

# Study of induction of Tolerance to Oral Peanut: a randomised controlled trial of desensitisation using peanut oral immunotherapy in children (STOP II)

Katherine Anagnostou,<sup>1</sup> Sabita Islam,<sup>1</sup> Yvonne King,<sup>2</sup> Loraine Foley,<sup>2</sup> Laura Pasea,<sup>3</sup> Chris Palmer,<sup>3</sup> Simon Bond,<sup>4</sup> Pamela Ewan<sup>1</sup> and Andrew Clark<sup>1\*</sup>

<sup>1</sup>Department of Medicine, University of Cambridge, Addenbrooke's Hospital, Cambridge, UK

<sup>2</sup>Department of Allergy, Addenbrooke's Hospital, Cambridge, UK

<sup>3</sup>Centre for Applied Medical Statistics, Department of Public Health and Primary Care, University of Cambridge, Institute of Public Health, Cambridge, UK

<sup>4</sup>Cambridge Clinical Trials Unit, Cambridge University Hospitals NHS Foundation Trust, Addenbrooke's Hospital, Cambridge, UK

\*Corresponding author

**Declared competing interests of authors:** Andrew Clark and Pamela Ewan are inventors on a patent application covering the peanut protein dose range.

Published December 2014

DOI: 10.3310/eme01040

## Plain English summary

### Study of induction of Tolerance to Oral Peanut (STOP II)

Efficacy and Mechanism Evaluation 2014; Vol. 1: No. 4

DOI: 10.3310/eme01040

NIHR Journals Library [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

## Plain English summary

**P**eanut allergy is a common disease in developed countries, affecting up to 1% of children in the UK, France, Germany and the USA. Peanut allergy is most often diagnosed in children, but it can appear for the first time at any age. Reactions vary in severity, and include mouth itching, nausea, stomachache and vomiting. Itchy nettle sting-like rashes and swelling also occur. More serious reactions involve wheezing, throat tightness and shortness of breath, requiring hospital treatment. It is not possible to predict who is at most risk of a severe reaction.

Peanut allergy does not usually resolve and most children will grow into adults with peanut allergy. Currently, the best treatment is peanut avoidance, and patients manage this with varying success. Accidental reactions happen frequently, and families have to carry emergency medication all the time, including injectable adrenaline.

The quality of life (QoL) of families with children who have a peanut allergy is reduced because of constant fear of reactions and the social limitations they put in place to keep their children safe (e.g. not eating out).

Based on the encouraging results of a small pilot study, we undertook a randomised trial of a new treatment: peanut oral immunotherapy (OIT). This involved children eating increasing amounts of peanut under supervision, starting with a tiny amount and building up to the equivalent of five peanuts a day.

The results showed that a high proportion (80–90%) of peanut-allergic children could eat 4–6 peanuts regularly after treatment and that many (50–60%) can eat the equivalent of up to 10 peanuts at a time (primary outcome measure of the trial). At least in the short term (up to 2 years), children need to continue eating peanuts on a daily basis to maintain desensitisation. Common side effects of treatment included mouth itching and stomachache. Wheeze occurred after less than 1 in 200 doses and was treated with asthma inhalers. This treatment protects children from accidental ingestion and they can relax their avoidance practice. There was a significant improvement in QoL measure by a standardised questionnaire.

Peanut OIT is a promising novel treatment that appears to work well and with acceptable side effects. As this is the first study of its type, the findings are relevant to the population studied, but will require confirmation using other patient subgroups. Because of the complex treatment and monitoring involved, OIT should be restricted to specialist centres. This technique may be applicable to other foods and further studies are warranted.

# Efficacy and Mechanism Evaluation

ISSN 2050-4365 (Print)

ISSN 2050-4373 (Online)

This journal is a member of and subscribes to the principles of the Committee on Publication Ethics (COPE) ([www.publicationethics.org/](http://www.publicationethics.org/)).

Editorial contact: [nihredit@southampton.ac.uk](mailto:nihredit@southampton.ac.uk)

The full EME archive is freely available to view online at [www.journalslibrary.nihr.ac.uk/eme](http://www.journalslibrary.nihr.ac.uk/eme). Print-on-demand copies can be purchased from the report pages of the NIHR Journals Library website: [www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)

## Criteria for inclusion in the *Efficacy and Mechanism Evaluation* journal

Reports are published in *Efficacy and Mechanism Evaluation* (EME) if (1) they have resulted from work for the EME programme, and (2) they are of a sufficiently high scientific quality as assessed by the reviewers and editors.

## EME programme

The Efficacy and Mechanism Evaluation (EME) programme was set up in 2008 as part of the National Institute for Health Research (NIHR) and the Medical Research Council (MRC) coordinated strategy for clinical trials. The EME programme is broadly aimed at supporting 'science driven' studies with an expectation of substantial health gain and aims to support excellent clinical science with an ultimate view to improving health or patient care.

Its remit includes evaluations of new treatments, including therapeutics (small molecule and biologic), psychological interventions, public health, diagnostics and medical devices. Treatments or interventions intended to prevent disease are also included.

The EME programme supports laboratory based or similar studies that are embedded within the main study if relevant to the remit of the EME programme. Studies that use validated surrogate markers as indicators of health outcome are also considered.

For more information about the EME programme please visit the website: <http://www.nets.nihr.ac.uk/programmes/eme>

## This report

The research reported in this issue of the journal was funded by the EME programme as project number 08/99/18. The contractual start date was in January 2010. The final report began editorial review in July 2013 and was accepted for publication in April 2014. The authors have been wholly responsible for all data collection, analysis and interpretation, and for writing up their work. The EME editors and production house have tried to ensure the accuracy of the authors' report and would like to thank the reviewers for their constructive comments on the final report document. However, they do not accept liability for damages or losses arising from material published in this report.

This report presents independent research. The views and opinions expressed by authors in this publication are those of the authors and do not necessarily reflect those of the NHS, the NIHR, MRC, NETSCC, the EME programme or the Department of Health. If there are verbatim quotations included in this publication the views and opinions expressed by the interviewees are those of the interviewees and do not necessarily reflect those of the authors, those of the NHS, the NIHR, NETSCC, the EME programme or the Department of Health.

**© Queen's Printer and Controller of HMSO 2014. This work was produced by Anagnostou *et al.* under the terms of a commissioning contract issued by the Secretary of State for Health. This issue may be freely reproduced for the purposes of private research and study and extracts (or indeed, the full report) may be included in professional journals provided that suitable acknowledgement is made and the reproduction is not associated with any form of advertising. Applications for commercial reproduction should be addressed to: NIHR Journals Library, National Institute for Health Research, Evaluation, Trials and Studies Coordinating Centre, Alpha House, University of Southampton Science Park, Southampton SO16 7NS, UK.**

Published by the NIHR Journals Library ([www.journalslibrary.nihr.ac.uk](http://www.journalslibrary.nihr.ac.uk)), produced by Prepress Projects Ltd, Perth, Scotland ([www.prepress-projects.co.uk](http://www.prepress-projects.co.uk)).

## ***Efficacy and Mechanism Evaluation Editor-in-Chief***

**Professor Raj Thakker** May Professor of Medicine, Nuffield Department of Medicine, University of Oxford, UK

## ***NIHR Journals Library Editor-in-Chief***

**Professor Tom Walley** Director, NIHR Evaluation, Trials and Studies and Director of the HTA Programme, UK

## ***NIHR Journals Library Editors***

**Professor Ken Stein** Chair of HTA Editorial Board and Professor of Public Health, University of Exeter Medical School, UK

**Professor Andree Le May** Chair of NIHR Journals Library Editorial Group (EME, HS&DR, PGfAR, PHR journals)

**Dr Martin Ashton-Key** Consultant in Public Health Medicine/Consultant Advisor, NETSCC, UK

**Professor Matthias Beck** Chair in Public Sector Management and Subject Leader (Management Group), Queen's University Management School, Queen's University Belfast, UK

**Professor Aileen Clarke** Professor of Public Health and Health Services Research, Warwick Medical School, University of Warwick, UK

**Dr Tessa Crilly** Director, Crystal Blue Consulting Ltd, UK

**Dr Peter Davidson** Director of NETSCC, HTA, UK

**Ms Tara Lamont** Scientific Advisor, NETSCC, UK

**Professor Elaine McColl** Director, Newcastle Clinical Trials Unit, Institute of Health and Society, Newcastle University, UK

**Professor William McGuire** Professor of Child Health, Hull York Medical School, University of York, UK

**Professor Geoffrey Meads** Professor of Health Sciences Research, Faculty of Education, University of Winchester, UK

**Professor Jane Norman** Professor of Maternal and Fetal Health, University of Edinburgh, UK

**Professor John Powell** Consultant Clinical Adviser, National Institute for Health and Care Excellence (NICE), UK

**Professor James Raftery** Professor of Health Technology Assessment, Wessex Institute, Faculty of Medicine, University of Southampton, UK

**Dr Rob Riemsma** Reviews Manager, Kleijnen Systematic Reviews Ltd, UK

**Professor Helen Roberts** Professor of Child Health Research, UCL Institute of Child Health, UK

**Professor Helen Snooks** Professor of Health Services Research, Institute of Life Science, College of Medicine, Swansea University, UK

Please visit the website for a list of members of the NIHR Journals Library Board:  
[www.journalslibrary.nihr.ac.uk/about/editors](http://www.journalslibrary.nihr.ac.uk/about/editors)

**Editorial contact:** [nihredit@southampton.ac.uk](mailto:nihredit@southampton.ac.uk)