# How to use the Harmonising Outcome Measures for Eczema Core Outcome Set for atopic dermatitis trials: a users' guide

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#### **Abstract**

**Background** The Harmonising Outcome Measures for Eczema (HOME) initiative has agreed upon the Core Outcome Set (COS) for use in atopic dermatitis (AD) clinical trials, but additional guidance is needed to maximize its uptake.

**Objectives** To provide answers to some of the commonly asked questions about using the HOME COS; to provide data to help with the interpretation of trial results; and to support sample size calculations for future trials.

Methods and results We provide practical guidance on the use of the HOME COS for investigators planning clinical trials in patients with AD. It answers some of the common questions about using the HOME COS, how to access the outcome measurement instruments, what training/resources are needed to use them appropriately and clarifies when the COS is applicable. We also provide exemplar data to inform sample size calculations for eczema trials and encourage standardized data collection and reporting of the COS.

**Conclusions** By encouraging adoption of the COS and facilitating consistent reporting of outcome data, it is hoped that the results of eczema trials will be more comprehensive and readily combined in meta-analyses and that patient care will subsequently be improved.

#### What is already known about this topic?

- The Harmonising Outcome Measures for Eczema (HOME) initiative has recommended core domains and outcome instruments that should be included and reported in all intervention trials of atopic dermatitis treatments.
- Use of the Core Outcome Set (COS) in trials and systematic reviews is currently low.
- Guidance is needed on how to access the HOME core instruments, how to use them and how to report trial findings.

#### What does this study add?

- This paper provides a 'how-to' guide to promote use of the HOME COS.
- It addresses common questions that people ask when trying to use the core instruments and provides data to support sample size calculations and the interpretation of results.

#### Accepted: 8 December 2023

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#### What are the clinical implications of this work?

- By increasing uptake of the HOME COS, clinical practice will be improved as data from published trials will be more easily combined in meta-analyses, thus improving clinical decision making.
- Improving the reporting of trial data in a consistent way for defined subgroups (e.g. children/adults) can boost the power of subgroup analyses in systematic reviews and help make informed personalized medicine decisions.

The Harmonising Outcome Measures for Eczema (HOME) initiative has published an agreed Core Outcome Set (COS) for use in atopic dermatitis (AD; also referred to as atopic eczema and eczema) trials.<sup>1</sup>

While it is hoped that the COS will be widely adopted, this will not happen without broad awareness, ownership and acceptance of the COS throughout the eczema research community. Uptake of COS across medicine is known to be variable, 1,2 and guidance on how best to support the uptake of COS suggests a need for recommendations on how to measure outcomes. 3,4 Tracking use of the HOME COS has shown that uptake of the core domains and outcome instruments is increasing over time, but there is still much room for improvement. 5,6

Herein, we provide practical guidance on the use of the HOME COS for investigators planning clinical trials in patients with AD. It answers some of the common questions about using the HOME COS, how to access the outcome measurement instruments, what training/resources are needed to use them appropriately and clarifies when the COS is applicable. We also provide exemplar data to inform sample size calculations for eczema trials and encourage standardized data collection and reporting of the COS.

## Which trials does the Core Outcome Set apply to?

The HOME COS is recommended for use in all trials testing AD interventions, if they are asking a question for which clinical outcomes are relevant. This includes drug and non-drug trials.

The HOME COS is not relevant for early-phase dose-finding studies or mechanistic studies (e.g. capturing biomarkers); primary prevention trials (when the incidence of eczema may be a more appropriate outcome); or trials of other types of eczema (e.g. for hand eczema there is a separate COS initiative: https://www.c3outcomes.org/hecos).

The domain of long-term control is only required if a trial is of 3 months' duration or longer.

If a trial includes people with a range of skin conditions (e.g. people with both AD and psoriasis), we recommend that the HOME core outcome instruments be considered for the trial where possible, but adherence to the COS would not be mandated as this might result in an undue data-collection burden. If data collected are of relevance to the HOME COS [e.g. quality of life (QoL) using the Dermatology Life Quality Index (DLQI) family of instruments], then – ideally – data should be presented separately for participants with AD. This could be provided as supplementary material.

## Is the Core Outcome Set suitable for all people?

The COS has been chosen to be relevant for all severities of AD, all ages and all ethnic groups, although some of the recommended instruments are age specific (Figure 1). Training for assessors may be needed to ensure applicability across all skin tones (particularly for the assessment of clinical signs in people with dark skin tones). There is a need for ongoing validation work to test the suitability of all instruments in different cultures, ethnicities and ages, but current evidence supports their wide use and applicability.

## How can the Core Outcome Set instruments be accessed?

Details of how to access the recommended core outcome instruments are available on the HOME website (www.homeforeczema.org). All instruments are freely available for use in noncommercial studies and for academic purposes, but copyright is usually retained by the developer and so permission for use should be obtained (see the individual instruments' websites for details of how this can be obtained). Some instruments may charge for commercial use.

Many of the preferred outcome instruments have been translated (and checked for quality of translation) and these translations are made available via the instrument's individual websites where possible. To reduce research waste and ensure consistency, the HOME initiative encourages sharing of validated versions of the translated instruments.

If a specific language version of the outcome instruments has not yet been made available, best-practice guidance on how to translate the instrument and ensure that the translated version is fit for purpose is available on the HOME website. Alternatively, various commercial companies offer suitable translation services and accreditation certificates.

The patient-reported outcomes included in the HOME COS are simple to use and all take < 2 min to complete. Specific instructions for completion are included within the instruments. For the assessment of clinical signs with the Eczema Area and Severity Index (EASI), a practical guide on how to complete the instrument is available, and training materials for clinicians or researchers making the assessments are available on the HOME website.

## How should the Core Outcome Set outcomes be collected?

There is currently no agreed consensus from HOME as to the preferred timing of outcome data collection, although

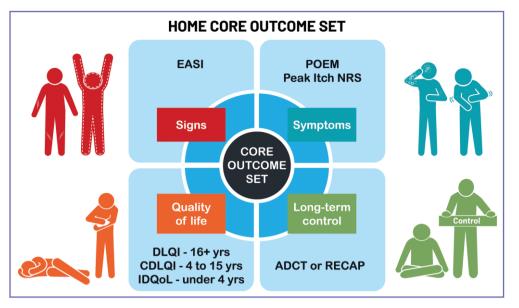


Figure 1 The Harmonising Outcome Measures for Eczema Core Outcome Set. Copyright: University of Nottingham 2023. ADCT, Atopic Dermatitis Control Tool; CDLQI, Children's Dermatology Life Quality Index; DLQI, Dermatology Life Quality Index; EASI, Eczema Area and Severity Index; IDQoL, Infants' Dermatitis Quality of Life Index; NRS, Numeric Rating Scale; POEM, Patient Oriented Eczema Measure; RECAP, Recap of atopic eczema. (Copyright University of Nottingham, 2023).

the TREatment of ATopic eczema (TREAT) Taskforce has published a consensus statement for use in clinical registries suggesting that outcomes should be collected at 'a minimum follow-up frequency of initially 4 weeks after commencing treatment, then every 3 months while on treatment and every 6 months while off treatment'. <sup>10</sup> It has been reported that collecting outcomes for at least 4–5 timepoints during a trial is most efficient, <sup>11</sup> but the exact timing of these assessments still lacks consensus agreement. Collecting outcomes very frequently throughout a trial (e.g. weekly) may lead to nonspecific trial effects for both groups that could mask small treatment effects. <sup>12</sup>

## How should the Core Outcome Set outcomes be reported?

Encouraging all trials to report outcomes at consistent time-points can facilitate meta-analysis in systematic reviews. <sup>10</sup> In the absence of consensus from the HOME initiative over the timing of outcome assessments, we would propose a pragmatic solution of triallists reporting outcome data at 4 weeks after starting treatment (to demonstrate short-term effect) and between 12 and 16 weeks (to capture medium term effects). In so doing, these recommendations reflect the consensus recommendation by the TREAT Taskforce, <sup>7</sup> and systematic review teams would be able to combine data from these two timepoints with relative confidence. Data for these timepoints could be made available as supplementary data files, if necessary.

Trial reports should include the mean and standard deviation for each timepoint (or median and interquartile range, depending on the distribution of the data) to facilitate inclusion in meta-analyses. <sup>13</sup> Presenting data as a categorized outcome (e.g. the proportion achieving a clinically significant improvement) can help with the interpretation of trial

findings but is insufficient for reporting of the COS without also including summary data for the continuous data.

To facilitate meta-analyses, we would advise the sharing of trial datasets so that important subgroup effects can be explored with combined datasets. If full data sharing is not possible, then it can be helpful to provide summary data for key characteristics separately from the main trial effects (e.g. age, sex, ethnicity and eczema severity). Such comparisons are generally underpowered in most trials, but by reporting these data separately, subsequent meta-analyses may be able to explore important subgroup effects and better inform clinical practice.

A template data table for use when reporting the HOME COS is provided (Table S1; see Supporting Information) and is available on the HOME website. If triallists routinely use this and provide it as supplementary information alongside trial reports, this could significantly enhance the speed and reliability of conducting meta-analyses in systematic reviews and inform subgroup analyses for specific patient groups.

## How should data from the core outcome instruments be interpreted?

When reporting changes in scores for the HOME core outcome instruments, it is useful to understand the clinical relevance of any observed changes.

Many of the HOME core outcome instruments have been mapped to severity bandings to aid interpretation (Table 1), which can be helpful when characterizing a study population.

The minimum important change (MIC) is often described as the smallest within-person change that is important to patients. <sup>14</sup> This can be an important concept to aid interpretation of trial results. For example, it can be used to report the proportion of people responding to treatment (i.e. achieving the MIC) for each of the compared treatments. <sup>15</sup>

Table 1 Interpretability of the Harmonising Outcome Measures for Eczema core outcome instruments

Core instruments (key publication)	Severity bandings	Minimum important within-person change
EASI (Hanifin et al., 2022) <sup>9</sup>	Leshem <i>et al.</i> (2015): $^{22}$ clear or no eczema = 0; almost clear = 0.1–1.0; mild disease = 1.1–7.0; moderate disease = 7.1–21; severe disease = 21.1–50; very severe disease $\geq$ 50.1	Schram <i>et al.</i> (2012): <sup>24</sup> 6.6 points; < 3 points (likely to be a measurement error)
	Chopra et al. (2017): <sup>23</sup> clear = 0; mild = 0.1-5.9; moderate = 6.0-22.9; severe = 23.0-72	
POEM (Charman <i>et al.</i> , 2004) <sup>25</sup>	Charman et al. (2013): $^{26}$ very mild=0-2; mild=3-7; moderate=8-16; severe=17-24; very severe=25-28	Howells <i>et al.</i> (2018): $^{27} \le 2$ points (likely to be measurement error); 2.1–2.9 points (small change, but may not be clinically important, depending on context); 3–3.9 (small but potentially important difference); $\ge 4$ points (very likely to be clinically important difference)
Peak Pruritus NRS (Yosipovitch <i>et al.</i> , 2019) <sup>28</sup>	NA	Yosipovitch <i>et al.</i> (2019): <sup>28</sup> ≥ 2 to 4 points
RECAP (Howells <i>et al.</i> , 2020) <sup>29</sup>	Zhang <i>et al.</i> (2023): <sup>30</sup> ≥6 points=AD not controlled (also see: Bhanot <i>et al.</i> , 2022) <sup>31</sup>	Zhang <i>et al.</i> (2023):30 4 points
ADCT (Pariser et al. 2020) <sup>32</sup>	Pariser et al. $(2020)$ : <sup>32</sup> $\geq$ 7 points = AD not controlled	Simpson et al. (2019):33 5 points
DLQI (Finlay <i>et al.</i> , 1994) <sup>34</sup>	Hongbo <i>et al.</i> (2005): $^{35}$ no effect on patient's life = 0–1; small effect on QoL = 2–5; moderate effect of QoL = 6–10; very large effect of QoL = 11–20; extremely large effect on QoL = 21–30	Basra <i>et al.</i> (2015): <sup>36</sup> 4-point change (for inflammatory skin disease, people with AD made up 12.5% of sample)
CDLQI (Lewis-Jones <i>et al.</i> , 1995) <sup>37</sup>	Waters et al. (2010): <sup>38</sup> 0–1 = no effect on child's life; 2–6 = small effect; 7–12 = moderate effect; 13–18 = very large effect; 19–30 = extremely large effect	Simpson <i>et al.</i> (2019): <sup>39</sup> 6–8 points (based on adolescents with moderate-to-severe disease)
IDQoL (Lewis-Jones <i>et al.</i> , 2001) <sup>40</sup>	Not yet available	Not yet available

AD, atopic dermatitis; ADCT, Atopic Dermatitis Control Tool; CDLQI, Children's Dermatology Life Quality Index; DLQI, Dermatology Life Quality Index; EASI, Eczema Area and Severity Index; IDQoL, Infants' Dermatitis Quality of Life Index; NA, not applicable; NRS, Numeric Rating Scale; POEM, Patient Oriented Eczema Measure; QoL, quality of life; RECAP, Recap of atopic eczema.

The MIC is a difficult concept to characterize and is rarely a fixed value. Rather, it depends on the type of participants included in a trial, the setting and the nature of the interventions being compared.<sup>16</sup> The values may also vary depending on whether you are interested in improvement or deterioration.<sup>17</sup>

A summary of published data relating to severity bandings and minimum important change for each of the HOME core outcome instruments is outlined in Table 1.

#### How can sample size estimates be made?

It has been advocated that sample sizes for trials should be based on the reasonable estimates of the true benefit of a given intervention (e.g. based on effect size anticipated, estimates from previous studies or values that are considered to be a realistic benefit), rather than the size of benefit judged to be important (MID).<sup>18</sup>

For example, a trial testing a simple, low-cost intervention with minimal side-effects may seek to detect a relatively small treatment effect that has broad applicability and benefit for many people, whereas a trial testing a new systemic drug for people with severe disease and with potential side-effects is likely to require a larger treatment effect to justify going ahead with the trial.

It may also be important to consider whether effect sizes vary according to baseline characteristics of the included population (e.g. eczema severity, age and sex). A study by Howells *et al.* explored the impact of different demographic

characteristics of participants included in five randomized controlled trials that used the Patient Oriented Eczema Measure (POEM) instrument in children with AD.<sup>19</sup> This study provided some reassurance that effect sizes were relatively stable across key demographic characteristics, including age, sex, ethnicity and disease severity.

One of the key challenges for designing eczema trials is sourcing relevant data to inform sample size estimations. To facilitate researchers in designing trials of AD treatments we have collated summary statistics for each of the HOME core outcome instruments according to setting, age of participants and disease severity. Where possible, details of the correlation between timepoints are also provided to inform analyses using repeated measures techniques (Tables 2–6). Data for QoL instruments have not been provided as this requires a different instrument for different ages.

### Areas of ongoing methodological debate

As with all COS, the HOME COS is provisional and may be adapted in time as new information comes to light. Several areas of debate remain, for which consensus discussions and agreement are still required.

Work is ongoing to establish the most efficient way of collecting the HOME COS and to reduce repetition of items across different domains. In the current COS, itch is captured in different ways in all three of the patient-reported domains, which is potentially frustrating and burdensome for people taking part in eczema trials. Future HOME meetings

Table 2 Data used to inform sample size calculations: clinical signs (Eczema Area and Severity Index)

Trial (setting)	No. of participants	Eligibility for trial	Age group	Baseline, mean (SD)	12 weeks, mean (SD)	16 weeks, mean (SD)	Correlations between timepoints (if repeated measures)
BEE trial (primary care, UK) <sup>41</sup>	550	Mild/moderate AD	Children	Intervention (cream): 3.2 (IQR 2.0–6.3) Control (lotion): 3.3 (IQR 2.0–7.2)	NA	Intervention (cream): 2.3 (IQR 0.9–5.2) Control (lotion): 2.2 (IQR 0.6–3.6)	-
CLOTHES trial (primary and secondary care, UK) <sup>42,a</sup>	300	Moderate/ severe AD	Children	Intervention: geometric mean 9.6 (7.8) Control: geometric mean 11.4 (10.6)	NA	Intervention: geometric mean 7.7 (10.1) Control: geometric mean 7.7 (8.7)	Correlation between baseline and 16 weeks: 0.65
Dupilumab trial (secondary care, USA and Canada) <sup>43</sup>	251	Moderate/ severe AD	Adolescents (12–18 years)	Intervention: 35.8 (14.8) Control: 35.5 (14.0)		Intervention: 12.3 (11.1) Control: 24.1 (15.5)	

AD, atopic dermatitis; BEE, Best Emollients for Eczema; CLOTHES, clothing for the relief of eczema symptoms; IQR, interquartile range; NA, not available. Data in the CLOTHES trial were skewed and so the geometric mean was used for analysis.

Table 3 Data used to inform sample size calculations: patient-reported symptoms (Patient Oriented Eczema Measure)

Trial (setting)	No. of participants	Eligibility for trial	Age group	Baseline, mean (SD)	12 weeks, mean (SD)	16 weeks, mean (SD)	Correlations between timepoints (if repeated measures)
BATHE trial (primary care, UK) <sup>44</sup>	482	Mild/ moderate AD	Children	Intervention: 9.5 (5.7) Control: 10.1 (5.8)	Intervention: 7.7 (6.2) Control: 7.9 (5.9)	Intervention: 7.1 (6.1) Control: 8.2 (6.3)	Correlation between baseline and 12 weeks: 0.52; correlation between baseline and 16 weeks: 0.48
ECO trial (primary care, UK) <sup>45</sup>	337	All severities	Young people (13–25 years)	Intervention: 15.1 (5.3) Control: 15.3 (5.5)	Intervention: 11.1 (5.9) Control: 14.0 (6.0)	Intervention: 11.2 (5.9) Control: 14.4 (6.3)	Correlation between baseline and 12 weeks: 0.57; correlation between baseline at 16 weeks: 0.56
ECO trial (primary care, UK) <sup>45</sup>	340	All severities	Children	Intervention: 12.9 (5.2) Control: 12.8 (5.4)	Intervention: 9.6 (6.1) Control: 10.0 (6.1)	Intervention: 9.7 (6.1) Control: 10.0 (6.0)	correlation between baseline and 12 weeks: 0.61; correlation between baseline at 16 weeks: 0.61
CLOTHES trial (primary and secondary care, UK) <sup>42</sup>	330	Moderate/ severe AD	Children	Intervention: 15 (6.0) Control: 15.8 (5.6)	Intervention: 11.5 (7) Control: 13.4 (6.7)	Intervention: 10.9 (6.6) Control: 13.3 (7.2)	Correlation between baseline and 16 weeks: 0.64
Dupilumab trial (secondary care, USA and Canada) <sup>43</sup>	251	Moderate/ severe	Adolescents (12–18 years)	Intervention: 21.1 (5.5) Control: 21.1 (5.4)	_	Intervention: 11.2 (7.4) Control: 16.2 (8.3)	-
EMO trial (online, UK) <sup>12</sup>	296	Mild-to- severe	Mostly adults (93%)	Intervention: 15.42 (6.02) Control: 14.28 (6.06)	Intervention (8 weeks): 12.00 (6.08) Control: 12.94 (6.47)	_	-

AD, atopic dermatitis; BATHE, emollient bath additives for the treatment of childhood eczema; CLOTHES, clothing for the relief of eczema symptoms; ECO, Eczema Care Online; EMO, Eczema Monitoring Online.

Table 4 Data used to inform sample size calculations: itch intensity (NRS-11 peak itch)

Trial (setting)	No. of participants	Eligibility for trial	Age group	Baseline, mean (SD)	12 weeks, mean (SD)	16 weeks, mean (SD)	Correlations between timepoints (if repeated measures)
ECO trial (primary care, UK) <sup>45</sup>	337	Mild/moderate	Young people	Intervention: 5.7 (2.2) Control: 5.6 (2.4)	Intervention: 5.0 (2.6) Control: 5.0 (2.5)	Intervention: 4.5 (2.6) Control: 4.7 (2.7)	NA
Dupilumab trial (secondary care, USA and Canada) <sup>43</sup>	251	Moderate/ severe	Adolescents (12–18 years)	Weekly average intervention: 7.5 (1.8)	_ `	Weekly average intervention: 4.0 (2.7)	NA
				Control: 7.7 (1.6)		Control: 6.0 (2.3)	

ECO, Eczema Care Online; NA, not available; NRS-11, 11-point Numeric Rating Scale.

Table 5 Data used to inform sample size calculations: eczema control (RECAP)

Trial (setting)	No. of participants	Eligibility for trial	Age group	Baseline, mean (SD)	12 weeks, mean (SD)	16 weeks, mean (SD)	Correlations between timepoints (if repeated measures)
ECO trial (primary care, UK) <sup>45</sup>	340	Mild/moderate AD	Children	Intervention: 12.8 (5.4) Control: 12.3 (5.5)	Intervention: 9.0 (6.1) Control: 9.7 (6.3)	Intervention: 8.6 (6.0) Control: 9.4 (6.9)	NA
ECO trial (primary care, UK) <sup>45</sup>	337	Mild/moderate	Young people	Intervention: 13.0 (5.1) Control: 13.1 (5.6)	Intervention: 10.3 (6.0) Control: 11.5 (6.3)	Intervention: 9.2 (6.0) Control: 10.7 (6.6)	NA
EMO trial (community, UK) <sup>12</sup>	232	All severities	Mostly adults	Intervention: 12.29 (6.14) Control: 11.79	Intervention (8 weeks): 10.67 (5.66)	_	NA
				(6.30)	(5.86)		

ECO, Eczema Care Online; EMO, Eczema Monitoring Online; NA, not available; RECAP, Recap of atopic eczema.

 Table 6
 Data used to inform sample size calculations: eczema control (Atopic Dermatitis Control Tool)

Trial (setting)	No. of participants	Eligibility for trial	Age (years)	Baseline, mean (SD)	12 weeks, mean (SD)	16 weeks, mean (SD)	Correlations between timepoints (if repeated measures)
RELIEVE-AD registry real-world clinical practice (Strober <i>et al.</i> , 2022) <sup>46</sup>	699	Initiating dupilumab	≥ 18	15.8 (5.4)	5.6 (5.0)	6 months: 5.0 (4.9)	-
BioDay Registry (Oosterhaven et al., 2022) <sup>47</sup>	104	On dupilumab for > 16 weeks and < 52 weeks	≥ 18	NA	NA	5.1 (3.7)	NA
CorEvita registry (data on file)	1738	Systemic eligible EASI≥12 vIGA moderate-to-severe	≥ 18	13.2 (6.3)			NA

EASI, Eczema Area and Severity Index; NA, not available; RELIEVE, EaRly Real-WorLd Patient EValuation for DupixEnt in Atopic Dermatitis; vIGA, validated Investigator Global Assessment.

will consider whether all items are necessary and whether a more streamlined approach could be adopted. It is also unclear whether the HOME patient-reported outcomes should be administered in a consistent order or not.

Some of the instruments (POEM and DLQI family of instruments) were originally designed and validated using

paper questionnaires rather than online versions, but preliminary evidence suggests that use in either format is appropriate.<sup>20</sup> With the increasing use of online data-capture forms, it is tempting to make answering all items on the outcome instruments mandatory. We do not generally advise making electronic data items mandatory, as this does not reflect how the instruments were developed or validated. An alternative approach that may help to minimize missing data during electronic data capture could be to make individual response items 'nonmandatory' but to add a warning to remind participants that not all of the questions have been completed as they attempt to navigate away from the form. If outcomes are collected using mandatory fields, it would be helpful to report this transparently in trial reports so that further exploration of the validity of both approaches could be explored.

In relation to capturing the domain of long-term control, while agreement over the possible instruments to measure 'eczema control' has been reached, it is not yet clear how often these instruments should be used to capture control over time. Further work is also needed to establish whether a single-item global measure of control would be sufficient.

For trials requiring health utility data to inform health economic analyses, it may be possible to map scores from the DLQI instruments to EQ-5D utility scores, <sup>21</sup> thus reducing the data-collection burden of using multiple QoL questionnaires.

How best to combine and analyse QoL data across different age groups can be challenging and potentially limit the power of studies to look at QoL outcomes. For example, methodological guidance is needed to establish whether scores across the three age-specific QoL instruments can be combined for analysis.

Similarly, it is unclear whether scores derived by proxy reporting can be combined with self-reported outcomes when including children and adults in the same trial.

#### Conclusion

We hope that this 'how-to' guide will support the uptake and reporting of the HOME COS and, by doing so, improve the evidence base for clinical decision making and improve patient care.

#### **Acknowledgements**

Thank you to all members of the Harmonising Outcome Measures for Eczema (HOME) initiative who have contributed to consensus discussions over the Core Outcome Set. Thanks also to Natasha Rogers for her help in preparing this manuscript for submission and for creating Figure 1.

#### Funding sources

This research received no specific grant from any funding agency in the public, commercial or not-for-profit sectors.

#### Conflicts of interest

K.S.T. was involved in the development and testing of one of the Harmonising Outcome Measures for Eczema (HOME) core outcome instruments [Recap of atopic eczema (RECAP)] and is employed at the research centre where the Patient Oriented Eczema Measure (POEM) was developed. The University of Nottingham owns copyright to license POEM – chargeable for commercial users. L.H. has

received consultation fees from the University of Oxford on an educational grant funded by Pfizer, unrelated to the submitted work; was involved in the development of the RECAP instrument; and is employed at the research centre where the POEM was developed. The University of Nottingham owns copyright to license POEM - chargeable for commercial users. Y.A.L. has received honoraria or fees from AbbVie, Sanofi, Genentech, Regeneron, Pfizer and Dexcel Pharma; an independent research grant from AbbVie; and has, without personal compensation, provided investigator services for Eli Lilly, Pfizer and AbbVie, all unrelated to this study. E.L.S. reports personal fees from Advances in Cosmetic Medical Derm Hawaii, AbbVie, Amgen, AOBiome, Arcutis Biotherapeutics, Arena Pharmaceuticals, Aslan Pharma, Boehringer Ingelheim USA, Boston Consulting Group, Bristol Myers Squibb - BMS, Collective Acumen (CA), CorEvitas, Dermira, Eli Lilly, Evelo Biosciences, Evidera, Excerpta Medica, FIDE, Forte Biosciences, Galderma, GlaxoSmithKline, Incyte, Janssen, Johnson & Johnson, Kyowa Kirin Pharmaceutical Development, LEO Pharma, Medscape, Merck, Maui Derm, MLG Operating, MJH Holding, Pfizer, Physicians World, PRImE, Regeneron, Revolutionizing Atopic Dermatitis, Roivant, Sanofi-Genzyme, Trevi Therapeutics, Valeant, Vindico Medical Education and WebMD; he also reports grants (or serves in a Principal Investigator role for) from AbbVie, Acrotech Biopharma, Amgen, Arcutis, Aslan, Castle Biosciences, CorEvitas, Dermavant, Dermira, Eli Lilly, Incyte, Kymab, Kyowa Kirin, National Jewish Health, LEO Pharma, Pfizer, Regeneron, Sanofi and Target RWE. These potential conflicts of interest have been reviewed and managed by Oregon Health & Science University. C.A. has received institutional funding from Dr Wolff Group and Bionorica, and consultancy fees or honoraria from Dr Wolff Group, Bionorica, Sanofi, LEO Pharma and RHEACELL; he was also involved in the development and testing of one of the HOME core outcome instruments (RECAP). P.I.S. has received departmental independent research grants for the TREAT NL registry from pharma since December 2019; is involved in performing clinical trials with many pharmaceutical industries that manufacture drugs used for the treatment of, for example, psoriasis and atopic dermatitis for which financial compensation is paid to the department/hospital; is Chief Investigator of the systemic and phototherapy atopic eczema registry (TREAT NL) for adults and children; and was involved in the development of one of the HOME core outcome instruments (RECAP). N.K. has received honoraria as a speaker/consultant for Sanofi, Maruho, AbbVie, Eli Lilly Japan, Mitsubishi Tanabe Pharma, Jansen Pharma, Taiho Pharmaceutical, Torii Pharmaceutical, Kyowa Kirin, Celgene Japan and LEO Pharma; and has received grants as an investigator from Maruho, Eli Lilly Japan, Sun Pharma, Taiho Pharmaceutical, Torii Pharmaceutical, Boehringer Ingelheim Japan, Kyowa Kirin, Jansen Pharma, Boehringer Ingelheim Japan, A2 Healthcare, AbbVie and LEO Pharma. H.C.W. chaired the HOME Core Outcome Set initiative from 2008 to 2021, was involved in the development of the POEM and is employed at the research centre where the POEM was developed. The University of Nottingham owns copyright to license POEM - chargeable for commercial users. L.A.A.G., M.E.J. and B.L.S. declare no conflicts of interest.

#### Data availability

No new data were generated or analysed in support of this research.

#### Ethics statement

Not applicable.

#### **Supporting Information**

Additional Supporting Information may be found in the online version of this article at the publisher's website.

#### References

- 1 Williams HC, Schmitt J, Thomas KS et al. The HOME Core outcome set for clinical trials of atopic dermatitis. J Allergy Clin Immunol 2022: 149:1899–911.
- Williamson PR, de Ávila Oliveira R, Clarke M et al. Assessing the relevance and uptake of core outcome sets (an agreed minimum collection of outcomes to measure in research studies) in Cochrane systematic reviews: a review. BMJ Open 2020; 10:e036562.
- 3 Williamson PR, Barrington H, Blazeby JM *et al.* Review finds core outcome set uptake in new studies and systematic reviews needs improvement. *J Clin Epidemiol* 2022; **150**:154–64.
- 4 Leshem YA, Simpson EL, Apfelbacher C et al. The Harmonising Outcome Measures for Eczema (HOME) implementation roadmap. Br J Dermatol 2023; **189**:710–18.
- 5 Vincent R, Chalmers JR, McWilliams C et al. Assessing uptake of the Harmonising Outcome Measures for Eczema (HOME) Core Outcome Set and recommended instruments. Br J Dermatol 2020; 183:566–8.
- 6 Lam M, Spuls PI, Leshem YA *et al.* Reporting of Harmonising Outcome Measures for Eczema (HOME) core outcome set instruments in randomized clinical trials for systemic treatments in atopic dermatitis. *Br J Dermatol* 2023; **189**:494–6.
- 7 Zhao CY, Hao EY, Oh DD et al. A comparison study of clinician-rated atopic dermatitis outcome measures for intermediate-to dark-skinned patients. Br J Dermatol 2017; 176:985–92.
- 8 Aoki V, Oliveira M, Wegzyn C et al. Assessment and monitoring challenges among patients with moderate-to-severe atopic dermatitis across Fitzpatrick skin types: a photographic review and case series. *Dermatitis* 2022; **33**(6s):S24–36.
- 9 Hanifin JM, Baghoomian W, Grinich E et al. The Eczema Area and Severity Index a practical guide. *Dermatitis* 2022; **33**:187–92.
- 10 Vermeulen FM, Gerbens LAA, Bosma AL et al. TREatment of ATopic eczema (TREAT) Registry Taskforce: consensus on how and when to measure the core dataset for atopic eczema treatment research registries. Br J Dermatol 2019; 181:492–504.
- 11 Stuart B, Howells L, Chalmers JR, Thomas KS. How often should outcomes be measured in eczema clinical trials? *Trials* 2019; 20:579 (abstract).
- 12 Baker A, Mitchell EJ, Partlett C, Thomas KS. Evaluating the effect of weekly patient-reported symptom monitoring on trial outcomes: results of the Eczema Monitoring Online randomized controlled trial. *Br J Dermatol* 2023; **189**:180–7.
- 13 Grinich EE, Schmitt J, Küster D *et al.* Standardized reporting of the Eczema Area and Severity Index (EASI) and the Patient-Oriented Eczema Measure (POEM): a recommendation by the Harmonising Outcome Measures for Eczema (HOME) Initiative. *Br J Dermatol* 2018; **179**:540–1.

- 14 Terwee CB, Peipert JD, Chapman R et al. Minimal important change (MIC): a conceptual clarification and systematic review of MIC estimates of PROMIS measures. Qual Life Res 2021; 30:2729–54.
- 15 Schünemann HJ, Akl EA, Guyatt GH. Interpreting the results of patient reported outcome measures in clinical trials: the clinician's perspective. *Health Qual Life Outcomes* 2006; **4**:62.
- 16 Cook CE. Clinimetrics Corner: the minimal clinically important change score (MCID): a necessary pretense. J Man Manip Ther 2008; 16:E82-3.
- 17 Hendrikx J, Fransen J, Kievit W, van Riel PL. Individual patient monitoring in daily clinical practice: a critical evaluation of minimal important change. *Qual Life Res* 2015; **24**:607–16.
- 18 Wong H. Minimum important difference is minimally important in sample size calculations. *Trials* 2023; **24**:34.
- 19 Howells L, Gran S, Chalmers JR et al. Do patient characteristics matter when calculating sample size for eczema clinical trials? Skin Health Dis 2021; 1:e42.
- 20 Ali FM, Johns N, Finlay AY et al. Comparison of the paper-based and electronic versions of the Dermatology Life Quality Index: evidence of equivalence. Br J Dermatol 2017; 177:1306–15.
- 21 Ali FM, Kay R, Finlay AY et al. Mapping of the DLQI scores to EQ-5D utility values using ordinal logistic regression. Qual Life Res 2017; 26:3025–34.
- 22 Leshem YA, Hajar T, Hanifin JM, Simpson EL. What the Eczema Area and Severity Index score tells us about the severity of atopic dermatitis: an interpretability study. *Br J Dermatol* 2015; 172:1353–7.
- 23 Chopra R, Vakharia PP, Sacotte R et al. Severity strata for Eczema Area and Severity Index (EASI), modified EASI, Scoring Atopic Dermatitis (SCORAD), objective SCORAD, Atopic Dermatitis Severity Index and body surface area in adolescents and adults with atopic dermatitis. Br J Dermatol 2017; 177:1316–21.
- 24 Schram ME, Spuls PI, Leeflang MM et al. EASI, (objective) SCORAD and POEM for atopic eczema: responsiveness and minimal clinically important difference. Allergy 2012; 67:99–106.
- 25 Charman CR, Venn AJ, Williams HC. The patient-oriented eczema measure: development and initial validation of a new tool for measuring atopic eczema severity from the patients' perspective. Arch Dermatol 2004; 140:1513–19.
- 26 Charman CR, Venn AJ, Ravenscroft JC, Williams HC. Translating Patient-Oriented Eczema Measure (POEM) scores into clinical practice by suggesting severity strata derived using anchorbased methods. Br J Dermatol 2013; 169:1326–32.
- 27 Howells L, Ratib S, Chalmers JR et al. How should minimally important change scores for the Patient-Oriented Eczema Measure be interpreted? A validation using varied methods. Br J Dermatol 2018; 178:1135–42.
- 28 Yosipovitch G, Reaney M, Mastey V et al. Peak Pruritus Numerical Rating Scale: psychometric validation and responder definition for assessing itch in moderate-to-severe atopic dermatitis. Br J Dermatol 2019; 181:761–9.
- 29 Howells LM, Chalmers JR, Gran S et al. Development and initial testing of a new instrument to measure the experience of eczema control in adults and children: Recap of atopic eczema (RECAP). Br J Dermatol 2020; 183:524–36.
- 30 Zhang J, Ragamin A, Romeijn GLE et al. Validity, reliability, responsiveness, and interpretability of the Recap of atopic eczema (RECAP) questionnaire. Br J Dermatol 2023; 189:578–87.
- 31 Bhanot A, Vincent R, Peters TJ, Ridd MJ. Validation of the RECap of AtoPic eczema measure of eczema control for use in dermatology clinics. Clin Exp Dermatol 2022; 47:440–2.
- 32 Pariser DM, Simpson EL, Gadkari A et al. Evaluating patient-perceived control of atopic dermatitis: design, validation, and scoring of the Atopic Dermatitis Control Tool (ADCT). Curr Med Res Opin 2020; 36:367–76.
- 33 Simpson E, Eckert L, Gadkari A et al. Validation of the Atopic Dermatitis Control Tool (ADCT®) using a longitudinal survey of

- biologic-treated patients with atopic dermatitis. *BMC Dermatol* 2019; **19**:15.
- 34 Finlay AY, Khan GK. Dermatology Life Quality Index (DLQI) a simple practical measure for routine clinical use. *Clin Exp Dermatol* 1994: **19**:210–16.
- 35 Hongbo Y, Thomas CL, Harrison MA et al. Translating the science of quality of life into practice: What do dermatology life quality index scores mean? J Invest Dermatol 2005; 125:659–64.
- 36 Basra MK, Salek MS, Camilleri L et al. Determining the minimal clinically important difference and responsiveness of the Dermatology Life Quality Index (DLQI): further data. *Dermatology* 2015; 230:27–33.
- 37 Lewis-Jones MS, Finlay AY. The Children's Dermatology Life Quality Index (CDLQI): initial validation and practical use. Br J Dermatol 1995; **132**:942–9.
- 38 Waters A, Sandhu D, Beattie P *et al.* Severity stratification of Children's Dermatology Life Quality Index (CDLQI) scores. *Br J Dermatol* 2010; **163**:121 (abstract).
- 39 Simpson EL, de Bruin-Weller M, Eckert L et al. Responder threshold for Patient-Oriented Eczema Measure (POEM) and Children's Dermatology Life Quality Index (CDLQI) in adolescents with atopic dermatitis. Dermatol Ther (Heidelb) 2019; 9:799–805.
- 40 Lewis-Jones MS, Finlay AY, Dykes PJ. The Infants' Dermatitis Quality of Life Index. *Br J Dermatol* 2001; **144**:104–10.
- 41 Ridd MJ, Santer M, MacNeill SJ et al. Effectiveness and safety of lotion, cream, gel, and ointment emollients for childhood eczema:

- a pragmatic, randomised, phase 4, superiority trial. *Lancet Child Adolesc Health* 2022; **6**:522–32.
- 42 Thomas KS, Bradshaw LE, Sach TH *et al.* Silk garments plus standard care compared with standard care for treating eczema in children: a randomised, controlled, observer-blind, pragmatic trial (CLOTHES Trial). *PLoS Med* 2017; **14**:e1002280.
- 43 Simpson EL, Paller AS, Siegfried EC et al. Efficacy and safety of dupilumab in adolescents with uncontrolled moderate to severe atopic dermatitis: a phase 3 randomized clinical trial. JAMA Dermatol 2020; 156:44–56.
- 44 Santer M, Ridd MJ, Francis NA *et al.* Emollient bath additives for the treatment of childhood eczema (BATHE): multicentre pragmatic parallel group randomised controlled trial of clinical and cost effectiveness. *BMJ* 2018; **361**:k1332.
- 45 Santer M, Muller I, Becque T et al. Eczema Care Online behavioural interventions to support self-care for children and young people: two independent, pragmatic, randomised controlled trials. BMJ 2022; 379:e072007.
- 46 Strober B, Mallya UG, Yang M *et al.* Treatment outcomes associated with dupilumab use in patients with atopic dermatitis: 1-year results from the RELIEVE-AD study. *JAMA Dermatol* 2022; **158**:142–50.
- 47 Oosterhaven JAF, Spekhorst LS, Zhang J et al. Eczema control and treatment satisfaction in atopic dermatitis patients treated with dupilumab a cross-sectional study from the BioDay registry. J Dermatolog Treat 2022; 33:1986–9.



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References: 1. BIMZELX (bimekizumab) SmPC. Available at: https://www.medicines.org.uk/emc/product/12834/smpc. Accessed September 2023 2. Strober et al. [BE BRIGHT open label extension] Br J Dermatol. 2023. 188(6): 749-759.

GB-BK-2300081 Date of preparation: September 2023.

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