Capturing and reporting topical treatment use in childhood eczema: lessons for data collection in eczema trials

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Patient consent: Participants gave written consent for their anonymised data to be used in subsequent future research.

What is already known about this topic?

- Long term topical therapy use is the mainstay treatment for eczema; however, adherence to topical therapies is generally considered poor and their use is under-reported in clinical trials.
- Within the 2017 Cochrane Review of 'Emollients and moisturisers for eczema' only 11 of 77 included studies reported on topical treatment use during trials.
- There are different ways to measure and report topical treatment use but no consensus on which is best.

What does this study add?

- If questionnaires are used to collect topical treatment use, they should be appropriate for the population completing them and the outcomes of interest.
- The detail and complexity must be balanced, especially if being collected as a process or secondary outcome measure.
- This paper offers key learning points for investigators designing or reporting surveys or trials where topical therapy use is examined.

Abstract

Background: Emollients and topical corticosteroids (TCS) prevent and treat flares in eczema. However, topical treatment use is poorly recorded and reported in clinical trials. There is no clear consensus of how best to capture and summarise topical treatment use.

Objectives: To explore different ways of capturing and reporting topical treatment use in childhood eczema.

Methods: Secondary data analysis using 450 participants from the Best Emollients for Eczema (BEE) trial. Participants were allocated to use one type of emollient (lotion, cream, gel, or ointment) 'twice daily and when required' for 16 weeks. Otherwise, clinical management remained unchanged. Parents completed weekly questions about topical therapy use and eczema symptoms. Two versions of topical treatment use questionnaires were used. The first (n=202, 44.9%) asked parents to report treatment use on days 1-7, starting completion on the day they were randomised. The second (n=248, 55.1%) reported use by day of the week (Monday to Sunday), starting completion the first Monday after randomisation. Both underwent Patient and Public Involvement (PPI) review, but the second version was tested more thoroughly using cognitive interviewing techniques, following parent feedback that questions on the first version were confusing. Descriptive statistics compared questionnaire completion and differences in emollient and TCS use.

Results: Overall, questionnaire completion for both emollient and TCS use decreased with time: but at weeks 1 and 16 were 84.7% (381/450) and 58.9% (265/450) for emollient use, and 94.2% (424/450) and 80.4% (362/450) for TCS use, respectively. Fewer emollient use questionnaires were completed with first (33.5%) than the second (87.9%) version ($p<0.001$). TCS use questionnaire completion were similar for both (84.9% and 87.4%, $p=0.002$). We present different ways of summarising topical treatment use.

Conclusions: While questionnaire completion was similar for TCS use, emollient use data completeness was higher in the second version. When designing questionnaires, balancing the detail and complexity of questions is important, especially if being collected as a secondary outcome measure. Numerous ways of summarising the same data can provide different information. Future collection and reporting of treatment use should reflect specific trial aims.

Introduction

Eczema, also known as atopic dermatitis, is a chronic relapsing inflammatory condition affecting ~20% of children[1]. Long term topical therapy includes emollients and topical corticosteroids (TCS) to prevent and treat flares.[2] Low adherence, where adherence is defined as how much a person's health-related behaviours coincide with agreed recommendations,[3] is a main cause of treatment failure.[4]

While topical treatments are not effective if they are not applied correctly or adequately, their use remains under-reported in eczema research. Of the 77 studies included in the 2017 Cochrane Review of 'Emollients and moisturisers for eczema',[5] only 11 of the included studies reported on treatment use. Insufficient collection and reporting of topical treatment use may be due to challenges in collecting this data, and uncertainties of how to summarise or interpret findings in a meaningful way.

We sought to explore different ways of capturing and reporting emollient and TCS use for children with eczema using parent-completed questionnaires, with recommendations for future research in this area.

Materials and Methods

Data source

Data were from the Best Emollient for Eczema (BEE) trial.[6,7] In summary, BEE was a pragmatic randomised, superiority trial comparing effectiveness and safety of four different emollient types (lotion, cream, gel, or ointment) for 550 children with eczema. Recruitment started January 2018 and the last participant completed their 16-week primary outcome period in February 2020. Participants were allocated to a study approved emollient type to use 'twice daily and when required' as their main leave-on moisturiser. Parents were asked to complete weekly questionnaires on topical therapy use and eczema symptoms (Patient-Orientated Eczema Measure, POEM).[8] Otherwise, clinical management was unchanged.

For this secondary data analysis study, data were restricted to participants with data on emollient and TCS use for at least one time point and at least one consecutive paired POEM (allowing for calculation if a flare occurred).

Eczema symptoms

POEM is a seven-item parent-reported measure asking about frequency of seven symptoms over the previous week, on a five point scale, providing a total score 0-28 (higher score indicates worse disease).[8] Charman et al. have published the following cut-offs for categorising eczema severity; 0-2 (clear/almost clear); 3-7 (mild); 8-16 (moderate); 17-24 (severe); 25-28 (very severe).[9]

Emollient and topical corticosteroid steroid use

Each week, parents were asked to retrospectively report on which days (if any) they had used their allocated emollient, other types of leave on emollient, and/or TCS. Questionnaires were completed online (92.2%) or paper (7.8%).

Two versions of the topical therapy use questionnaires were used (Figure 1) and each participant only completed one version. The first version (January 2018 to February 2019; n=289) asked participants to start reporting topical treatment use on days 1 through to 7, from the day of randomisation. Because of concerns about data completeness, a second version of the questionnaire was introduced (March 2019 to February 2020; n=261), which asked participants to start completing it by day of the week (Monday through to Sunday), starting on the first Monday after randomisation.

Data have been aggregated based on how many days topical treatments were used in each week (from 0 – did not use – to 7 – used every day), rather than on which specific days of the week. Emollient use was categorised as any emollient (allocated or other), allocated emollient only, allocated and non-allocated, and non-allocated only. Missing data were weekly questionnaires which were not returned or were returned but not completed (e.g., no responses to any questions including "did not use" option).

Patient and Public Involvement (PPI)

Parents of children with eczema were invited to review and comment on trial study materials including questionnaires prior to the BEE trial commencement. Four volunteers from an advisory group were shown two potential amended versions and worked through questions using 'think aloud' and verbal probing techniques.

Sample size

For the original trial, a sample size of 520 was determined to detect a clinically important difference in POEM scores (≥ 3) between treatment arms. This cohort study is an exploratory secondary analysis of this data; therefore, a sample size estimate was not done.

Statistical methods

All analysis were performed using Stata v17.0. including Sankey graph formulation (code by Naqvi Asjad, v1.73).[10]

Descriptive analyses were undertaken for baseline characteristics. Continuous data were summarised as mean (standard deviation) unless skewed, in which case median was used (interquartile range). Categorical data were presented as proportion (percentage). Differences were tested using chi-squared distribution for categorical data, Mann-Whitney U test for non-parametric data, and paired t-test for parametric data. Sankey graphs were used to present patterns of emollient use across weeks.

Results

Study sample and participant characteristics

As shown in Figure 2, 100/550 (18.2%) participants were excluded because 23 did not return their weekly questionnaire at any time-point and 77 did not provide any paired POEM scores (allowing for flare calculation) and/or no TCS or emollient use data. Questionnaires were administered weekly for 16 weeks, so that a total of 7200 questionnaires were sought from the 450 participants in the cohort.

Participants were 47.3% female, 87.1% white ethnicity, median age 4 (IQR 2-8) years with a mean baseline POEM score of 9.2 (SD 5.5) (Table 1), similar to those in the main trial. Of those who were excluded, there were a greater number from a lower socio-economic background and who had completed the first version of topical therapy questionnaires (i.e., those given the first version were more likely to not answer it at all).

Completion of emollient and TCS use questionnaires

Completion of emollient use questionnaires decreased from 84.7% (381/450) at week 1 to 58.9% (265/450) at week 16 (Table 2). TCS use questionnaires completion was better for week 1 (94.2%, 424/450), and while it decreased, it remained higher by week 16 (80.4%, 362/450).

Fewer emollient use questionnaires were completed in total over 16 weeks if provided the first version (33.5%, 1082/3232 patient-weeks) compared to if provided the second (87.9%, 3489/3968 patient-weeks, p<0.001). There was no difference in TCS use questionnaires completed in total over 16 weeks if provided the first version (84.9%, 2744/3232 patient-weeks) or if provided the second

(87.4%, 3468/3968 patient-weeks, p=0.002). Completion by version is provided in Figure S1 and Figure S2.

Reported topical therapy use over time

Table 2 presents emollient and TCS use as the proportion of days used at five time points and overall within the trial. Inclusive of weeks 1 to 16, overall topical therapy use, presented as median (IQR) were: 7 (4-7) days of use for any emollient, 6 (0-7) days of use for allocated emollient, 0 (0-3) days of use for non-allocated emollient types, and 0 (0-2) days of use for TCS. Where co-use was reported, allocated emollients were applied more often than non-allocated types.

Table 3 presents the proportion (percentage) of participants who reported only using their allocated emollient for all 16 weeks. 100% use of allocated emollient were most reported by those allocated to cream (n=43/116; 37%) and 0% use were most reported by those allocated to gel (n=52/109; 48%).

Figure 3 graphically presents the median days topical therapy combinations were used, by week and allocated treatment arm. Data were presented this way in the original BEE paper. Participants allocated to lotion and cream appeared to have generally high emollient use. For those allocated to ointment, use of allocated and any emollient decreased over time. TCS use remained minimal for each treatment arm across all weeks.

Emollient use by individual trajectories

Table 4 shows the proportion (percentage) of participants reporting different emollient use combinations at individual time points (weeks 8 and 16) and throughout time points (weeks 1 to 8 and weeks 9 to 16), separated by allocated arm. Inclusive of weeks 1 to 16, total allocated emollient use ranged from 30% (ointment, 530/1776) to 48% (cream, 886/1856). These figures include all from each allocated arm (e.g., those who did not complete their questionnaire within each week).

Sankey graphs visually depict participant use of the same or different emollients over different weeks (Figure 4). Participants generally used what they were allocated, but some used combinations of emollients or non-allocated types. Questionnaire non-completion appeared even between each treatment arm. As some data in Table 4 were used when formulating our Sankey graph, the following conclusions can be drawn; at week 8 29-52% used only their allocated emollient and 9-23% used non-allocated types only. At week 16, use of only allocated emollient was lower at 23-40%.

Discussion

Summary and interpretation of findings

Questionnaire completion for both emollient and TCS use decreased with time. While fewer questions about emollient use were completed with the first version of the treatment use questionnaire, there was no difference for TCS use.

Summary tables provided detailed numerical information but quickly become complex and hard to interpret. In comparison, figures can help overcome this problem but often a textual summary is needed, for example for scientific abstracts. It is difficult to succinctly present both type and frequency of use and so no one-way to best report topical treatment use exists. Therefore, a combination of different tables and figures may be the only way to provide a detailed understanding of use.

We have shown that different numerical and graphical ways of summarising topical treatment use, at individual time points and across trajectories, can lead to differences in how data are interpreted and the conclusions which can be drawn.

For example, the median (IQR) days of allocated emollient use (Table 2) appeared to remain consistently high at different time points (e.g., allocated use at weeks 1 and 16 were both 5 (0-7) days). However, when presented graphically and considered by week and treatment group (Figure 3), it can be seen that median use of allocated emollients was consistently high for lotion and cream but decreased for ointment with time. Depending on the research question and study design, this suggests that data like these should be presented in tabular and graphical formats, both as overall use but also by time and type of emollient.

Additionally, Table 2 and Figure 3 present TCS use as median days for all participants with completed questionnaires and use generally appeared low; overall median 0 (IQR 0-2) days. However, current NICE guidelines generally recommend TCS use only during flares for 7-14 days [11] and so this may not be the best way to present TCS use (i.e., TCS use should only be considered when flares occur).

Presenting use of particular topical treatments as proportions (Table 3 and Table 4) provides an overall summary but have their limitations. Summarising use as the proportion of people reporting use of a specific emollient type (Table 3) does not tell us anything about how often that emollient was used; and summarising co-use of emollients (Table 4) does not reflect use at an individual level. For example, 29-52% and 23-40% used their allocated emollient at weeks 8 and 16, respectively (Table 4) but this does not tell use if the same children are using a particular emollient at these timepoints. By contrast, the Sankey graph shows how some individuals used different emollient combinations at different weeks, but most generally used their allocated type (Figure 4). This further supports our suggestion to use different but complementary methods to present findings.

Strengths and weaknesses

We provide novel insights into how to collect and report topical therapy use in childhood eczema, which could be applied to other age groups and dermatological conditions. This sample were a large and diverse cohort of children with different eczema severities, who were representative of the original trial population, who in turn reflect UK community populations. More participants of a lower socio-economic background were excluded, perhaps because a lack of literacy provides a barrier to answering the questionnaires.[12]

Changes to the treatment use questions mid-trial provided an opportunity for us to compare their completion but this was not planned as a study within the trial and participants were not randomised to one version or the other. Patients were invited to comment on version one of the topical treatment use questionnaires before they were used, but despite this some parents confused the day of the week on which emollients were used with the number of days of emollient use and reported being uncertain which questions to answer if use deviated from allocation. The second version was tested more thoroughly, using "think aloud" techniques. The large difference in completion for emollient use supports the suggestion that the problem was confusion over the questions rather than lack of willingness to engage.

Weekly collection of topical therapy use and eczema severity allowed for small changes in trends to be detected. However, self-report questionnaires may overreport use.[13, 14] The questionnaires did not ask about the frequency, quantity applied each day, or type of TCS, as this would have made the questionnaire too complex. We did not measure treatment use by asking participants to return tubs to clinics or by having electronic lids because this was a pragmatic clinical trial.

Comparison with existing literature

It is common in trials to observe questionnaire completion rates declining over time, and a reduction in topical treatment use question completion specifically has been previously reported in the Barrier

Enhancement for Eczema Prevention (BEEP) and Bath Additives in the Treatment of cHildhood Eczema (BATHE) trials. In BEEP, which explored whether daily emollient use reduced the risk of developing eczema in infants,[15] emollient use questions completion were 76.8% (532/693) at 3 months, 74.9% (519/693) at 6 months and 73.0% (506/693) at 12 months, with 63.9% (442/693) completing at all three time points. In the BATHE trial, where effectiveness of bath additives for childhood eczema were evaluated,[16] 92.0% (424/461) and 86.1% (397/461) answered questions on the use of bath additives question and frequency of baths per week respectively. Like BEE, both trials collected data remotely (online, paper questionnaire, or over the phone with researcher). Similar adherence in dermatology trials did not report on completion (e.g., their number of returned and/or completed questionnaires).[17-19] Our completion rate will be an under-estimation as, for the purpose of other planned analyses, we excluded those without at least one paired POEM score from our analyses. Completion rates may also be affected by the frequency of questionnaires – weekly for 16 weeks in the BEE study compared with three monthly in BEEP for 12 months and once at 16 weeks in BATHE for example. Asking participants to complete the questionnaire itself may constitute an intervention. Methodological work on POEM has demonstrated that completion influences eczema severity.[20]

Many trials exploring adherence in dermatology have only presented treatment use numerically as proportions (percentage) or mean (standard deviation) of days of reported daily use.[16, 17, 21, 22] We found that where our tables contained complex granular data, graphs complemented them visually to contextualise the data. Some adherence trials have similarly co-presented both graphical and numerical data (either in tables or textually) to describe treatment use using line graphs [23-25] or bar charts [26, 27] to display differences between treatment arms or trends over time. We are not aware of other studies utilising Sankey graphs in this research area.

We provide a more detailed insight into patterns in use than the original BEE paper, whilst supporting their conclusion that most participants used their allocated emollient. We have purposefully not discussed use in terms of adherence (measuring use against a predetermined standard)[3] because it is not clear what constitutes good adherence beyond possibly daily emollient use. In BEE, adopting a definition of using an "allocated emollient type at least one in every four weeks for at least 60% of days within this week", 28% of participants were deemed adherent. In other clinical trials, an arbitrary >80% use of prescribed medication is often used without clinical rationale,[28] as this figure was derived from trials of tablets for hypertension.[29] This threshold may not necessarily be relevant to skin conditions, where acceptable adherence should focus on each individuals symptom burden and depends on type of therapy and patients' desired outcome (e.g., rash resolution or itch reduction).[30]

While Harmonising Outcome for Eczema (HOME) guidelines make recommendations for which outcomes to collect and report in trials of eczema treatments,[31] there is no consensus about how best to collect and report use of topical treatments as a process or outcome measure.

Implications for future research and clinical practice

If topical treatment use is to be measured using patient-completed questionnaires, the detail and complexity of questions must be balanced against respondent burden and ease of completion, especially if being collected as a secondary outcome measure. The importance of how questions are phrased, and response options structure, are reinforced by the differences in responses seen between the versions one and two of the BEE topical treatment use questions, at least for emollients. Novel questionnaires should be piloted, using approaches such as cognitive think aloud

interviews,[32] before use in studies and future research should explore barriers to questionnaire completion in this population.

Resource limited projects should plan data collection and analysis from the outset to ensure they do not gather more data than they need to present and that findings are reported thoughtfully. We recommend a combination of graphs and numerical data to complement each other. The level of detail we collected (e.g., allocated and non-allocated use) may not be required in other trials, depending on their design. Future research should explore how best to capture daily quantity and frequency of topical therapy use, as well as TCS potency used; and in turn, how best to summarise these data. Consideration of the frequency of this data collection is warranted to achieve a balance between granularity of data, response burden and any "treatment effect" that continually asking about use of topical treatments might have.

In summary, there are many ways to collect and report treatment use data. Self-report questionnaires should be designed and tested according to the intended outcomes, balancing complexity, and accessibility. Greater transparency on how topical treatment use is collected is warranted.

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References

1. Langan SM, Irvine AD, Weidinger S. Atopic dermatitis. Lancet. 2020;396(10247):345-60.
2. National Institute for Health and Care Excellence (NICE) Clinical Knowledge Summaries (CKS). Eczema - atopic: Summary 2024 [24.7.24]. Available from: https://cks.nice.org.uk/topics/eczema-atopic/.
3. Gupta G, Mallefet P, Kress DW, et al. Adherence to topical dermatological therapy: lessons from oral drug treatment. Br J Dermatol. 2009;161(2):221-7.
4. National Institute for Health and Care Excellence (NICE) Clinical Guidance. Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence (CG76). 2009 28.1.09.
5. van Zuuren EJ, Fedorowicz Z, Christensen R, et al. Emollients and moisturisers for eczema. Cochrane Database Syst Rev. 2017(2).
6. Ridd MJ, Wells S, Edwards L, et al. Best emollients for eczema (BEE) - comparing four types of emollients in children with eczema: protocol for randomised trial and nested qualitative study. BMJ Open. 2019;9(11):e033387.
7. 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(8):522-32.
8. 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(12):1513-9.
9. Charman CR, Venn AJ, Ravenscroft JC, et al. Translating Patient-Oriented Eczema Measure (POEM) scores into clinical practice by suggesting severity strata derived using anchor-based methods. Br J Dermatol. 2013;169(6):1326-32.

10. Naqvi A. Stata package 'sankey' 2024. 1.73. Available from: https://github.com/asjadnaqvi/stata-sankey.
11. National Institute for Health and Care Excellence (NICE) Clinical Knowledge Summaries (CKS). Eczema - Topical corticosteroids 2024 [24.7.24]. Available from: https://cks.nice.org.uk/topics/eczema-atopic/prescribing-information/topical-corticosteroids/.
12. Bonevski B, Randell M, Paul C, et al. Reaching the hard-to-reach: a systematic review of strategies for improving health and medical research with socially disadvantaged groups. BMC Medical Res Methodol. 2014;14(1):42.
13. Stirratt MJ, Dunbar-Jacob J, Crane HM, et al. Self-report measures of medication adherence behavior: recommendations on optimal use. Transl Behav Med. 2015;5(4):470-82.
14. Ahn CS, Culp L, Huang WW, et al. Adherence in dermatology. J Dermatolog Treat. 2017;28(2):94-103.
15. Chalmers JR, Haines RH, Bradshaw LE, et al. Daily emollient during infancy for prevention of eczema: the BEEP randomised controlled trial. Lancet. 2020;395(10228):962-72.
16. 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.
17. Pena-Robichaux V, Kvedar JC, Watson AJ. Text messages as a reminder aid and educational tool in adults and adolescents with atopic dermatitis: a pilot study. Dermatol Res Pract. 2010;2010.
18. Navarrete-Dechent C, Curi-Tuma M, Nicklas C, et al. Oral and written counseling is a useful instrument to improve short-term adherence to treatment in acne patients: a randomized controlled trial. Dermatol Pract Concept. 2015;5(4):13-6.
19. Balato N, Megna M, Di Costanzo L, et al. Educational and motivational support service: a pilot study for mobile-phone-based interventions in patients with psoriasis. Br J Dermatol. 2013;168(1):201-5.
20. Barrett A, Hahn-Pedersen J, Kragh N, et al. Patient-reported outcome measures in atopic dermatitis and chronic hand eczema in adults. Patient. 2019;12:445-59.
21. Techasatian L, Kiatchoosakun P. Effects of an emollient application on newborn skin from birth for prevention of atopic dermatitis: a randomized controlled study in Thai neonates. J Eur Acad Dermatol Venereol. 2022;36(1):76-83.
22. Carr AJ, Patel RP, Jones M, et al. A pilot study of a community pharmacist intervention to promote the effective use of emollients in childhood eczema. Pharm J. 2007;278:319-22.
23. Staab D, Von Rueden U, Kehrt R, et al. Evaluation of a parental training program for the management of childhood atopic dermatitis. Pediatr Allergy Immunol. 2002;13(2):84-90.
24. Krejci-Manwaring J, Tusa MG, Carroll C, et al. Stealth monitoring of adherence to topical medication: Adherence is very poor in children with atopic dermatitis. J Am Acad Dermatol. 2007;56(2):211-6.
25. Cork MJ, Britton J, Butler L, et al. Comparison of parent knowledge, therapy utilization and severity of atopic eczema before and after explanation and demonstration of topical therapies by a specialist dermatology nurse. Br J Dermatol. 2003;149(3):582-9.
26. Moore EJ, Williams A, Manias E, et al. Eczema workshops reduce severity of childhood atopic eczema. Australas J Dermatol. 2009;50(2):100-6.
27. Hix E, Gustafson CJ, O'Neill JL, et al. Adherence to a five day treatment course of topical fluocinonide 0.1% cream in atopic dermatitis. Dermatol Online J. 2013;19(10):20029.
28. Baumgartner PC, Haynes RB, Hersberger KE, et al. A Systematic Review of Medication Adherence Thresholds Dependent of Clinical Outcomes. Front Pharmacol. 2018;9:1290.
29. Haynes RB, Taylor DW, Sackett DL, et al. Can simple clinical measurements detect patient noncompliance? Hypertension. 1980;2(6):757-64.
30. Feldman SR, Vrijens B, Gieler U, et al. Treatment Adherence Intervention Studies in Dermatology and Guidance on How to Support Adherence. Am J Clin Dermatol. 2017;18(2):253-71.

31. 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(6):1899-911.
32. Van den Haak MJ, De Jong MD, Schellens PJ. Evaluation of an informational web site: three variants of the think-aloud method compared. Tech Commun. 2007;54(1):58-71.

Figure legends

Figure 1 Topical treatment use questionnaires.

Two versions of parent-reported use of emollients and topical corticosteroids questionnaires used in BEE study

Figure 2 Study sample.

Flow chart displaying inclusion criteria, sample size, and percentage (number) of weekly completed questionnaires from weeks 1 to 16 for this cohort. Topical treatment questionnaires were considered completed if there was a response to at least one treatment use question per week. BEE trial, Best Emollients for Eczema trial. POEM, Patient-Orientated Eczema Measure; two consecutive weekly paired POEM scores allow for calculation whether a flare occurred. TCS, topical corticosteroids.

Figure 3 Median days emollient and topical corticosteroid (TCS) use reported by treatment arm.

Median days emollient and topical corticosteroid use reported from weeks 1 to 16 by treatment arm. Emollient use displayed as median reported use of allocated emollient type, any emollient (allocated and other), and non-allocated emollient type only.

Figure 4 Sankey graph of reported emollient use at weeks 8 and 16.

Sankey graph displaying the flow of emollient type combinations used by participant from baseline allocation to reported use at weeks 8 and 16 (n=450). Width of bar represents proportion of individuals who did not report use or used that emollient type and/or combination per week.

Table 1 Baseline characteristics

	BEE trial (n=550)	Cohort sample (n=450)	Excluded (n=100)	P-value
Sex				
Female	295 (53.6%)	213 (47.3%)	42 (58.0%)	0.33
Male	255 (46.4%)	237 (52.6%)	58 (42.0%)	
Ethnicity				
White	473 (86.0%)	392 (87.1%)	81 (81.0%)	0.28
African, Caribbean, or Black	18 (3.3%)	12 (2.7%)	6 (6.0%)	
Asian or Asian British	16 (2.9%)	13 (2.9%)	3 (3.0%)	
Mixed	43 (7.8%)	33 (7.3%)	10 (10.0%)	
Median age (IQR) in years	4 (2-8)	4 (2-8)	4 (2-7)	0.65
Socioeconomic background (IMD quintiles) *				
IMD 1	62 (11.3%)	46 (10.2%)	16 (16.0%)	0.02
IMD 2	55 (10.0%)	39 (8.7%)	16 (16.0%)	
IMD 3	102 (18.6%)	81 (18.0%)	21 (21.0%)	
IMD 4	111 (20.2%)	90 (20.0%)	21 (21.0%)	
IMD 5	173 (31.5%)	154 (34.2%)	19 (19.0%)	
Missing	47 (8.6%)	40 (8.9%)	7 (7.0%)	
Met UK diagnostic criteria for eczema	447 (81.3%)	367 (81.6%)	80 (80%)	0.72
Mean Baseline POEM (SD)**	9.3 (5.5)	9.2 (5.5)	9.7 (5.1)	0.45
Baseline eczema severity				
Clear/almost clear (POEM 0-2)	40 (7.3%)	37 (8.2%)	3 (3.0%)	0.34
Mild (POEM 3-7)	185 (33.6%)	152 (33.8%)	33 (33.0%)	
Moderate (POEM 8-16)	266 (48.4%)	210 (46.7%)	56 (56.0%)	
Severe (POEM 17-24)	53 (9.6%)	46 (10.2%)	7 (7.0%)	
Very severe (POEM 25-28)	5 (0.9%)	4 (0.9%)	1 (1.0%)	
Missing	1 (0.2%)	1 (0.2%)	0 (0.0%)	
Treatment arm				
Lotion	137 (24.9%)	114 (25.3%)	23 (23.0%)	0.91
Cream	140 (25.5%)	116 (25.8%)	24 (24.0%)	
Gel	135 (24.6%)	109 (24.2%)	26 (26.0%)	
Ointment	138 (25.1%)	111 (24.7%)	27 (27.0%)	
Questionnaire version				<0.001
First	289 (52.5%)	202 (44.9%)	87 (87.0%)	
Second	261 (47.5%)	248 (55.1%)	13 (13.0%)	

Baseline characteristics of the Best Emollient for Eczema (BEE) trial, this cohort sample, and excluded participants. Cohort sample was derived from BEE participants (*Figure 1*). 100 participants were excluded because 23 did not return their weekly questionnaire at any time-point and 77 did not provide any paired POEM scores and/or no TCS or emollient use data, from weeks 1 to 16. Data are n (%), mean (SD), or median (IQR). Statistical analysis: chi-squared test for categorical data, Mann-Whitney U test for non-parametric data, t-test for parametric data. POEM, Patient Orientated Eczema Measure. IMD, Index of Multiple Deprivation, 1 is most deprived. *n=503 for BEE study, n=410 for cohort sample, n=93 for excluded participants **n=549 for BEE study, n=449 for cohort sample, n=100 for excluded participants.

Table 2 Number of participants reporting different combinations of emollient use

	Week						Median weekly (IQR) use across weeks 1-16
	Baseline	1	4	8	12	16	
Emollient use							
Completed questionnaires (% total)	450	381 (84.7%)	283 (62.9%)	292 (64.9%)	269 (59.8%)	265 (58.9%)	
First version (% total)	202	143 (70.8%)	56 (27.7%)	71 (35.2%)	58 (28.7%)	65 (32.2%)	
Second version (% total)	248	238 (96.0%)	227 (91.%)	221 (89.1%)	211 (85.1%)	200 (80.7%)	
Any emollient (% responded)		369 (96.9%)	275 (97.2%)	282 (96.6%)	254 (94.4%)	251 (94.7%)	
Median (IQR) days any use		6 (4-7)	7 (5-7)	7 (4-7)	7 (5-7)	7 (4-7)	7 (4-7)
Allocated emollient use only (% responded)		202 (53.0%)	185 (65.4%)	169 (57.9%)	156 (58.0%)	149 (56.2%)	
Median (IQR) days allocated use		5 (0-7)	6 (2-7)	6 (0-7)	6 (0-7)	5 (0-7)	6 (0-7)
Co-use of allocated & non-allocated (% responded)*		71 (18.6%)	40 (14.1%)	40 (13.7%)	30 (11.2%)	29 (10.9%)	
Median (IQR) days allocated use		5 (3-6)	5.5 (2-7)	6.5 (4-7)	6.5 (4-7)	7 (5-7)	6 (4-7)
Median (IQR) days non-allocated use		3 (2-5)	4 (2-6.5)	3.5 (2-7)	3.5 (2-7)	2 (2-6)	3 (2-7)
Non-allocated use only (% responded)		96 (25.2%)	50 (17.7%)	73 (25.0%)	68 (25.3%)	73 (27.5%)	
Median (IQR) days non-allocated use		0 (0-3)	0 (0-2)	0 (0-3)	0 (0-3)	0 (0-4)	0 (0-3)
TCS use							
Completed questionnaires (% total)	450	424 (94.2%)	403 (89.6%)	389 (86.4%)	372 (82.7%)	362 (80.4%)	
First version (% total)	202	190 (94.1%)	179 (88.6%)	170 (84.2%)	161 (79.7%)	162 (80.2%)	
Second version (% total)	248	234 (94.4%)	224 (90.3%)	219 (88.3%)	211 (85.1%)	200 (80.7%)	
Any TCS use reported (% responded)		169 (39.9%)	168 (41.7%)	155 (39.8%)	141 (37.9%)	126 (34.8%)	
Median (IQR) days TCS use		0 (0-2)	0 (0-3)	0 (0-3)	0 (0-2)	0 (0-2)	0 (0-2)
Emollient and TCS use							
Any emollient and any TCS use (% total)	450	376 (83.6%)	278 (61.7%)	290 (64.4%)	267 (59.3%)	263 (58.4%)	
First version (% total)		142 (70.3%)	54 (26.7%)	71 (35.2%)	56 (27.7%)	63 (31.2%)	
Second version (% total)		234 (94.4%)	224 (90.3%)	219 (88.3%)	211 (85.1%)	200 (80.7%)	
Median (IQR) days both used		0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)	0 (0-2)

Table displaying the number (%) of participants who returned questionnaires in total and those reporting different emollient use categories by week for weeks 1, 4, 8, 12, and 16. Median (IQR) days of use during each week displayed by category, for individuals who returned their topical therapy use questionnaire. Topical corticosteroid, TCS. *Median (IQR) of co-use includes only those individuals who reported at least one day of allocated and non-allocated emollient use during the specified week

Table 3 Proportion (percentage) of respondents reporting allocated emollient use only

	Allocated emollient			
Reported use of allocated emollient only	**Lotion** (n=114)	**Cream** (n=116)	**Gel** (n=109)	**Ointment** (n=111)
100%	20 (18%)	43 (37%)	25 (23%)	17 (15%)
90-99%	12 (11%)	14 (12%)	4 (4%)	11 (10%)
80-89%	13 (11%)	13 (11%)	8 (7%)	6 (5%)
70-79%	5 (4%)	2 (2%)	1 (<1%)	2 (2%)
60-69%	3 (3%)	1 (<1%)	5 (5%)	7 (6%)
50-59%	2 (2%)	6 (5%)	3 (3%)	6 (5%)
40-49%	2 (2%)	1 (<1%)	3 (3%)	4 (4%)
30-39%	5 (4%)	1 (<1%)	2 (2%)	2 (2%)
20-29%	3 (3%)	7 (6%)	2 (2%)	3 (3%)
10-19%	5 (4%)	4 (3%)	1 (<1%)	6 (5%)
1-10%	5 (4%)	0 (0%)	3 (3%)	7 (6%)
0%	39 (34%)	24 (21%)	52 (48%)	40 (36%)

Number of participants reporting use of their allocated emollient only during the trial. Data presented as n(%). Calculated by the total number of weeks only allocated emollient use reported, divided by the total number of completed questionnaires.

Table 4 Proportion (percentage) of participants reporting different combinations of use by treatment arm, at and through time-points

Emollient use combinations per allocated type	Allocation to each arm	Individual timepoints			Throughout timepoints		
		Week 8	Week 16	Weeks 8 & 16	Weeks 1 to 8	Weeks 9 to 16	Weeks 1 to 16
Lotion							
Lotion only	114	42 (37%)	40 (35%)	32 (28%)	357 (39%)	326 (36%)	683 (35%)
Lotion and one other emollient type		13 (11%)	4 (4%)	2 (2%)	93 (10%)	53 (6%)	146 (8%)
Other emollient type only		14 (12%)	14 (12%)	6 (5%)	113 (12%)	105 (9%)	218 (12%)
Other combination of emollient types		2 (2%)	4 (4%)	1 (<1%)	32 (4%)	33 (4%)	65 (4%)
No emollient use		1 (<1%)	3 (3%)	1 (<1%)	16 (2%)	26 (3%)	42 (2%)
Questionnaires not completed		42 (37%)	49 (43%)	72 (30%)	301 (33%)	369 (40%)	670 (37%)
Sub-total		114	114	114	912	912	1824
Cream							
Cream only	116	60 (52%)	46 (40%)	39 (34%)	481 (52%)	405 (44%)	886 (48%)
Cream and one other emollient type		12 (10%)	11 (9%)	6 (5%)	88 (9%)	66 (7%)	154 (8%)
Other emollient type only		10 (9%)	12 (10%)	7 (6%)	77 (8%)	88 (9%)	165 (9%)
Other combination of emollient types		0 (0%)	0 (0%)	0 (0%)	4 (<1%)	7 (<1%)	11 (<1%)
No emollient use		2 (2%)	2 (2%)	0 (0%)	13 (1%)	21 (2%)	34 (2%)
Questionnaires not completed		32 (28%)	45 (39%)	64 (55%)	265 (29%)	341 (37%)	606 (33%)
Subtotal		116	116	116	928	928	1856
Gel							
Gel only	109	35 (32%)	37 (34%)	29 (27%)	309 (35%)	287 (33%)	596 (34%)
Gel and one other emollient type		6 (6%)	6 (6%)	3 (3%)	86 (10%)	47 (5%)	143 (8%)
Other emollient type only		19 (17%)	14 (13%)	8 (7%)	132 (15%)	121 (14%)	253 (15%)
Other combination of emollient types		2 (2%)	3 (3%)	1 (<1%)	18 (2%)	23 (3%)	41 (2%)
No emollient use		5 (5%)	5 (5%)	2 (2%)	33 (4%)	49 (6%)	82 (5%)
Questionnaires not completed		42 (39%)	44 (40%)	66 (61%)	294 (34%)	345 (40%)	639 (37%)
Subtotal		109	109	109	872	872	1744
Ointment							
Ointment only	111	32 (29%)	26 (23%)	22 (20%)	300 (34%)	230 (26%)	530 (30%)
Ointment and one other emollient type		9 (8%)	8 (7%)	4 (4%)	68 (8%)	61 (7%)	129 (7%)
Other emollient type only		26 (23%)	25 (23%)	15 (14%)	163 (18%)	179 (20%)	342 (19%)
Other combination of emollient types		0 (0%)	1 (<1%)	0 (0%)	5 (<1%)	11 (1%)	16 (<1%)
No emollient use		2 (2%)	4 (4%)	0 (0%)	21 (2%)	25 (3%)	46 (3%)
Questionnaires not completed		42 (38%)	47 (42%)	70 (63%)	331 (37%)	382 (43%)	713 (40%)
Subtotal		111	111	111	888	888	1776

Number of participants who reported using different emollients and combinations from baseline allocation at individual timepoints (week 8 and 16) and throughout timepoints (weeks 1 to 8 and weeks 9 to 16) per allocated treatment arm.

SECTION 1.2: Use of treatments

For these questions, we are only interested in when a moisturiser was applied and left on the skin, rather than used in the bath or as a soap substitute. This may include your study moisturiser (the one you were prescribed at the start of the study) and/or any other moisturisers that you have been prescribed or bought.

Thinking back to the week beginning **MONDAY** DD MM YY, please tell us which moisturiser(s) you (or someone else) have used on your child's skin (even if just a small amount in one area).

If you have used the study moisturiser (the one you were prescribed at the start of the study) in the last 7 days, please answer this question:

1 a) Name of study moisturiser_____

b) Over the last week, which days of the week have you put the study moisturiser on your child's skin? Please tick 'did not use' if you haven't used it (or haven't collected it yet).

	Day of week used							
Day of week used	Mon	Tues	Wed	Thur	Fri	Sat	Sun	**Did not use**
Study moisturiser	□1	□2	□3	□4	□5	□6	□7	□0

If you have used ANY OTHER moisturiser in the last 7 days (either prescribed by GP or bought), please answer this question:

2. Over the last week, which days of the week have you put other moisturisers on your child's skin? Please tick 'Did not use' if you haven't used them.

		Day of week used							Did not use
	Type of moisturiser	Mon	Tues	Wed	Thurs	Fri	Sat	Sun	
2.1	Lotion	□1	□1	□1	□1	□1	□1	□1	□0
2.2	Cream	□2	□2	□2	□2	□2	□2	□2	□0
2.3	Gel	□3	□3	□3	□3	□3	□3	□3	□0
2.4	Ointment	□4	□4	□4	□4	□4	□4	□4	□0

3. Over the last week, which days have you put any steroid creams or steroid ointments (e.g. hydrocortisone, Eumovate) on your child's skin? Please tick 'Did not use' if you haven't used any:

Day of week	Mon	Tues	Wed	Thur	Fri	Sat	Sun	Did not use
Steroid used	□1	□2	□3	□4	□5	□6	□7	□0

SECTION 1.3: Use of treatments

1.0) I'm completing this page for the week beginning: D D M M Y Y

Day 1 = _____

Thinking back over the past week, please tell us which moisturiser(s) you (or someone else) have used on your child's skin (even if just a small amount in one area).

For these questions, we are only interested in when a moisturiser was applied and left on the skin, rather than used in the bath or as a soap substitute. This may include your study moisturiser (the one you were given at the start of the study) and/or any other moisturisers that you have been prescribed or bought.

1.1) Over the last week, on which days has your study moisturiser been applied to your child's skin? (As best as you can remember)

Day of week used	1	2	3	4	5	6	7	Did not use
Study moisturiser	□1	□2	□3	□4	□5	□6	□7	□0

1.2) Over the last week, has any other moisturiser been applied to your child's skin?

□0 No – go to next page

□1 Yes – please tell us what and on which days (As best as you can remember):

		Day of week used							Did not use
	Type of moisturiser	1	2	3	4	5	6	7	
2.1	Lotion □1	□1	□1	□1	□1	□1	□1	□1	□0
2.2	Cream □2	□2	□2	□2	□2	□2	□2	□2	□0
2.3	Gel □3	□3	□3	□3	□3	□3	□3	□3	□0
2.4	Ointment □4	□4	□4	□4	□4	□4	□4	□4	□0

1.3) In the past week, please tick the number of days any steroid creams or ointments (e.g. hydrocortisone, eumovate) were used on your child's skin:

☐0	☐1	☐2	☐3	☐4	☐5	☐6	☐7
No days	1 day	2 days	3 days	4 days	5 days	6 days	7 days

Figure 1
211x124 mm (x DPI)

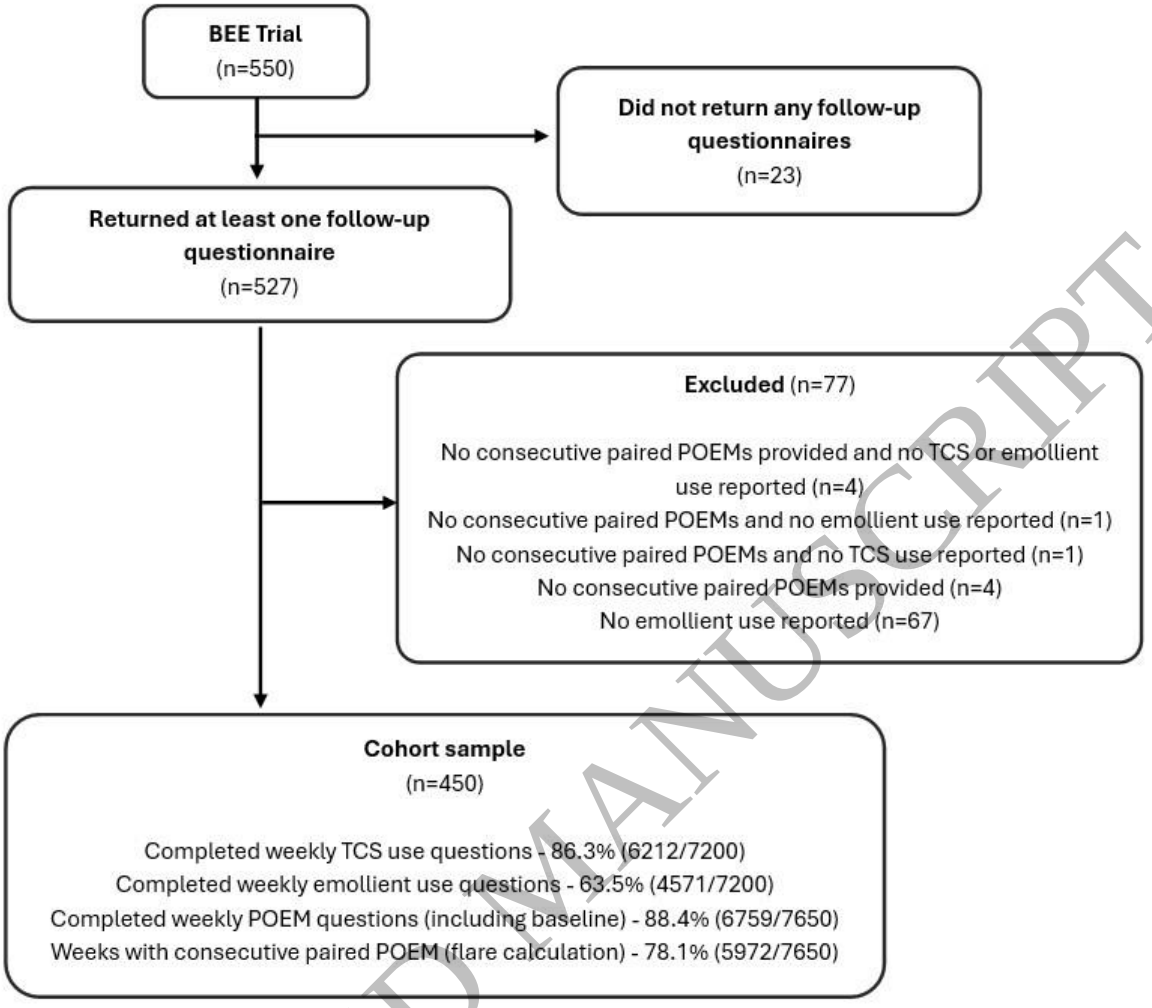

Figure 2
212x185 mm (x DPI)

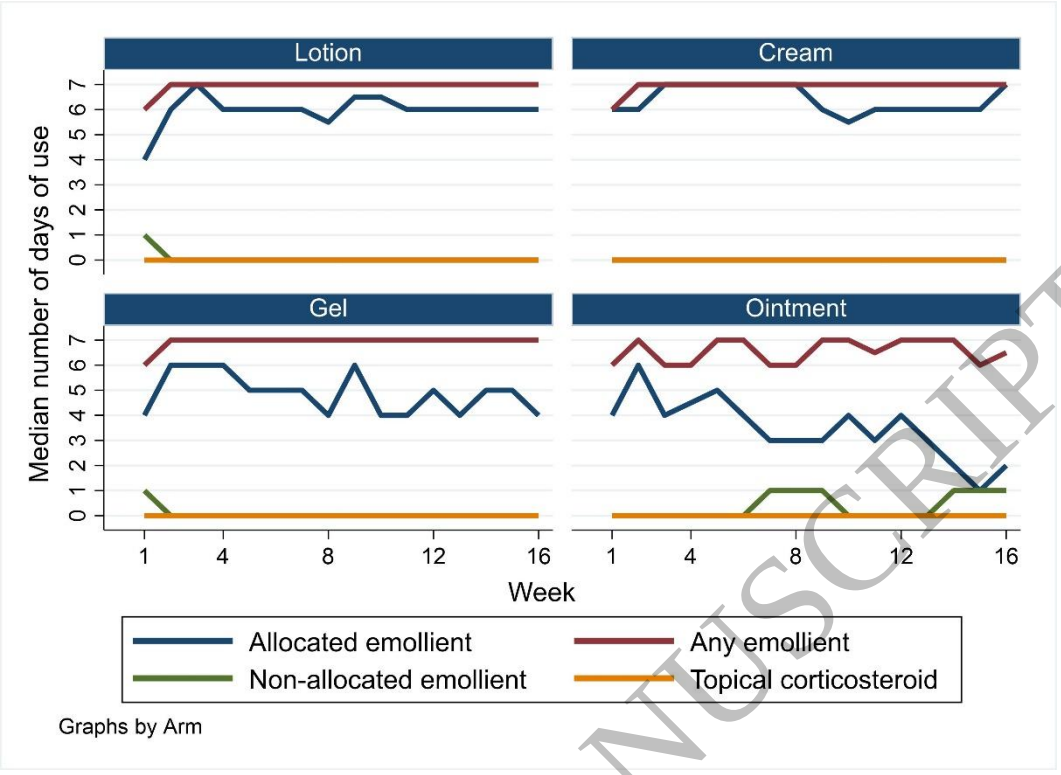

Figure 3
140x102 mm (x DPI)

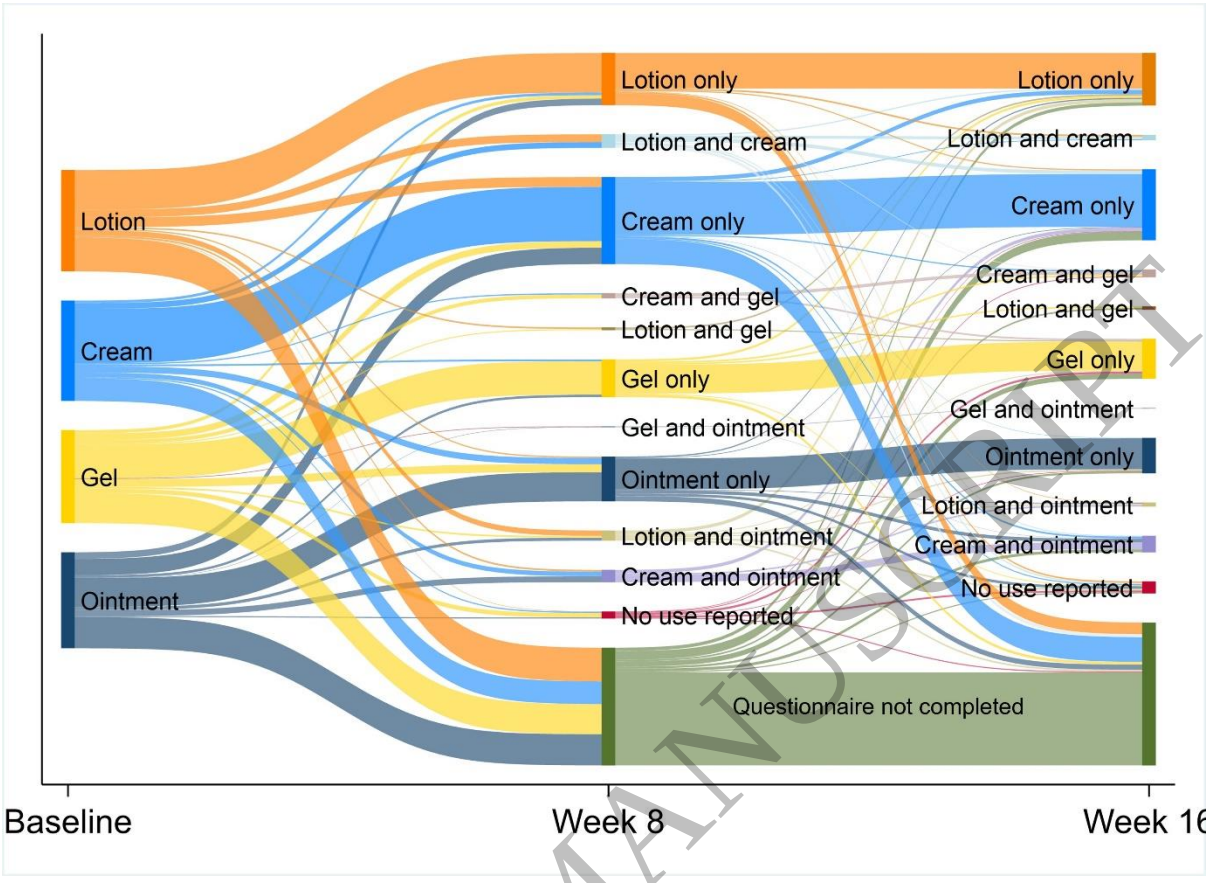

Figure 4
251x182 mm (x DPI)

Consistent safety profile with over 8 years of real-world evidence, across licensed indications[1–3]

Cosentyx® secukinumab

1,000,000 patients treated globally, and counting across indications[4]

150+ clinical trials across indications[5]

8+ years of real-world evidence, worldwide across indications[1–3]

8 indications[1–3]

Click here to visit our HCP portal and learn more

Real-world evidence shows a consistent safety profile with long-term use of Cosentyx over 6 years[6,7]

No trend toward increased AE rates over time (pooled PsA, AS, PsO):*[6]

AEs of select interest (EAIR per 100 PY)	1 year	2 years	3 years	4 years	5 years	6 years	Cumulative rate
Serious infections Cases	2.0 n=149	1.7 n=475	0.7 n=649	1.3 n=1,841	1.3 n=2,285	1.1 n=2,226	1.3 n=8,719
Malignant or unspecified tumours Cases	0.2 n=15	0.2 n=50	0.2 n=225	0.3 n=422	0.3 n=520	0.3 n=573	0.3 n=1,896
MACE Cases	0.2 n=15	0.1 n=39	0.2 n=151	0.2 n=238	0.2 n=264	0.1 n=287	0.2 n=1,031
Total IBD Cases	0.2 n=12	0.2 n=46	0.2 n=185	0.3 n=340	0.2 n=312	0.1 n=261	0.2 n=1,291
Exposure (PY)	7450	28,549	93,744	137,325	182,024	212,636	680,470

Adapted from Novartis Data on File. 2021.[6]

No trend towards increased rates of malignancy, MACE or IBD over time[6]

The most frequently reported adverse reactions are upper respiratory tract infections (17.1%) (most frequently nasopharyngitis, rhinitis).[1,2] Refer to the prescribing information for a summary of adverse events.

Refer to the Cosentyx Summary of Product Characteristics for full details, dosing and administration, including special populations.

Cosentyx is indicated for the treatment of moderate to severe **PsO** in adults, children and adolescents from the age of 6 years who are candidates for systemic therapy; active **PsA** in adult patients (alone or in combination with methotrexate) when the response to previous disease-modifying anti-rheumatic drug therapy has been inadequate; active **AS** in adults who have responded inadequately to conventional therapy; active **nr-axSpA** with objective signs of inflammation as indicated by elevated C-reactive protein and/or magnetic resonance imaging evidence in adults who have responded inadequately to non-steroidal anti-inflammatory drugs; active moderate to severe **HS** (acne inversa) in adults with an inadequate response to conventional systemic HS therapy; active **ERA** in patients 6 years and older (alone or in combination with methotrexate) whose disease has responded inadequately to, or who cannot tolerate, conventional therapy; active **JPsA** in patients 6 years and older (alone or in combination with methotrexate) whose disease has responded inadequately to, or who cannot tolerate, conventional therapy.[1,2]

Prescribing information, adverse event reporting and full indication can be found on the next page.

*Successive time periods of PSUR shown with cumulative rate: 26 Dec 2014 to 25 Dec 2015; 26 Dec 2015 to 25 Dec 2016; 26 Dec 2016 to 25 Dec 2017; 26 Dec 2017 to 25 Dec 2018: 26 Dec 2018 to 25 Dec 2019; 26 Dec 2019 to 25 Dec 2020.[6]

Abbreviations: AE, adverse event; AS, ankylosing spondylitis; EIAR, exposure-adjusted incidence rate; ERA, enthesitis-related arthritis; HCP, healthcare professional; HS, hidradentitis suppurativa; IBD, inflammatory bowel disease; JPsA, juvenile psoriatic arthritis; MACE, major adverse cardiac event; nr-axSpA, non-radiographic axial spondyloarthritis; PsA, psoriatic arthritis; PsO, plaque psoriasis; PY, patient year.

References: 1. Cosentyx® (secukinumab) GB Summary of Product Characteristics; **2.** Cosentyx® (secukinumab) NI Summary of Product Characteristics; **3.** European Medicines Agency. European public assessment report. Available at: https://www.ema.europa.eu/en/documents/overview/cosentyx-epar-medicine-overview_en.pdf [Accessed August 2024]; **4.** Novartis Data on File. Secukinumab – Sec008. 2023; **5.** ClinicalTrials.gov. Search results for 'secukinumab', completed, terminated and active, not recruiting trials. Available at: https://clinicaltrials.gov/search?term=Secukinumab,&aggFilters=status:com [Accessed August 2024]; **6.** Novartis data on file. Cosentyx Periodic Safety Update Report (PSUR); 26 December 2019 – 25 December 2020. 22 February 2021; **7.** Deodhar A, et al. Arthritis Res Ther 2019;21(1):111.

NOVARTIS

UK | August 2024 | FA-11239622

Cosentyx® (secukinumab) Northern Ireland Prescribing Information.

Please refer to the Summary of Product Characteristics (SmPC) before prescribing.

Indications: Treatment of: moderate to severe plaque psoriasis in adults, children and adolescents from the age of 6 years who are candidates for systemic therapy; active psoriatic arthritis in adults (alone or in combination with methotrexate) who have responded inadequately to disease-modifying anti-rheumatic drug therapy; active ankylosing spondylitis in adults who have responded inadequately to conventional therapy; active non-radiographic axial spondyloarthritis (nr-axSpA) with objective signs of inflammation as indicated by elevated C-reactive protein (CRP) and/or magnetic resonance imaging (MRI) evidence in adults who have responded inadequately to non-steroidal anti-inflammatory drugs; active enthesitis-related arthritis and juvenile psoriatic arthritis in patients 6 years and older (alone or in combination with methotrexate) whose disease has responded inadequately to, or who cannot tolerate, conventional therapy; active moderate to severe hidradenitis suppurativa (acne inversa) in adults with an inadequate response to conventional systemic HS therapy. **Presentations:** Cosentyx 150 mg solution for injection in pre-filled pen; Cosentyx 300 mg solution for injection in pre-filled pen. **Dosage & Administration:** Administered by subcutaneous injection at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Consider discontinuation if no response after 16 weeks of treatment. Each 150 mg dose is given as one injection of 150 mg. Each 300 mg dose is given as two injections of 150 mg or one injection of 300 mg. If possible avoid areas of the skin showing psoriasis. *Plaque Psoriasis:* Adult recommended dose is 300 mg monthly. Based on clinical response, a maintenance dose of 300 mg every 2 weeks may provide additional benefit for patients with a body weight of 90 kg or higher. Adolescents and children from the age of 6 years: if weight ≥ 50 kg, recommended dose is 150 mg (may be increased to 300 mg as some patients may derive additional benefit from the higher dose). If weight < 50 kg, recommended dose is 75 mg. However, 150mg solution for injection in pre-filled pen is not indicated for administration of this dose and no suitable alternative formulation is available. *Psoriatic Arthritis:* For patients with concomitant moderate to severe plaque psoriasis see adult plaque psoriasis recommendation. For patients who are anti-TNFα inadequate responders, the recommended dose is 300 mg, 150 mg in other patients. Can be increased to 300 mg based on clinical response. *Ankylosing Spondylitis:* Recommended dose 150 mg. Can be increased to 300 mg based on clinical response. *nr-axSpA:* Recommended dose 150 mg. *Enthesitis-related arthritis and juvenile psoriatic arthritis:* From the age of 6 years, if weight ≥ 50 kg, recommended dose is 150 mg. If weight < 50 kg, recommended dose is 75 mg. However, 150mg solution for injection in pre-filled pen is not indicated for administration of this dose and no suitable alternative formulation is available. *Hidradenitis suppurativa:* Recommended dose is 300 mg monthly. Based on clinical response, the maintenance dose can be increased to 300 mg every 2 weeks. **Contraindications:** Hypersensitivity to the active substance or excipients. Clinically important, active infection. **Warnings & Precautions:** *Infections:* Potential to increase risk of infections; serious infections have been observed. Caution in patients with chronic infection or history of recurrent infection. Advise patients to seek medical advice if signs/symptoms of infection occur. Monitor patients with serious infection closely and do not administer Cosentyx until the infection resolves. Non-serious mucocutaneous candida infections were more frequently reported for secukinumab than placebo in the psoriasis clinical studies. Should not be given to patients with active tuberculosis (TB). Consider anti-tuberculosis therapy before starting Cosentyx in patients with latent TB. *Inflammatory bowel disease (including Crohn's disease and ulcerative colitis):* New cases or exacerbations of inflammatory bowel disease have been reported with secukinumab. Secukinumab, is not recommended in patients with inflammatory bowel disease. If a patient develops signs and symptoms of inflammatory bowel disease or experiences an exacerbation of pre-existing inflammatory bowel disease, secukinumab should be discontinued and appropriate medical management should be initiated. *Hypersensitivity reactions:* Rare cases of anaphylactic reactions have been observed. If an anaphylactic or serious allergic reactions occur, discontinue immediately and initiate appropriate therapy. *Vaccinations:* Do not give live vaccines concurrently with Cosentyx; inactivated or non-live vaccinations may be given. Paediatric patients should receive all age appropriate immunisations before treatment with Cosentyx. *Latex-Sensitive Individuals:* The removable needle cap of the 150mg pre-filled pen contains a derivative of natural rubber latex. *Concomitant immunosuppressive therapy:* Combination with immunosuppressants, including biologics, or phototherapy has not been evaluated in psoriasis studies. Cosentyx was given concomitantly with methotrexate, sulfasalazine and/or corticosteroids in arthritis studies. Caution when considering concomitant use of other immunosuppressants. **Interactions:** Live vaccines should not be given concurrently with secukinumab. No interaction between Cosentyx and midazolam (CYP3A4 substrate) seen in adult psoriasis study. No interaction between Cosentyx and methotrexate and/or corticosteroids seen in arthritis studies. **Fertility, pregnancy and lactation:** *Women of childbearing potential:* Use an effective method of contraception during and for at least 20 weeks after treatment. *Pregnancy:* Preferably avoid use of Cosentyx in pregnancy. *Breast feeding:* It is not known if secukinumab is excreted in human breast milk. A clinical decision should be made on continuation of breast feeding during Cosentyx treatment (and up to 20 weeks after discontinuation) based on benefit of breast feeding to the child and benefit of Cosentyx therapy to the woman. *Fertility:* Effect on human fertility not evaluated. **Adverse Reactions**: *Very Common* (≥1/10): Upper respiratory tract infection. *Common* (≥1/100 to <1/10): Oral herpes, headache, rhinorrhoea, diarrhoea, nausea, fatigue. *Uncommon (≥1/1,000 to <1/100):* Oral candidiasis, lower respiratory tract infections, neutropenia, inflammatory bowel disease. *Rare (≥1/10,000 to <1/1,000)*: anaphylactic reactions, exfoliative dermatitis (psoriasis patients), hypersensitivity vasculitis. *Not known:* Mucosal and cutaneous candidiasis (including oesophageal candidiasis). *Infections:* Most infections were non-serious and mild to moderate upper respiratory tract infections, e.g. nasopharyngitis, and did not necessitate treatment discontinuation. There was an increase in mucosal and cutaneous (including oesophageal) candidiasis, but cases were mild or moderate in severity, non-serious, responsive to standard treatment and did not necessitate treatment discontinuation. Serious infections occurred in a small proportion of patients (0.015 serious infections reported per patient year of follow up). *Neutropenia:* Neutropenia was more frequent with secukinumab than placebo, but most cases were mild, transient and reversible. Rare cases of neutropenia CTCAE Grade 4 were reported. *Hypersensitivity reactions:* Urticaria and rare cases of anaphylactic reactions were seen. *Immunogenicity:* Less than 1% of patients treated with Cosentyx developed antibodies to secukinumab up to 52 weeks of treatment. *Other Adverse Effects:* The list of adverse events is not exhaustive, please consult the SmPC for a detailed listing of all adverse events before prescribing. **Legal Category:** POM. **MA Number & List Price:** EU/1/14/980/005 - 150 mg pre-filled pen x2 £1,218.78; EU/1/14/980/010 – 300 mg pre-filled pen x 1 £1218.78. **PI Last Revised:** May 2023. Full prescribing information, (SmPC) is available from: Novartis Pharmaceuticals UK Limited, 2nd Floor, The WestWorks Building, White City Place, 195 Wood Lane, London, W12 7FQ. Telephone: (01276) 692255.

UK | 284832 | May 2023

Adverse Event Reporting:

Adverse events should be reported. Reporting forms and information can be found at www.mhra.gov.uk/yellowcard. Adverse events should also be reported to Novartis via uk.patientsafety@novartis.com or online through the pharmacovigilance intake (PVI) tool at www.novartis.com/report

If you have a question about the product, please contact Medical Information on 01276 698370 or by email at medinfo.uk@novartis.com

Cosentyx® (secukinumab) Great Britain Prescribing Information.

Please refer to the Summary of Product Characteristics (SmPC) before prescribing.

Indications: Treatment of: moderate to severe plaque psoriasis in adults, children and adolescents from the age of 6 years who are candidates for systemic therapy; active psoriatic arthritis in adults (alone or in combination with methotrexate) who have responded inadequately to disease-modifying anti-rheumatic drug therapy; active ankylosing spondylitis in adults who have responded inadequately to conventional therapy; active non-radiographic axial spondyloarthritis (nr-axSpA) with objective signs of inflammation as indicated by elevated C-reactive protein (CRP) and/or magnetic resonance imaging (MRI) evidence in adults who have responded inadequately to non-steroidal anti-inflammatory drugs; active enthesitis-related arthritis and juvenile psoriatic arthritis in patients 6 years and older (alone or in combination with methotrexate) whose disease has responded inadequately to, or who cannot tolerate, conventional therapy; active moderate to severe hidradenitis suppurativa (acne inversa) in adults with an inadequate response to conventional systemic HS therapy. **Presentations:** Cosentyx 75 mg solution for injection in pre-filled syringe; Cosentyx 150 mg solution for injection in pre-filled syringe; Cosentyx 150 mg solution for injection in pre-filled pen; Cosentyx 300 mg solution for injection in pre-filled pen. **Dosage & Administration:** Administered by subcutaneous injection at weeks 0, 1, 2, 3 and 4, followed by monthly maintenance dosing. Consider discontinuation if no response after 16 weeks of treatment. Each 75 mg dose is given as one injection of 75 mg. Each 150 mg dose is given as one injection of 150 mg. Each 300 mg dose is given as two injections of 150 mg or one injection of 300 mg. If possible avoid areas of the skin showing psoriasis. *Plaque Psoriasis:* Adult recommended dose is 300 mg. Based on clinical response, a maintenance dose of 300 mg every 2 weeks may provide additional benefit for patients with a body weight of 90 kg or higher. Adolescents and children from the age of 6 years: if weight ≥ 50 kg, recommended dose is 150 mg (may be increased to 300 mg as some patients may derive additional benefit from the higher dose). If weight < 50 kg, recommended dose is 75 mg. *Psoriatic Arthritis:* For patients with concomitant moderate to severe plaque psoriasis see adult plaque psoriasis recommendation. For patients who are anti-TNFα inadequate responders, the recommended dose is 300 mg, 150 mg in other patients. Can be increased to 300 mg based on clinical response. *Ankylosing Spondylitis:* Recommended dose 150 mg. Can be increased to 300 mg based on clinical response. *nr-axSpA:* Recommended dose 150 mg. *Enthesitis-related arthritis and juvenile psoriatic arthritis:* From the age of 6 years, if weight ≥ 50 kg, recommended dose is 150 mg. If weight < 50 kg, recommended dose is 75 mg. *Hidradenitis suppurativa:* Recommended dose is 300 mg monthly. Based on clinical response, the maintenance dose can be increased to 300 mg every 2 weeks. **Contraindications:** Hypersensitivity to the active substance or excipients. Clinically important, active infection. **Warnings & Precautions:** *Infections:* Potential to increase risk of infections; serious infections have been observed. Caution in patients with chronic infection or history of recurrent infection. Advise patients to seek medical advice if signs/symptoms of infection occur. Monitor patients with serious infection closely and do not administer Cosentyx until the infection resolves. Non-serious mucocutaneous candida infections were more frequently reported for secukinumab in the psoriasis clinical studies. Should not be given to patients with active tuberculosis (TB). Consider anti-tuberculosis therapy before starting Cosentyx in patients with latent TB. *Inflammatory bowel disease (including Crohn's disease and ulcerative colitis):* New cases or exacerbations of inflammatory bowel disease have been reported with secukinumab. Secukinumab, is not recommended in patients with inflammatory bowel disease. If a patient develops signs and symptoms of inflammatory bowel disease or experiences an exacerbation of pre-existing inflammatory bowel disease, secukinumab should be discontinued and appropriate medical management should be initiated. *Hypersensitivity reactions:* Rare cases of anaphylactic reactions have been observed. If an anaphylactic or serious allergic reactions occur, discontinue immediately and initiate appropriate therapy. *Vaccinations:* Do not give live vaccines concurrently with Cosentyx; inactivated or non-live vaccinations may be given. Paediatric patients should receive all age appropriate immunisations before treatment with Cosentyx. *Latex-Sensitive Individuals:* The removable needle cap of the 75mg and 150 mg pre-filled syringe and 150mg pre-filled pen contains a derivative of natural rubber latex. *Concomitant immunosuppressive therapy:* Combination with immunosuppressants, including biologics, or phototherapy has not been evaluated in psoriasis studies. Cosentyx was given concomitantly with methotrexate, sulfasalazine and/or corticosteroids in arthritis studies. Caution when considering concomitant use of other immunosuppressants. **Interactions:** Live vaccines should not be given concurrently with secukinumab. No interaction between Cosentyx and midazolam (CYP3A4 substrate) seen in adult psoriasis study. No interaction between Cosentyx and methotrexate and/or corticosteroids seen in arthritis studies. **Fertility, pregnancy and lactation:** *Women of childbearing potential:* Use an effective method of contraception during and for at least 20 weeks after treatment. *Pregnancy:* Preferably avoid use of Cosentyx in pregnancy. *Breast feeding:* It is not known if secukinumab is excreted in human breast milk. A clinical decision should be made on continuation of breast feeding during Cosentyx treatment (and up to 20 weeks after discontinuation) based on benefit of breast feeding to the child and benefit of Cosentyx therapy to the woman. *Fertility:* Effect on human fertility not evaluated. **Adverse Reactions**: *Very Common (≥1/10):* Upper respiratory tract infection. *Common (≥1/100 to <1/10):* Oral herpes, headache, rhinorrhoea, diarrhoea, nausea, fatigue. *Uncommon (≥1/1,000 to <1/100):* Oral candidiasis, lower respiratory tract infections, neutropenia, inflammatory bowel disease. *Rare (≥1/10,000 to <1/1,000)*: anaphylactic reactions, exfoliative dermatitis (psoriasis patients), hypersensitivity vasculitis. *Not known:* Mucosal and cutaneous candidiasis (including oesophageal candidiasis). *Infections:* Most infections were non-serious and mild to moderate upper respiratory tract infections, e.g. nasopharyngitis, and did not necessitate treatment discontinuation. There was an increase in mucosal and cutaneous (including oesophageal) candidiasis, but cases were mild or moderate in severity, non-serious, responsive to standard treatment and did not necessitate treatment discontinuation. Serious infections occurred in a small proportion of patients (0.015 serious infections reported per patient year of follow up). *Neutropenia:* Neutropenia was more frequent with secukinumab than placebo, but most cases were mild, transient and reversible. Rare cases of neutropenia CTCAE Grade 4 were reported. *Hypersensitivity reactions:* Urticaria and rare cases of anaphylactic reactions were seen. *Immunogenicity:* Less than 1% of patients treated with Cosentyx developed antibodies to secukinumab up to 52 weeks of treatment. *Other Adverse Effects:* The list of adverse events is not exhaustive, please consult the SmPC for a detailed listing of all adverse events before prescribing. **Legal Category:** POM. **MA Number & List Price:** PLGB 00101/1205 – 75 mg pre-filled syringe x 1 - £304.70; PLGB 00101/1029 - 150 mg pre-filled pen x2 £1,218.78; PLGB 00101/1030 - 150 mg pre-filled syringe x2 £1,218.78; PLGB 00101/1198 – 300 mg pre-filled pen x 1 £1218.78. **PI Last Revised:** June 2023. Full prescribing information, (SmPC) is available from: Novartis Pharmaceuticals UK Limited, 2nd Floor, The WestWorks Building, White City Place, 195 Wood Lane, London, W12 7FQ. Telephone: (01276) 692255.

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