.26 per pack (pack contains two 250mg injections)</li><li>• Patient access scheme (PAS) discount in place for lebrikizumab and its comparators</li></ul>

# Key issues

Issue	EAG report issue no.	Resolved?	ICER impact
Is the NMA population generalisable to NHS clinical practice?	1	No – for discussion	Unknown 
What is the preferred outcome for measuring response in atopic dermatitis? Is EASI 75 comparable to EASI 50 + DLQI? Is the company's approach of deriving response rate from EASI 75 acceptable?	2	No – for discussion	Small 
Discontinuation rates – to be discussed in Part 2a	3 and 4	No – for discussion	Large 
	5	No – for discussion	Large 
Should utilities be based on trial-arm or overall health state?	6	No – for discussion	Large 
Where is the company positioning lebrikizumab in the treatment pathway?	7	Yes	N/A



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# Summary of key clinical trials

EAG: TCS combination trials most relevant to clinical practice



**ADhere**

**ADvantage**

Characteristic	ADvocate 1	ADvocate 2	ADhere	ADvantage
<b>Design</b>	Randomised double-blind			
<b>Population</b>	Adults and adolescents with moderate to severe AD			Plus, not adequately controlled with CsA or for whom CsA is not medically advisable
<b>Intervention</b>	Lebrikizumab monotherapy (n=283)	Lebrikizumab monotherapy (n=281)	Lebrikizumab + TCS (n = 145)	Lebrikizumab + TCS (n = 220)
<b>Comparator</b>	Placebo (n=141)	Placebo (n=146)	Placebo + TCS (n = 66)	Placebo + TCS (n = 111)
<b>Duration</b>	16-week induction, 36 weeks maintenance		16 weeks	16-week induction, 36 weeks maintenance
<b>Primary outcome</b>	Percentage achieving EASI 75 at week 16 Participants achieving IGA score of 0 or 1 and a reduction of $\geq 2$ at week 16			Percentage achieving EASI 75 at week 16
<b>Used in base case?</b>	No		Yes (included in NMA used to calculate response rates for combination treatment)	
<b>Location</b>	No UK participants			UK participants included

AD, atopic dermatitis; CsA, ciclosporin A; EASI, Eczema Area Severity Index; IGA, Investigator's Global Assessment; NMA, network meta-analysis; TCS, topical corticosteroid

# Lebrikizumab trial results: EASI 75

Achieved primary outcome versus placebo

Trials did not include comparators relevant to NHS clinical practice

**EASI 75:** percentage of participants achieving a 75% reduction from baseline EASI score ([EASI description](#))

Lebrikizumab EASI 75 response at weeks 16

\*population treated with CsA (unless CsA unsuitable)

	ADhere		ADvantage*	
	Lebrikizumab+TCS (N=145)	Placebo+TCS (N=66)	Lebrikizumab+TCS (N=220)	Placebo+TCS (N=111)
% of participants	69.5	42.2	68.4	40.8
Difference (95% CI)	26.4 (12.1 to 40.8)		████████	
P value	<0.001		<0.001	

## [Results from ADvocate trials](#)

TA814 committee: composite outcome (EASI 50 + DLQI≥4) a more relevant outcome

[Company did post-hoc analysis to get EASI 50 + DLQI ≥4 results \(see slide\)](#)

**NICE** CsA, ciclosporin A; DLQI, Dermatology Life Quality Index; EASI, Eczema Area Severity Index; TCS, topical corticosteroid

# NMA summary

No trial comparing lebrikizumab with all comparators, company conducted NMA

- Company conducted NMA to assess the efficacy of lebrikizumab monotherapy and combination therapy with its comparators

Comparators included in the NMA	Outcomes addressed	EAG comments
Dupilumab, tralokinumab, baricitinib, abrocitinib and upadacitinib	<ul style="list-style-type: none"><li>• EASI response at 16 weeks</li><li>• IGA 0/1 response at week 16</li><li>• Pruritus numerical rating scale at weeks 4 and 16</li></ul>	<ul style="list-style-type: none"><li>• Excludes composite outcome: EASI 50 + DLQI</li><li>• Limited information on previous treatment received</li></ul>

## NMA results summary

[NMA results \(see slide\)](#)

- The odds ratio for achieving EASI 75 was statistically significant in favour of lebrikizumab + TCS compared with baricitinib + TCS
- The odds ratio for achieving EASI 75 was statistically significantly lower for lebrikizumab + TCS compared with upadacitinib 30 mg + TCS
- The difference between lebrikizumab and the other treatments (upadacitinib 15 mg, dupilumab, abrocitinib, and tralokinumab) was not statistically significant



# Key issues: Generalisability of population to NMA results

Unclear if differences in NMA trial populations markedly impact results

## Background

- No clinical trial comparing lebrikizumab with all its comparators, company did an NMA
- NMA response rate odd ratios calculated from various lebrikizumab and comparator trials
- There are differences in the trial eligibility criteria including with previous use of systemic therapy, response to previous treatment, and suitability for systemic treatment

## Company

- In general, trial differences (e.g., race and time of diagnosis) were not treatment effect modifiers
- Difference in potency and frequency of TCS may bias results
- Subgroup analysis shows response to lebrikizumab does not differ based on previous systemic treatment

## EAG comments

- Response rates based on population that does not fully match population of interest
  - ADvantage only lebrikizumab trial which explicitly included people previously treated with or who are unsuitable for systemic therapy with CsA
- Inclusion of people naïve to systemic treatment in some of the studies could potentially impact response rates → impact not expected to be important in the model
- Acknowledge company's approach represents available data

[NMA results \(see slide\)](#)



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# Key issues: Appropriate outcome response rate

Unclear if response rates based on EASI 75 NMA is acceptable

## Background

- Composite outcome (EASI 50 + DLQI  $\geq 4$ ) preferred for response rate in previous NICE appraisals
- Company used EASI 75 results versus placebo from NMA to inform lebrikizumab and comparator response rate at week 16
  - Converted EASI 50 + DLQI  $\geq 4$  response rate in placebo arm of upadacitinib trial to odds
  - Applied EASI 75 odds ratio from the NMA to estimate baseline-adjusted odds for each treatment

TA814  
TA681  
TA534

## Company

- NMA on composite outcome not possible because results of outcome for comparators are not published
- EASI 75 had the closest relative response to the composite outcome in the lebrikizumab trials
- Company base case uses EASI 75 to inform response rate

## EAG comments

- Unclear how similar EASI 75 and EASI 50 + DLQI  $\geq 4$  outcomes are for comparators
- Company approach reasonable if further data absent

 What is the preferred outcome for measuring response in atopic dermatitis? Is EASI 75 comparable to EASI 50 + DLQI? Is the company's approach of deriving response rate from EASI 75 acceptable?



# Key issues: Appropriate utility values

Unclear if utilities should be based on trial arm or overall health state

## Background

- Company used ADhere treatment-specific utility values in its model:
  - Utilities from lebrikizumab arm applied for lebrikizumab and its comparators
  - Utilities from placebo arm applied for BSC (topical treatments and phototherapy)
- For both groups, utility values were further subdivided based on health state (that is, responders and non-responders)
  - TA814 committee concluded that the magnitude of difference in utility between treatments was likely due to difference in trial design and reporting methodology
  - Arm-specific utility introduced unnecessary complexity
  - Preferred single utility based on overall health states (that is, baseline, response, and non-response)

## Company

- Outcomes differed for responders and non-responders based on treatment arm
- Good clinical rationale for having separate utility values based on treatment arm

## EAG comments

- Base case uses overall health state utilities (baseline, response, and non-response) for consistency with TA814
- Company utilities for response and non-response do not appear plausible, EAG used weighted average





# Cost-effectiveness results






All ICERs are reported in PART 2B slides  
because they include confidential  
comparator PAS discounts

- Scenario analyses will also be considered in PART 2 including the impact of alternative:
  - short term discontinuation rates
  - long-term discontinuation rates
  - utility values
  - outcome response rate (EASI 50 and EASI 75)
  - subsequent treatment assumption.

# Lebrikizumab for treating moderate to severe atopic dermatitis in people 12 years and over

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- ✓ **Summary**

# Key issues

Issue	ICER impact
Is the NMA population generalisable to NHS clinical practice?	Unknown 
What is the preferred outcome for measuring response in atopic dermatitis? Is EASI 75 comparable to EASI 50 + DLQI? Is the company's approach of deriving response rate from EASI 75 acceptable?	Small 
Discontinuation rates – to be discussed in Part 2a	Large 
	Large 
Should utilities be based trial-arm or overall health state?	Large 

**Thank you.**

**Lebrikizumab for treating moderate to severe atopic dermatitis in people 12 years and over**

# **Supplementary appendix**

# Measuring clinical effectiveness

## EASI and DLQI are used in clinical practice

### Eczema Area and Severity Index (EASI): 0 to 72

Assesses disease at 4 body regions, and measures 4 clinical signs (erythema, induration / papulation, excoriation and lichenification) on a scale of 1-3, proportionate to surface area

0	1 – 5.9	6.0 – 22.9	23.0 – 72
Clear	Mild	Moderate	Severe
Response	<ul style="list-style-type: none"> <li>EASI 50, EASI 75, EASI 90 or absolute reduction from baseline</li> <li>EASI 50 = <math>\geq 50\%</math> reduction in EASI score from baseline</li> </ul>		

### Dermatology Life Quality Index (DLQI): 0 to 30

10-item questionnaire covering 6 domains: symptoms and feelings, daily activities, leisure, work and school, personal relationships and treatment; 0(no impact) to 3 (worst impact)

0 – 1	2 – 5	6 – 10	11 – 20	21 – 30
No effect	Small effect	Moderate effect	Large effect	Extremely large effect
Response	$\geq 4$ point improvement considered a clinically important difference			

### Investigator's Global Assessment (IGA): 0 to 4

Clinician's impression of patient's eczema based on severity of erythema, papulation / induration, oozing / crusting and lichenification

0	1	2	3	4
Clear	Almost clear	Mild	Moderate	Severe

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# Recent NICE appraisals for atopic dermatitis

Company positioned lebrikizumab with recently appraised systemic treatments

Recent NICE appraisals

Technology appraisal	Drug	Recommendation
NICE TA814 (August 2022)	Abrocitinib, tralokinumab or upadacitinib	<b>Abrocitinib and upadacitinib:</b> for treating moderate to severe atopic dermatitis that is suitable for systemic treatment in adults and young people 12 years and over, only if the disease has not responded to at least 1 systemic immunosuppressant, or if these are not suitable <b>Tralokinumab:</b> recommended as above for adults only
NICE TA681 (March 2021)	Baricitinib	An option for treating moderate to severe atopic dermatitis in adults, only if the disease has not responded to at least 1 systemic immunosuppressant or they are not tolerated
NICE TA534 (August 2018)	Dupilumab	An option for treating moderate to severe atopic dermatitis in adults, only if the disease has not responded to at least 1 other systemic therapy, or they are not tolerated

# Decision problem

The EAG expects lebrikizumab to be used in combination with TCS in practice

Population, intervention, comparators and outcomes from the scope

	Final scope	Company	EAG comments
Population	People 12 years and over with moderate to severe atopic dermatitis who are candidates for systemic therapy		
Intervention	Lebrikizumab		Expected to be used in combination with TCS in clinical practice
Comparators	<ul style="list-style-type: none"><li>• Systemic therapy naïve: azathioprine, ciclosporin, methotrexate and mycophenolate</li><li>• Previous systemic therapy: abrocitinib, tralokinumab, upadacitinib, dupilumab, baricitinib</li></ul>	<p>Included previous systemic therapy comparators.</p> <p>Additional subgroup analysis for people with inadequate response to ciclosporin or who cannot have ciclosporin</p>	<p>Reasonable.</p> <p>More relevant for subgroup to analysis to capture people with inadequate response to methotrexate and ciclosporin</p>
Outcomes	<p>Included:</p> <ul style="list-style-type: none"><li>• Disease free period</li><li>• Time to relapse</li></ul>	<p>Replaced scope outcomes for:</p> <ul style="list-style-type: none"><li>• Rescue therapy use</li><li>• TCS-free days</li><li>• Treatment discontinuation</li></ul>	<p>Disagree with company's rationale that scope outcomes are less relevant</p> <p><a href="#">Return to previous slide</a></p>



# EAG summary of baseline characteristics in lebrikizumab trials

- Around 10-20 % adolescents in the trials – efficacy expected to be similar for both groups
- Weight was different across the trials, people in ADvantage having a lower weight – higher efficacy likely with lower weight
- There were differences in the proportion of Black and Asian people, 94% of people in ADvantage were White
- Around 40 – 65% of people in ADvocate and ADhere were systemic treatment naïve – not fully representative of NHS practice
  - ADvantage more representative; includes people initially treated with ciclosporin A



Are these baseline characteristics generalisable to NHS clinical practice?

# Additional study reported by company

Characteristic	ADjoin
Design	Long-term extension study
Population	Adults and adolescents with moderate-to-severe AD who completed one of the following lebrikizumab studies: <ul style="list-style-type: none"><li>• ADvocate 1, ADvocate 2, ADhere, ADore, ADOpt-VA</li></ul> or who otherwise met the inclusion criteria (US only)
Intervention	Lebrikizumab 250 mg Q4W Lebrikizumab 250 mg Q2W ± TCS
Comparator	N/A
Duration	100 weeks
Primary outcome	Percentage of participants who discontinue because of AEs
Used in base case?	No
Location	No UK participants

# Lebrikizumab trial results: EASI 75

Achieved primary outcome versus placebo

Trial did not include comparators relevant to NHS clinical practice

[EASI description \(see slide\)](#)

Lebrikizumab EASI 75 response at weeks 16

\*population treated with CsA (unless CsA unsuitable)

	ADvocate 1		ADvocate 2		ADhere		ADvantage*	
	Lebrikizumab monotherapy (N=283)	Placebo (N=141)	Lebrikizumab monotherapy (N=281)	Placebo (N=146)	Lebrikizumab+ TCS (N=145)	Placebo+TCS (N=66)	Lebrikizumab+ TCS (N=220)	Placebo+TCS (N=111)
% of participants	58.8	16.2	52.1	18.1	69.5	42.2	68.4	40.8
Difference (95% CI)	42.0 (33.3 to 50.6)		33.3 (24.4 to 42.2)		26.4 (12.1 to 40.8)		██████	
P value	<0.001		<0.001		<0.001		<0.001	

**EASI 75:** percentage of participants achieving a 75% reduction from baseline EASI score

**TA814 committee:** composite outcome (EASI 50 + DLQI≥4) a more relevant outcome

[Company did post-hoc analysis to get EASI 50 + DLQI ≥4 results \(see slide\)](#)

**NICE** CsA, ciclosporin A; DLQI, Dermatology Life Quality Index; EASI, Eczema Area Severity Index; TCS, topical corticosteroid

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# Lebrikizumab trial results: composite outcome

Lebrikizumab post-hoc composite outcome results: EASI 50 and DLQI ≥4-point improvement from baseline at week 16

	ADvocate 1 and 2 pooled		ADhere		ADvantage*	
	Lebrikizumab monotherapy	Placebo	Lebrikizumab+TCS	Placebo+TCS	Lebrikizumab+TCS	Placebo+TCS
Adults <sup>^</sup>	(n=497)	(n=252)	(n=113)	(n= 52)	(n= 194)	(n= 98)
n/N (%) of participants	████	████	████	████	████	████
Adolescents <sup>#</sup>	(n= 67)	(n= 35)	(n=32)	(n= 14)	(n= 26)	(n= 13)
n/N (%) of participants	████	████	████	████	████	████

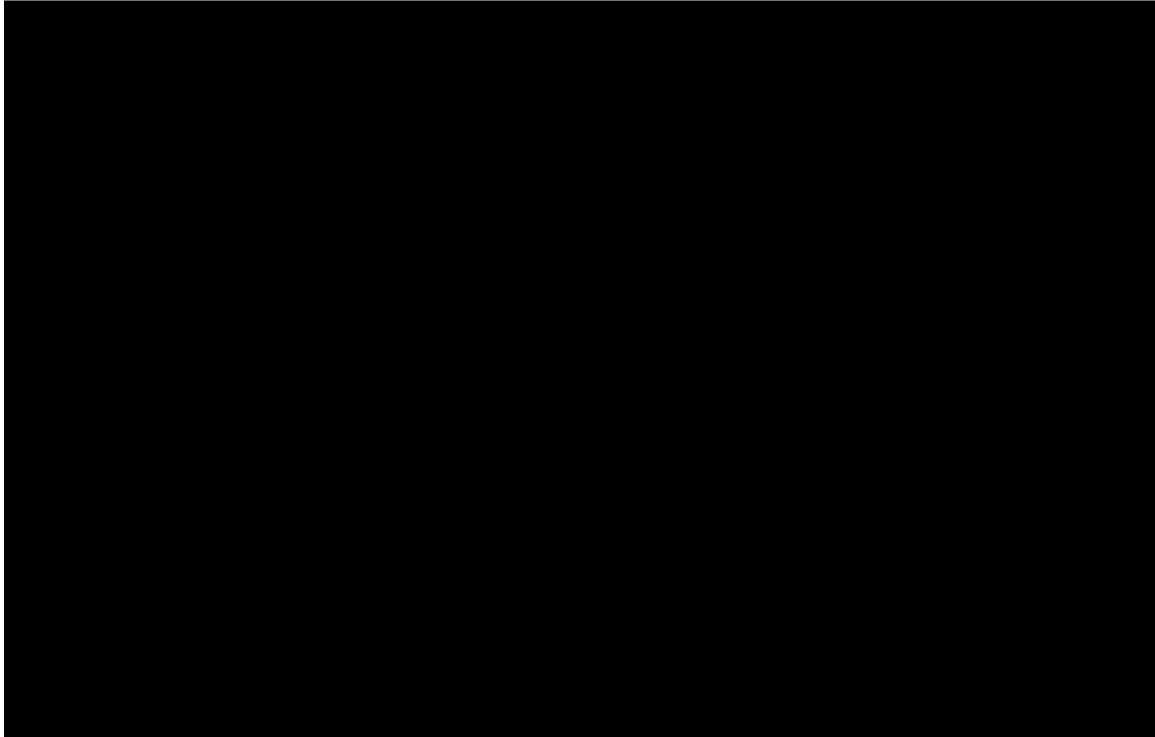
<sup>^</sup>over 18 years old; <sup>#</sup> above 12 but less than 18 years old

\*population treated with CsA (unless CsA unsuitable)

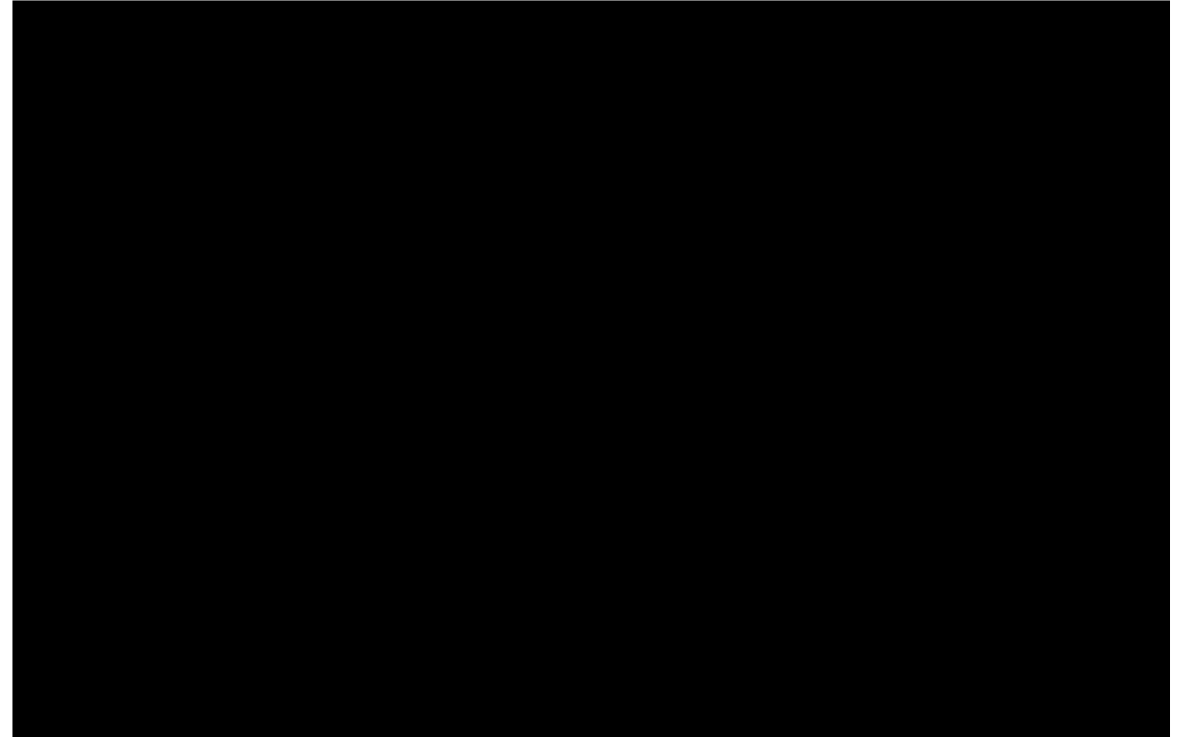
**EAG: Reason for missing data in analysis not clear**

# NMA network diagram

Monotherapy EASI response network diagram



Combination therapy EASI response network diagram



# NMA results for lebrikizumab and its comparators

Results of NMA EASI 75 at week 16 for the baseline risk adjusted model

Treatments	Active treatments vs. PBO OR (95% CrI)*	LEB vs. other active treatments or PBO OR (95% CrI)
Lebrikizumab 250 mg Q2W + TCS	■	-
Dupilumab 300 mg Q2W + TCS	■	■
Baricitinib 2 mg QD + TCS	■	■
Baricitinib 4 mg QD + TCS	■	■
Abrocitinib 100 mg QD + TCS	■	■
Abrocitinib 200 mg QD + TCS	■	■
Tralokinumab 300 mg Q2W + TCS	■	■
Upadacitinib 15 mg QD + TCS	■	■
Upadacitinib 30 mg QD + TCS	■	■
Placebo + TCS	-	■

\*used to calculate response rates in the company's economic model

# Response probability used in company's model

Probability of response to treatment at week 16 for combination therapy

Treatment	Probability (company base case)
Lebrikizumab	████
Dupilumab	████
Baricitinib	████
Upadacitinib	████
Abrocitinib	████
Tralokinumab	████

**Calculated by:**

- converting EASI 50 + DLQI response at week 16 in placebo arm of combination trials to odds
- applying EASI 75 NMA odds ratio to the baseline response rate.

# How company incorporated evidence into model

Input and evidence sources

Input	Assumption and evidence source
Baseline characteristics	ADvantage
Intervention efficacy	Baseline adjusted NMA response rates (ADhere and ADvantage)
Comparator efficacy	Baseline adjusted NMA response rates
Model Structure	Short term: decision tree; long term: Markov model
Utilities	ADhere EQ-5D-5L mapped to 3L
Costs	BNF
Resource use	NHS National Cost Collection 2020/2021, and Personal Social Services 2021

**EAG: Response to treatment not expected to differ between adults and adolescents**



# Utility values used by company and EAG

## Summary of health state utility values used in the model

Health state	Company base case (CI)	Clarification responses (CI)	EAG base case (CI)
Baseline	████	████	████
Response	████	████	████
Non-response	████	████	████
BSC (weighted average)*	████	████	████
BSC responder	████	████	████
BSC non-responder	████	████	████

\*Proportion of responders: 42% (from upadacitinib trial)

EAG: calculated the utility values for response and non-response as the weighted average of the utility values from the lebrikizumab and placebo arms used in the company's base case