

HKIA Position Paper on Prevention of Peanut Allergy in High Risk Infants

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1. Background

Peanut allergy is one of the most common food allergies around the world. In Western countries, the prevalence of peanut allergy in children has doubled from 1.4 to 3.0% over the past 10 years [1]. In Asia, the prevalence of peanut allergy in infants and children is 0.26 to 1.10% [2]. The prevalence of peanut allergy indicated by double blinded placebo controlled food challenge is 0.43% in China [3]. In Hong Kong, parent-reported study shows 0.52% with symptoms associated with ingestion of peanut [4]. In terms of food allergy prevention, some earlier guidelines recommended peanut avoidance in infants at high risk for food allergy [1, 5, 6]. However, because of the lack of scientific evidence related to delayed food introduction and food allergy prevention [7], newer guidelines have withdrawn their recommendation on delayed feeding [8].

Recent research has suggested that maternal intake and early introduction of peanut may have a protective effect on peanut allergy. Studies have found that children have reduced odds ratio of developing allergy and asthma during mid-childhood if their mothers had consumed peanut during pregnancy [9, 10]. Du Toit et al compared the incidence of peanut allergy between Jewish children living in UK and in Israel. While peanut is one of the infant foods in Jewish children living in Israel, most parents hold off introducing peanut until the infant is 14 months of age in UK. This study found that early introduction of peanuts, around 7 months of age, is associated with lower prevalence of peanut allergy [11].

In the Learning Early about Peanut Allergy (LEAP) study, the same group showed that early introduction of dietary peanut may prevent peanut allergy in high risk infants [1]. 640 infants age 4 to 11 months with severe eczema and /or egg allergy, were randomized into two groups to either avoid or consume peanuts. Infants in the

consumption group were fed at least 6 grams of peanut protein¹ per week in the form of a puffed corn snack with peanut (Bamba) or peanut butter, while the others were told to avoid peanuts. At the age of 5, both groups were given an oral peanut challenge. In the intention-to-treat population, 17.2 % exhibited peanut allergy in the avoidance group, while only 3.2% in the consumption group. In those without peanut sensitization at infancy, prevalence of peanut allergy was 13.7% in the avoidance group and 1.9% in the consumption group (P<0.001). In those who were mildly sensitized to peanuts at infancy, with a wheal of 1 to 4 mm in skin prick test, the prevalence of peanut allergy was 35.3% in the avoidance group and 10.6% consumption group (P=0.004). The study findings showed that early and sustained consumption of peanuts was associated with a substantial and significant decrease in the development of peanut allergy in high-risk infants, while peanut avoidance is associated with greater frequency of peanut allergy.

2. Recommendations

It is important to note that results in the LEAP study are only applicable to infants at high risk for peanut allergy. High risk infants were defined as those with severe eczema and / or egg allergy.

For Infants and children with existing peanut allergy, strict peanut avoidance should be continued to prevent allergic reaction. For infants at low risk for peanut allergy, peanuts can be safely introduced into their diet upon introduction of solid foods.

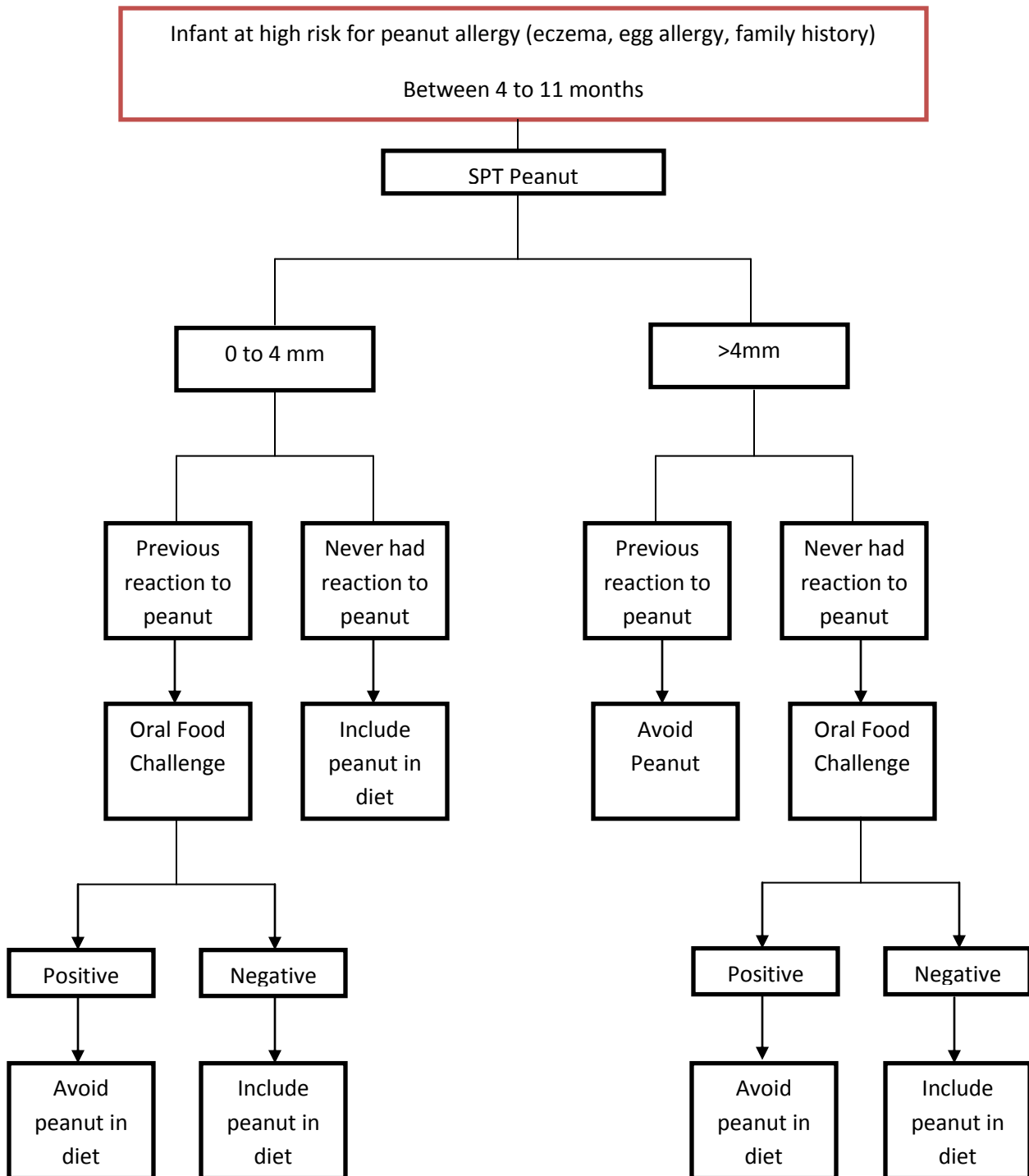
For all infants aged between 4-11 months at high risk for peanut allergy as defined in the LEAP study, i.e. those with severe eczema or existing egg allergy, skin prick test to peanut is encouraged. Infants with negative SPT results without any previous reaction to peanut should include peanut (6 grams peanut protein / week given in three or more separate occasions) in their diets until 5 years old. Infants with mild positive SPT results to peanut (< 4 mm) without any previous reaction to peanut should also include peanut in their diets as above (Figure 1).

For these high risk infants, approximately 4.5 teaspoon smooth peanut butter or equivalent can be given on 3 or more separate occasions weekly. Other types of peanut containing foods can be introduced into diet depending on the age of the child. See the following table for various forms of peanuts that are equivalents to 4.5 teaspoons of peanut butter or 6 grams of peanut protein.

¹ 6 grams of peanut protein is equivalent to approximately 25 peanut kernels or 4.5 teaspoon smooth peanut butter.

Peanut foods with approximately 6 grams of peanut protein [12]		
Type of food	Portion	Grams of Peanut Protein
Peanut butter, smooth	4.5 teaspoons	6.0 g
Peanut butter, crunchy	5 teaspoons	5.8 g
Peanut flour, defatted	9 teaspoons	5.9 g
Roasted peanuts	25 kernels	5.9 g
Raw peanuts (as an ingredient)	2.5 tablespoons	5.9 g

Figure 1. Peanut introduction in infants at high risk for peanut allergy



Infants with positive SPT results (> 4 mm) without any previous reaction should be given an oral peanut challenge under supervision of a trained specialist to rule out clinical peanut allergy. They should only include peanut in their diets if the challenge is negative. Infants with a reaction to oral peanut challenge should avoid peanuts (Figure 1).

Parents of high risk infants must be warned not to self-introduce peanuts, and they should seek advice from an allergist for appropriate actions. A sporadic feeding pattern or self-introduction of peanut in uncontrolled amount may pose more risk in these high risk infants. A supervised peanut introduction by allergists or doctors experienced in managing allergic diseases is recommended.

At this point, no recommendation on early introduction can be made for other food allergens such as milk, egg, tree nuts and seafood. There is no evidence showing that delayed introduction of any food allergen can help to prevent food allergy.

We are aware that international consensus guidelines are being drawn up but this will take many months, so these recommendations for Hong Kong are intended to be a guide in the interim.

3. Implications for the Health Service

The LEAP study findings have been reported in many major news articles [13-20] and has prompted a need for revision of medical guidelines [21]. For many years, many parents and even health professionals are taking the avoidance approach to prevent peanut allergy, and in Western societies, peanut introduction is often delayed until after one year old. The LEAP study has suggested that rather than avoiding peanuts, we should be considering introducing peanuts during a window of opportunity in infancy. This proposal has far reaching consequences in terms of infant feeding; clear guidance to parents, as well as health professionals, on whether all high risk infants should be tested for peanut sensitization; what to do when there is only a mildly positive SPT to peanut; and education for health care professionals. In light of the underdevelopment of allergy service provision in HK at the present time it is a moot point whether HK has the resource to implement the findings of this ground breaking research to benefit public health.

4. Future Research Directions

The LEAP study is a landmark study, but many questions on allergy prevention remain unanswered. The study will be carried on as the LEAP-On study, in which the subjects in the consumption group will be asked to avoid peanut for one year at age 5 to examine if continuous exposure to peanut is needed for prevention. Compared to the Western world, peanut allergy is much less prevalent in Asian countries. It has been suggested that this low prevalence could be related to Asian eating practices [2, 22]. Peanuts are often introduced in congee and soup as one of the ingredients in early infant feedings. This could contribute to a sustained exposure to a form of peanut with lower allergenicity [23]. Locally, future research on prevention is urgently warranted. This includes defining more precisely how much and in what form of peanut protein has to be given; how long it has to be administered and what is the window of opportunity when the immune system can be educated in infancy; how long tolerance lasts when regular peanut consumption ceases; and whether the strategy is also relevant to other allergenic foods.

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