THE BEEP STUDY

PARTICIPANT NEWSLETTER - 5-YEAR RESULTS EDITION, OCTOBER 2022

Results of the UK DCTN Barrier Enhancement for Eczema Prevention study

We've done it!

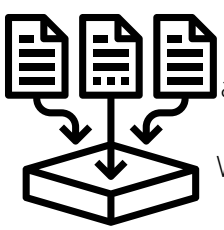
We have reached the final 5-year follow-up point for every participant and analysed the final results! Thank you so much for everything you have done for this study; read on to discover what your data has told us about the role of moisturisers in preventing eczema and beyond.

The BEEP Study

Around one in five school-aged children have eczema in the UK ; children born into families with a history of eczema, asthma, or hay fever are at higher risk of developing eczema. There is currently no known cure, so it is important to research ways to prevent eczema from starting in the first place. Small previous studies suggested that the regular application of moisturiser from birth might be a useful prevention method. A big independent study was needed to get a reliable answer on whether moisturisers can prevent eczema and allergies. So that is what BEEP was all about, with 1394 babies and families across England with a family history of eczema, asthma or hay fever taking part.

When you signed up to the trial, you were randomly assigned to one of two groups:

- best practice skin care
- best practice skin care plus the application of moisturiser to your new-born's skin at least once a day for a year



You were sent regular questionnaires for the next five years, and attended a face-to-face nurse visit around the time of your child's 2nd birthday. We followed-up with you and your child for five years to see if there was a late preventative effect on eczema developing or eczema severity, and also to see if there was any effect on preventing asthma and hay fever and food allergies and the value in terms of costs of this approach.

We have already shared the main two year results with you. The results being shared here include all the data we collected over the first five years of your child's life.

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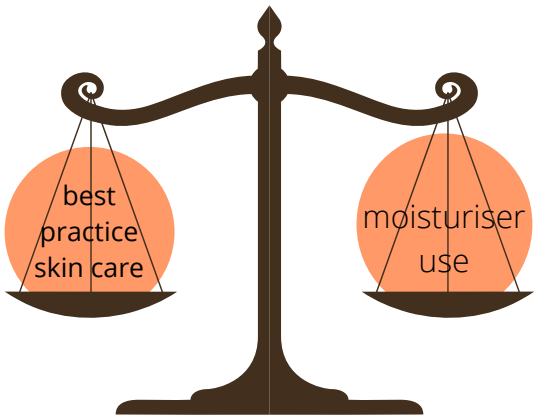
What do the results show?

- This trial **did not show any differences between the two groups** in terms of *the numbers of children who went on to develop eczema*, how early this eczema appeared, and how serious the eczema was.
- There was also no difference between the two groups in terms of *which children went on to develop asthma or hay fever*.

- In the group who used daily moisturisers, children had a slightly higher rate of food allergy than the group who used best skin care advice alone at 2 years but this could have been due to chance and there was no difference at 5 years.

This trial was able to answer our research question:
Applying moisturisers to babies' skin in the first year of their life does not lower the chance of developing eczema, nor does it affect the severity of the eczema.
It also showed that there is no effect on the development of asthma, hay fever, or food allergy later in childhood.



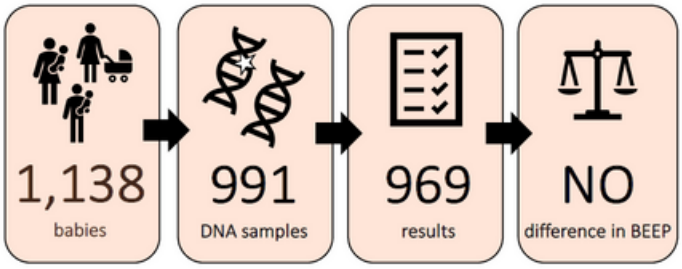
No difference!

Genetic results

What did we do?

We were delighted that many of the families whose babies participated in the BEEP study also agreed to give saliva samples for DNA to be collected. We used these samples to test for genetic differences that might make a difference to how the baby's skin responds to moisturiser therapy. We tested one gene called filaggrin (*FLG*) because this gene plays an important part in the skin's protection against eczema and allergies. We wanted to find out if babies with a mutation or 'spelling mistake' in *FLG* might benefit more (or less) from moisturiser treatment.

How many samples?
1,138 families (82% of all those in BEEP) agreed to take part in the genetic study and we were able to obtain saliva and DNA samples from 991 babies.



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What did we find?
We successfully tested the gene FLG in 969 samples (70%). 124 babies showed mutations in FLG which we know would put them at increased risk of developing eczema, but these babies did not show any more or less benefit from moisturiser treatment.

What does this mean?
The BEEP study overall showed no effect of moisturisers on eczema prevention. Our finding is important because it has shown that there is not even a difference in the subgroup of babies who are at the highest risk of developing eczema.

What's next?
Samples where parents/carers have given consent are still being stored securely in a freezer in Prof Brown's research lab in the University of Edinburgh. These may be used for further eczema research to look at other genes, if approved by the BEEP study team, but the samples will all be safely destroyed in 15 years' time.

Any questions?
Feel free to contact the BEEP team (details at the end of this newsletter) or Professor Sara Brown sara.brown@ed.ac.uk

Prof Sara Brown, Professor of Dermatology

Health Economics in the BEEP trial

What did we want to find out?
We wanted to find out whether, if daily all-over-body application of moisturiser during the first year of life prevented atopic eczema in high-risk children, it would be cost effective for the NHS to routinely provide moisturisers to children born to families with eczema, asthma or hay fever in the future.

How did we do this?
You all kindly provided information on your child's health care appointments and medications linked to eczema, hayfever and asthma over the first five years of life which we used to estimate the average cost per child of health care for those receiving moisturisers in the first year of life and those receiving standard care alone over the 5-year study period. At the same time, you kindly completed questions about your own and your child's quality of life. This allowed us to compare the costs to the benefits of preventative moisturiser use.

What did we find?
We are still busy analysing the data. We will be reporting the average cost per child over 2 years and 5 years for NHS appointments and medications associated with eczema, rhinitis and asthma. *There is unlikely to be a significant difference in these costs* between those advised to use moisturisers in the first year of life and those not given this advice.

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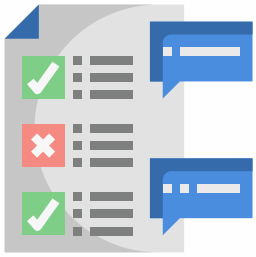
Main carers reported their children had generally high quality of life. On average parental quality of life was higher at 2 years than at around their child's birth, reflecting the often busy and emotional time parents have around the birth of a new child, and quality of life remained higher than at birth up to the point the study finished at 5 years.

Why is this important?

If the health costs confirms that moisturisers are not cost effective it means the NHS can use its scarce resources to fund other services that will be of greater benefit to patients and the public.

Prof Tracey Sach, Professor of Health Economics

This study will also add evidence about the range of services and their associated costs used for eczema, asthma and rhinitis in this period of a child's life which may be useful to those planning services or for future studies needing information on the typical costs for children under 5 at high risk of allergic disease.



In addition, there is currently no agreed way of measuring child quality of life for use in studies that look at benefits in relation to costs. In this study we tested a questionnaire that had been developed in older children by using additional guidance to help parents complete this for younger children. We will be looking at this to see how well the questionnaire worked in this age group to see if it can be used in the under 5's in future studies.

Find out more:

If you have questions about this part of the study please contact the BEEP team (details at the end of this newsletter) or Professor Tracey Sach: T.sach@uea.ac.uk

Milk allergy in the BEEP trial

One surprise finding from the BEEP study was the high rate of reported issues with cow's milk in participating children. Many more parents reported allergy or intolerance than would be expected, and we were not able to confirm milk allergy in most of the children where parents reported an issue. Almost 1 in 6 families reported an issue with cow's milk in their child, but only 1 in 100 BEEP children had a confirmed milk allergy. For other food allergies such as egg or peanut, family report of allergy was similar to the confirmed allergy rate. UK prescription data show that low allergy formula milks are being prescribed by GPs much more than necessary at the moment. Dr Hilary Allen is a GP working with the BEEP team to understand reasons why too many babies are being diagnosed with milk allergy. We will share the results with you next year when the study is complete.

Dr Robert Boyle, Consultant Paediatric Allergist

BEEP Investigator Dr Robert Boyle spoke recently on BBC Radio 4's 'Inside Health' about why milk allergy overdiagnosis matters: search for '*Are too many babies being diagnosed with cows' milk allergy? Inside Health*' if you would like to listen.
(https://www.bbc.co.uk/programmes/m0019jyy)
Or scan the QR code on the right!

And a message from Hywel Williams

Hello children, parents and carers, and a huge thank you for taking part in the BEEP study which is now finished.

Prof Hywel Williams, Chief Investigator

2 years

The 2 year results: You may remember me telling you that we found no difference in eczema between the two study groups when your child was aged 2 years. We also found that mild skin infections were slightly higher in the group given moisturisers. When doing these trials, we always "place our bet" (that moisturisers would prevent eczema) and then "show you our hand" (sharing the results openly and honestly).

I was disappointed that using moisturisers from birth did not prevent eczema as I was convinced it might work given the research signals at the time. But that's science for you and why we can't rely on indirect evidence and smaller studies to answer big questions. You need big independent studies like BEEP to get a clear answer.

5 years

The 5 year follow-up: It was important to follow up all children up to the age of 5 years as some eczema develops later in childhood. Also to see if there was any effect in preventing asthma, hay fever and food allergy. Again, the answer was no. Not even for those with the gene that puts them at higher risk of eczema.

What do other studies say? Around a dozen other studies from all over the world have copied BEEP and they have shown the same result so far – no clear benefit in using moisturisers in early life to prevent eczema and allergies. We cannot rule out small benefits, and it is always possible that other moisturisers and changes in bathing could help to prevent eczema, but for now, the evidence of no benefit is pretty clear.

So was it all a waste of time? Definitely not. It was a really important idea that needed to be put through a fair test. BEEP has provided high quality evidence that using moisturisers from birth does not prevent eczema and allergies. Asking parents to apply moisturiser at least once a day to your baby's skin for a whole year is a big ask, so it is one less thing to worry about. We are not giving up on the idea of preventing eczema and there are other ways that are worth looking at in the future.

A big thank you: On behalf of the fabulous BEEP team of managers, methods experts, patient experts, independent monitors, funders, administrators, nurses and doctors, I would like to express my sincere thanks to each and every one of you for taking part in BEEP. You have really helped to move the field of eczema prevention forward and we have learnt a lot in the process.

Professor Hywel Williams, Chief Investigator for the BEEP study

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NHS National Institute for Health Research