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Viaskin Peanut – peanut allergy immunotherapy (DBV 712; EPIT Peanut) for paediatric patients aged 4-11

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LAY SUMMARY

Viaskin Peanut is a novel form of allergy immunotherapy in development. A patch worn on intact skin is used to deliver peanut allergens. The allergens are given to trigger an effect in the immune system with the aim of desensitising an allergy sufferer to peanuts and reducing future reactions to the allergen. The patch is targeted at children aged 4-11 who currently follow a peanut-free diet and are at risk of severe, life-threatening reactions when accidentally exposed to peanuts.

Advanced-stage clinical trials are currently being conducted in this population. A peanut desensitisation service is not currently provided by the NHS.

TARGET GROUP

Paediatric patients (aged 4-11 years) with an IgE-mediated peanut allergy/hypersensitivity

TECHNOLOGY

DESCRIPTION

Viaskin Peanut (DBV 712; EPIT Peanut) is a novel method of peanut allergy immunotherapy. It is a wearable patch, a new form of epicutaneous immunotherapy (EPIT), which delivers active biological compounds such as allergens through intact skin.[1] Allergens are captured in the superficial layers of the skin by the Antigen Presenting Cells of the epidermis, i.e. the Langerhans cells, without the need of systemic exposure to the allergen. Animal models have demonstrated that this continuous exposure to the allergen leads to the activation of regulatory T cells which down-regulate Th2, promoting long-term tolerance when subsequently exposed to the allergen.[2] The goal of allergen–specific immunotherapy is desensitisation and decreased response to the allergen.[3] In ongoing phase III clinical trials, a Viaskin Peanut 250mcg patch is applied to the skin daily, for at least six months to a year.

A peanut desensitisation service is not currently provided by the NHS. However, current NICE guidelines state that some people may need allergen‑specific immunotherapy, which should be supervised by allergy specialists and should only be provided by physicians and nurses with specialist knowledge.[3]

INNOVATION and/or ADVANTAGES

If licensed for this indication, Viaskin Peanut could provide a novel way of treating children with peanut allergy. By reducing allergic reactions to peanuts in children, the patch could potentially improve the quality of life in both children and their families through reduced complications and worry related to accidental ingestion or exposure.

Reaching a tolerated dose of peanut protein of 300 mg could be a key milestone in the immunotherapy treatment of highly peanut-sensitive individuals at very high risk of allergic reactions, as this could mean ability to tolerate most trace levels of undeclared peanut protein in food products.[4]

DEVELOPER

DBV Technologies

AVAILABILITY, LAUNCH or MARKETING

Viaskin Peanut was designated as a Fast Track Therapy and a Breakthrough Therapy for the treatment of peanut allergy in children by FDA.[5]

PATIENT GROUP

BACKGROUND

Allergy is a form of exaggerated sensitivity in relation to a 'foreign' substance, called an allergen, that may be inhaled, swallowed, injected, or comes into contact with the skin, eyes or mucosa.[3] Immunoglobulin E (IgE) mediated food allergies are most common and involve a greater risk of rapid reactions and anaphylaxis.[6] Severe cases of allergy can lead to anaphylaxis, an acute, potentially fatal, allergic reaction that is characterised by rapidly developing airway, breathing and circulation problems.[3]

Peanut allergy is a major cause of food-induced deaths and having the allergy is associated with a reduced quality of life.[7]

CLINICAL NEED and BURDEN OF DISEASE

Reported prevalence of peanut allergy in children in the UK varies depending on the source; figures ranging from 2 in 1,000 to 19 per 1,000 have been reported.[8] About 20% of children outgrow their peanut allergy.[9]

In England in 2015/16, there were 4,673 hospital admissions due to adverse food reactions (T78.0 and T78.1), resulting in 1,882 bed days and 4,877 finished consultant episodes.[10] Over half of these episodes were in paediatric patients aged between 0 and 14. Annually, about 10 deaths are caused by food allergies in England and Wales.[6]

PATIENT PATHWAY

RELEVANT GUIDANCE

NICE GUIDANCE

- NICE guidelines. Food allergy in under 19s: assessment and diagnosis (CG116). February 2011.
- NICE quality standard. Food allergy (QS118). March 2016.
- NICE diagnostics guidance. ImmunoCAP ISAC 112 and Microtest for multiplex allergen testing (DG24). May 2016

NHS ENGLAND and POLICY GUIDANCE

- NHS England. 2013/14 NHS Standard Contract for Paediatric Medicine: Specialised Allergy services. E03/S/j.

OTHER GUIDANCE

- Togias, A. et al. (2017) Addendum guidelines for the prevention of peanut allergy in the United States: Report of the National Institute of Allergy and Infectious Diseases-sponsored expert panel. Journal of Allergy and Clinical Immunology, DOI: 10.1016/j.jaci.2016.10.010

- Muraro, A., Roberts, G., Worm, M., Bilo, M.B., Brockow, K., Fernández Rivas, M., Santos, A.F., Zolkipli, Z.Q., Bellou, A., Beyer, K. and Bindslev-Jensen, C., 2014. Anaphylaxis: guidelines from the European Academy of Allergy and Clinical Immunology. Allergy, 69(8), pp.1026-1045.
- European Academy of Allergy and Clinical Immunology. Food Allergy and Anaphylaxis Guidelines. 2014. Available from: http://www.eaaci.org/foodallergyandanaphylaxisguidelines/Food%20Allergy%20-%20web%20version.pdf

CURRENT TREATMENT OPTIONS

There is no currently approved treatment to peanut allergy. Avoidance of the food through a peanut-free diet is the best way of preventing allergic reactions, and auto-injector pens (epinephrine) are used in emergency situations when a severe allergic reaction occurs.[6] [7] However, avoidance of exposure to trace amounts of peanut protein capable of eliciting an allergic reaction is very difficult due to the nearly ubiquitous presence of peanuts in the food industry, the potential for cross-contamination, and incorrect ingredient information in restaurants and on product labels.

Other forms of immunotherapy have also been explored in an effort to find treatments for peanut allergy. Subcutaneous, sublingual and oral immunotherapy have all been trialled and have induced clinical benefits but with varying levels of adverse reactions.[7] [11]

EFFICACY and SAFETY

Trial	REALISE; NCT02916446; Viaskin Peanut vs placebo; phase III trial
Sponsor	DBV Technologies
Status	ongoing
Source of Information	Trial registry,[12] company website,[13] company
Location	US, Canada
Design	Randomised, double-blind, placebo-controlled
Participants	N=393 (information from company); children aged 4-11 years; physician-diagnosed peanut allergy; following a strict peanut-free diet
Schedule	Viaskin Peanut 250mcg, daily, for six months (vs placebo). After 6 months, all subjects will receive the active treatment up to a period of 3 years.
Follow-up	42 months
Primary Outcomes	Adverse Events (AEs), Treatment-Emergent Adverse Events (TEAEs) and Serious Adverse Events (SAEs)
Secondary Outcomes	Change in peanut-specific Immunoglobulins E (IgE); change in peanut-specific Immunoglobulins G4 (IgG4)
Key Results	-
Adverse effects (AEs)	-
Expected reporting date	Primary completion date for data collection reported as September 2017 in the trial registry.

Trial	PEPITES; NCT02636699; Viaskin Peanut vs placebo; phase III	PEOPLE; NCT03013517; extension of PEPITES; phase III
Sponsor	DBV Technologies	DBV Technologies
Status	ongoing	ongoing
Source of Information	Trial registry[14]	Trial registry[15]
Location	US, Canada, Australia, Germany, Ireland	US, Canada, Australia, Germany, Ireland
Design	Randomised, double-blind, placebo-controlled	Non-randomised, follow-up study
Participants	N=356; children aged 4-11 years; physician-diagnosed peanut allergy; following a strict peanut-free diet	N=255
Schedule	Viaskin Peanut 250mcg, daily, for 12 months (vs placebo).	Viaskin Peanut 250µg
Follow-up	12 months	2 additional years if previously on active treatment in the PEPITES study, or for 3 years if previously on placebo in the PEPITES study
Primary Outcomes	Percentage of treatment responders in the overall population	Percentage of subjects originating from the active arm of PEPITES reaching an Eliciting Dose (ED) ≥ 1,000 mg after 24 months of additional treatment in PEOPLE
Secondary Outcomes	Percentage of treatment responders in each of the 2 screening ED strata; Change from baseline of mean and median cumulative reactive dose of peanut protein; Change from baseline of mean and median eliciting dose of peanut protein	-
Key Results	-	-
Adverse effects (AEs)	-	-
Expected reporting date	Primary completion date for data collection reported as August 2017 in the trial registry.	Primary completion date for data collection reported as February 2020 in the trial registry.

Trial	NCT01904604; DAIT CoFAR6; Viaskin Peanut vs placebo; Phase II
Sponsor	National Institute of Allergy and Infectious Diseases, Consortium of Food Allergy Research
Status	published
Source of Information	Trial registry,[16] publication[7]
Location	USA
Design	Randomised, double-blind, placebo-controlled

Participants	N=74; age range 4-25; physician-diagnosed peanut allergy or convincing history of peanut allergy; positive reaction to initial oral challenge
Schedule	100 µg Peanut Patch (n=24), 250 µg Peanut Patch (n=25), or placebo (n=25). Applied daily for a 52-week blinded period, initially 3 hours and gradually increased to 24 hours for 21 days, then patch changed every 24 hours.
Follow-up	130 weeks/30 months (crossover at week 52)
Primary Outcomes	Percentage with treatment success after 52 weeks (passing a 5044-mg protein oral food challenge or achieving a 10-fold or greater increase in successfully consumed dose from baseline to week 52)
Secondary Outcomes	Percentage of subjects desensitized to peanut protein, oral food challenges, adverse events
Key Results	At week 52, treatment success was achieved in 3 (12%) placebo-treated participants, 11 (46%) VP100 participants, and 12 (48%) VP250 participants (P = .005 and P = .003, respectively, compared with placebo; VP100 vs VP250, P = .48). Treatment success was higher among younger children (P = 0.03; age, 4-11 vs >11 years).
Adverse effects (AEs)	14.4% of placebo doses and 79.8% of VP100 and VP250 doses resulted in reactions, predominantly local patch-site and mild reactions (P = .003).
Expected reporting date	-

In addition to the above, two Phase IIb trials, VIPES and OLFUS VIPES, have been completed by DBV Technologies. Further information is available at:

- Company website: https://www.dbv-technologies.com/en/viaskin-products/viaskin-peanut
- Dupont et al. Deciphering the dose-response effect of peanut Epicutaneous ImmunoTherapy (EPIT) in peanut allergic subjects, 2015. Available at: http://onlinelibrary.wiley.com/doi/10.1111/all.12717/epdf
- Shreffler et al. Efficacy and Safety of Long-Term Epicutaneous Immunotherapy (EPIT) Treatment of Peanut Allergy with Viaskin Peanut: Results of the Two-Year Extension of the Vipes Phase IIb Clinical Trial, 2017. Available at: https://aaaai.confex.com/aaaai/2017/webprogram/Paper31324.html

ESTIMATED COST and IMPACT

COST

The cost of Viaskin Peanut is not yet known.

According to a January 2016 Bloomberg article, Morgan Stanley estimated that the Viaskin Peanut patch would cost about $6,500 USD a year in the U.S. and $3,300 USD in Europe, but the company would not comment on pricing.[17]

IMPACT – SPECULATIVE

IMPACT ON PATIENTS and CARERS

- ☐ Reduced mortality/increased length of survival
- ☒ Reduced symptoms or disability
- ☐ Other
- ☐ No impact identified

IMPACT ON HEALTH and SOCIAL CARE SERVICES

- ☐ Increased use of existing services
- ☒ Decreased use of existing services
- ☐ Re-organisation of existing services
- ☐ Need for new services
- ☒ Other: *potential requirement for new staff training*
- ☐ None identified

IMPACT ON COSTS and OTHER RESOURCE USE

- ☒ Increased drug treatment costs
- ☐ Reduced drug treatment costs
- ☒ Other increase in costs: *provision of a new mode of immunotherapy if provided within the NHS*
- ☒ Other reduction in costs: *potential reduction in peanut allergy related hospital attendance if desensitisation is achieved and anaphylaxis avoided*
- ☐ Other
- ☐ None identified

OTHER ISSUES

- ☐ Clinical uncertainty or other research question identified:
- ☒ None identified

REFERENCES

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[15] ClinicalTrials.gov. *Follow-up of the PEPITES Study to Evaluate Long-term Efficacy and Safety of Viaskin Peanut in Children (PEOPLE)* Available from: https://clinicaltrials.gov/ct2/show/NCT03013517 [Accessed 4 April 2017]

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