

CORRESPONDENCE

Advice recommended by health professionals regarding precautionary allergen labelling on pre-packed foods

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To the Editor,

Many countries (including in Europe) mandate the disclosure of specific food allergens as ingredients in pre-packed foods. Manufacturers frequently provide additional advice as to the potential for unintentional contamination during manufacture, in the form of voluntary precautionary allergen labelling (PAL). With the exception of Japan and Switzerland, existing legislation does not extend to the use of PAL. This has resulted in the widespread use of PAL and variability in wording employed (such as 'may contain...', 'may contain traces of...' or 'made in a factory...'), causing confusion and anxiety to allergic individuals and their carers, and significantly compromising consumer choice (1, 2). However, there are no published data on the advice provided by health professionals (HPs) to allergic consumers with regard to PAL. Neither the European Academy of Allergy and Clinical Immunology nor American Academy of Allergy, Asthma & Immunology provides advice as to the interpretation of PAL, although both associations are involved in work to improve their utility.

We developed a web-based survey using scenario-based risk analysis (consisting of eight case vignettes, Table S1 in the Online Repository) to assess factors that might affect the advice provided by HPs with regard to PAL. Pilots were performed with focus groups of medical professionals and dietitians. HPs subscribing to the e-mail lists of the Allergy Academy at King's College London and Paediatric Allergy Interest Group of the British Society for Allergy and Clinical Immunology were invited to participate. We were advised by our local research ethics committee that approval was not required. Data were analysed using Prism 6 software (Graph-Pad Software Inc, La Jolla, CA, USA); chi-squared test was used to analyse responses, a *p* value of <0.05 was considered significant. Two hundred and thirty-nine HPs participated in the survey: 57% medical practitioners (62 paediatricians; 50 allergy specialists; 24 primary care physicians), 20% dietitians and 20% nursing staff. Seventy-three per cent had been qualified for 5+ yr.

Thirty-eight per cent of HPs recommended complete avoidance of foods with PAL to nuts (but no nut listed in the ingredients) (Fig. 1), 22% advised no avoidance was necessary. The remainder recommended that avoidance was not required under specific circumstances, which included the absence of intercurrent infection; asthma being under control; and the food products in question not being confectionery, baked goods or foreign cuisine (Indian/Chinese/Thai/Middle Eastern foods being named specifically). Only 12 of 86 HPs mentioned availability of an epinephrine auto-injector and other rescue medication as being an important factor. Other factors are listed in Table 1. A number of HPs mentioned that

avoidance was less important where the PAL was 'made in factory where nuts are processed' as opposed to a simpler 'may contain nuts' label. Factors resulting in more stringent advice included asthma (56% recommending complete avoidance, *p* = 0.0037); prior anaphylaxis to the allergen in question (79%, *p* = 0.002); and prior mild reaction to a tiny amount (71%, *p* < 0.0001) (Fig. 2). Stringent avoidance advice was less common where the child was allergic to tree nuts, but tolerant of peanut (25%, *p* = 0.002). Where home

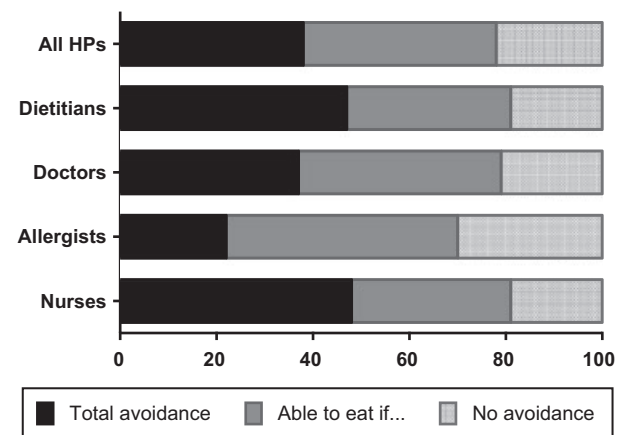


Figure 1 Advice recommended by different health professionals (HPs) with regard to precautionary allergen labelling (PAL) in nut-allergic children.

Table 1 Commonly cited factors taken into consideration by health professionals when providing advice regarding precautionary allergen labelling

Safe environment, for example at home, availability of rescue medication
No intercurrent illness
Previous severe reaction to the allergen in question
Patient's comprehension and ability to comply with advice
Family and child's level of anxiety
Comorbidities, for example asthma
Ability to recognize symptoms of an allergic reaction
Previously reacted to a 'trace'
Degree of sensitisation, for example size of skin prick test
Location and social company – only try new foods when patient is in control
A history of having consumed the product previously without problem

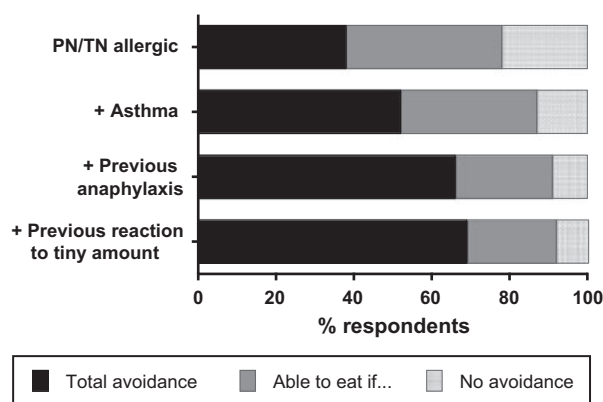


Figure 2 Factors affecting the advice recommended with regard to precautionary allergen labelling (PAL) in nut-allergic children.

circumstances resulted in a request to allow a child to consume a 'free-from' product which did not list 'nuts' as an ingredient but had PAL to nut, most HPs considered allowing the child to eat the biscuit ($p < 0.001$), with 44% recommending a supervised challenge in hospital first, to demonstrate tolerance.

Advice regarding avoidance of PAL did not vary significantly where the allergen in question was egg rather than a nut ($p = 0.52$) with 41% of HPs recommending avoidance of items with PAL to egg, irrespective of whether the child was able to tolerate egg as an ingredient in baked foods such as cakes ($p = 0.221$). Provision of epinephrine auto-injector did not alter the advice given ($p = 0.45$). Where there was a history of anaphylaxis to raw egg but tolerance to egg in baked foods, an additional 26% recommended more stringent avoidance of foods of PAL to egg ($p = 0.016$).

A number of HPs commented that providing advice regarding PAL can be challenging: 'my patients are often eating brands which 'may contain nuts' at the time of diagnosis without reaction. I allow them to continue using these products but advise against any new products with similar labelling. I don't condone it, but try my best not to scare them to death in the process'.

This study is the first to assess the advice provided by HPs to allergic consumers with regard to PAL. PAL is useful if they convey accurate and easily understandable information to the consumer relating to potential cross-contamination. Modern food production can be complicated, with the potential for cross-contamination at many stages along the manufacturing chain. However, recent research suggests that most foods with PAL do not contain sufficient allergen to trigger a reaction, although the risk is not negligible, particularly for confectionery products and biscuits (3, 4). Many patient-support groups understandably advocate complete avoidance to minimize the risk of reactions, but a large proportion of allergic patients disregard PAL (5) without seemingly experiencing adverse effects. HPs are in a difficult situation where they need to be able to provide rational advice to their patients, many of

whom already ignore PAL (5). Patients (and their families) may interpret 'tolerance' of products with PAL as a sign of a more 'mild' food allergy, which can result in increased risk taking. It is therefore not surprising that we found wide differences in the advice provided by different HPs to allergic consumers.

The advice provided often contradicted the available evidence. For example, the recommendation to avoid PAL was more common where there was a history of anaphylaxis, despite little evidence that such individuals are 'more sensitive', reacting to smaller ('trace') amounts (6, 7). Studies using biochemical analysis for contaminating allergen have found wide variations in the degree of contamination found between different batches of the same food (4). Thus, the fact that an allergic consumer has previously tolerated a product with PAL is not indicative of tolerance to a different batch of the same food.

Egg was not seen as a less 'risky' allergen, although there are no reports in the literature that foods with PAL to egg actually contain sufficient to trigger an allergic reaction, in contrast to nuts (3, 8). It is surprising that similar advice was provided irrespective of whether the child could tolerate 'baked egg', as a child tolerant to baked egg can be assumed to tolerate 'traces of egg' in pre-packed foods, the majority of which are cooked. It is not uncommon for children with a history of anaphylaxis to (non-extensively heated) egg to tolerate egg in baked foods egg (9); that 26% of HPs recommended avoidance of PAL in these circumstances suggests an information need with regard to baked egg consumption in the egg-allergic child.

Given the uncertainty in interpretation of PAL and the variation in avoidance recommendations (by HPs) and practice (by allergic consumers), one might assume that ensuring a 'safe environment' where rescue medications are available might be important when advising patients. It is therefore interesting that the vast majority of HPs did not mention this as a factor when advising that avoidance of foods with PAL was not mandatory. Although our survey was limited to the UK paediatric setting, we suspect the findings are applicable to those involved in the management of food-allergic patients of all the ages. We therefore propose that patients with confirmed IgE-mediated food allergy are provided with a personalized management plan that not only contains individualized dietary information (including advice on food labelling) but also contains clear advice on the use of rescue medication.

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Conflict of interests

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Supporting Information

Additional Supporting Information may be found in the online version of this article:

Table S1. (Online Repository): Scenarios.

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Table S1 (Online Repository): Scenarios

Case No.	Scenario
1	Female (age 9 years) with previous allergic reactions to peanut, hazelnut and cashew. No other atopic concerns. Has epinephrine auto-injector (AI), never had anaphylaxis
2a	Male (12 years) with stable asthma and previous reactions to peanut and ‘tree nuts’. Never had anaphylaxis, has AI.
2b	Has an anaphylactic reaction to peanut one year later.
3a	Male (3 years) with egg allergy, no other atopy. Recently reacted to ‘baked egg’ in a cake. No AI.
3b	Now prescribed AI by his GP as about to start full-time nursery.
4a	Female (2 years) with history of viral-induced wheeze. Mild reaction to half a boiled-egg, tolerates egg in cakes and eats these on a regular basis.
4b	6 months later has had anaphylaxis to raw egg (in cake batter). Continues to tolerate egg in cakes.
5	Female (3 years) with resolved eczema. Recent non-anaphylactic reaction to hazelnut. Tolerates peanut butter. Is prescribed AI.
6	1 year old with multiple food allergies (cow’s milk, egg, soy, wheat). No prior anaphylaxis. High probability of clinical reactivity to peanut on testing. Mother wants to know if he can eat a ‘free-from’ biscuit labelled ‘may contain nuts’ but with no nut listed as an ingredient.
7	Male (11 years) with seasonal allergic rhinitis but no asthma. Previous widespread urticarial and angioedema to a tiny amount on peanut butter contamination in a sandwich. Has AI, never had anaphylaxis.
8	Male (14 years) with previous non-anaphylactic reactions to peanut and cashew. Refuses to carry his AI with him.

