

Early introduction of allergens without screening cost effective

Early introduction (EI) of potential food allergens (FA) in infants without screening for the risk of allergies appears to be safe and cost effective, according to findings of two studies published in *Allergy*. In both studies, costs were assessed from a US societal perspective over a 20-year horizon.

Peanut allergy

No screening prior to early peanut introduction (EPI) within 12 months of age appears to be less costly and more effective than screening of high-risk infants prior to early peanut introduction, or delayed peanut introduction, according to findings of the first study.¹

A Markov model was used to evaluate the optimal early peanut introduction strategy in the US, compared with strategies recommended in USA and Canada and by the Australasian Society for Clinical Immunology and Allergy, and the UK Department of Health. The strategies compared were: no screening and early peanut introduction; early peanut skin prick test (SPT) in high-risk infants followed by early peanut introduction; early peanut-specific serum immunoglobulin E (IgE) screening and skin test screening in serum-positive infants; or delayed peanut introduction.

No screening and early peanut introduction dominated (more effective and less costly) peanut skin testing screening in infants with early onset eczema and/or egg allergy followed by early in-office introduction to peanuts. No screening was estimated to increase the cases of peanut allergy prevented, improve the QALY gain and reduce healthcare costs. The estimated cost per high-risk infant was \$6556.69 with no screening and early peanut introduction, \$7576.32 with skin test screening in high-risk infants prior to early peanut introduction, and \$11 708.38 with delayed peanut introduction.

From a societal perspective, skin test screening prior to early peanut introduction was estimated to cost \$654 115 322 and result in 3208 additional diagnoses of peanut allergy. Early peanut introduction strategies with or without screening dominated delayed peanut introduction.

"We demonstrate that when comparing an EPI policy of screening high-risk children with peanut SPT and in-office initial peanut introduction vs a strategy where no children undergo such screening and facilitated introduction, screening is dominated, resulting in significantly higher healthcare costs without improving QALY," concluded the authors.

Egg allergy

No screening prior to early egg introduction (EEI) at 6 months of age also appears to be less costly and more effective than screening of high-risk infants prior to early egg introduction or delayed egg introduction, according to findings of the second study.²

A Markov model populated with data from the PETIT trial was used to evaluate the optimal early egg introduction strategy for cooked eggs at 6 months in Canadian, European and US settings over a 20-year time horizon. A no-screening strategy and introduction of egg in all infants at home was compared with skin prick test screening, egg-specific serum IgE screening prior to introduction of cooked egg or raw pasteurised egg in high-risk infants with early-onset eczema, or delayed

egg introduction at over 12 months of age.

No screening dominated skin prick test screening and IgE screening in high-risk infants. Estimated incremental costs with skin prick testing were \$6865 US dollars, €6901 and \$10 610 Canadian dollars, and estimated costs with serum IgE screening in primary care were \$16 722, €18 072 and \$28 193, respectively. Serum IgE screening was the most costly strategy.

The estimated incidence of egg allergy was 2.5% with no screening, 9.5% with skin prick testing, 12.0% with delayed egg introduction and 21.4% with serum IgE screening. Sensitivity analysis found that skin prick testing prior to early egg introduction would be the preferred strategy if the risk of reaction to egg exceeded 22%.

From a US societal perspective, incremental costs compared with no screening were \$2 009 351 175 (US dollars) with skin prick test screening and \$4 894 445 790 with serum IgE screening.

"In support of consideration of a recommendation for EEI for forthcoming joint food allergy guidelines from AAAAI, ACAAI, and CSACI*, this simulation shows that a recommendation for EEI of cooked egg at 6 months of life in all infants irrespective of risk produces the most optimal health and economic benefits compared to alternative strategies involving screening," said the authors.

Early introduction without screening best

"While all economic analyses in FA have limitations, these analyses present persuasive economic data for EI for peanut and egg with no prior screening, assuming full adherence. Therefore, a continuing focus on understanding patient needs and preferences and learning how best to promote adherence to early introduction in our patients is a high priority," concluded Julia Upton from the Hospital for Sick Children, University of Toronto, and colleagues, in an accompanying editorial published in *Allergy*.³ There is a need to develop QALY measures specific for allergic patients, they commented.

* American Academy of Allergy, Asthma & Immunology; American College of Allergy, Asthma and Immunology; and Canadian Society of Allergy and Clinical Immunology

1. Shaker M, et al. "To Screen or not to Screen": Comparing the Health and Economic Benefits of Early Peanut Introduction Strategies in Five Countries. *Allergy* : 30 Mar 2018. Available from: URL: <http://doi.org/10.1111/all.13446>.
2. Shaker M, et al. The Health and Economic Outcomes of Early Egg Introduction Strategies *Allergy* : 20 Jul 2018. Available from: URL: <https://doi.org/10.1111/all.13565>.
3. Upton JEM, et al. Early introduction without screening is a good deal, if caregivers will buy it. *Allergy* : 4 Aug 2018. Available from: URL: <http://doi.org/10.1111/all.13584>.