consumption group (p<0.001). Among the 98 participants in the ITT population who initially had positive test results, the prevalence of peanut allergy was 35.3% in the avoidance group and 10.6% in the consumption group (p<0.004).

• The EAT study randomly assigned 1,303 exclusively breastfed infants at 3 months of age to early introduction of 6 allergenic foods or to exclusive breastfeeding to approximately 6 months of age. In the per-protocol analysis, the prevalence of any food allergy (2.4% vs 7.3%; p<0.005), peanut allergy (0% vs 2.5%; p=0.003) and egg allergy (1.4% vs 5.5%; p=0.009) was significantly lower in the early introduction group than in the standard-introduction group.

**Guideline recommendations**

As a result of the growing body of evidence, international guidelines are now changing to recommend solid food introduction – including allergenic foods – by 4-6 months. Locally, the 2016 Guidelines for Allergy Prevention in Hong Kong recommended practical measures, starting from pregnancy, for allergy prevention (Figure 4).1-6

1. **No unnecessary diet restriction during pregnancy and lactation**
2. **Breastfeeding in the first 6 months of life**
3. **Consider hydrolyzed formula milk in high-risk infants if exclusive breastfeeding is not feasible**
4. **Introduce complementary food from 4 to 6 months of age when developmentally ready**
5. **Control air pollution**
6. **Avoid both active and passive smoking**
7. **Control indoor air quality**
8. **Control weight and avoid obesity**
9. **Avoid excessive psychological stress**
10. **Receive immunizations as recommended**
11. **Judicious use of antibiotics**
12. **Early treatment and control of atopic diseases**

**The GIN study** was a landmark trial that investigated the effects of partially hydrolyzed whey formula (eHF-W), extensively hydrolyzed whey formula (eHF-W), extensively hydrolyzed casein formula (eHF-C), and the cow’s milk formula (CMF) – given in the effects of prebiotics on immune parameters, and microbial exposure may affect an individual’s microbiome leading to a healthy immune system, timing is critical. Thus, if the goal is to promote development of a healthy microbiome and allergy system, timing is key for any nutritional strategy.

In terms of clinical implications, early nutritional habits and microbial exposure may affect an individual’s long-term risk of infection.4

**Conclusion**

Maternal nutrition, infant nutrition (particularly in the first 1,000 days of life) and immunity are inextricably linked. The early manipulation of the microbiome is a good opportunity for protecting human health. Major advances in allergy research have revealed a window of opportunity in early life for prevention and treatment, and caused a paradigm shift from allergic avoidance to tolerance induction.

Clinicians can advise women on the importance of proper nutrition during pregnancy, and of early-life nutrition, for the health outcomes of their child. When a balanced diet of fresh, whole foods cannot be maintained, nutritional supplementation, eg. of probiotics, vitamin D and n-3 PUFA, in the right doses may be considered to help promote a healthy microbiome and immune system for both mothers and infants; based on current data, these nutrients are not harmful, and may be beneficial for fetal development and the immune system.1,2,3

**References**


**Highlights**

• The EAT study randomly assigned 1,303 exclusively breastfed infants at 3 months of age to early introduction of 6 allergenic foods or to exclusive breastfeeding to approximately 6 months of age. In the per-protocol analysis, the prevalence of any food allergy (2.4% vs 7.3%; p<0.005), peanut allergy (0% vs 2.5%; p<0.003) and egg allergy (1.4% vs 5.5%; p<0.009) was significantly lower in the early-introduction group than in the standard-introduction group.

**Guideline recommendations**

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**References**

The rising rate of allergic diseases

Over the last 50 years, the prevalence of allergic diseases worldwide has been on an alarming upward trend, and allergic diseases are now of pandemic proportions. This is especially pronounced in children up to 40–50% of schoolchildren are now sensitized to 1 or more common allergens.16, 21

The population-based International Study of Asthma and Allergies in Childhood found that, in Hong Kong, 10% of secondary schoolchildren had asthma, 15% had atopic dermatitis (AD) and about a third of those aged 6–7 years had rhinitis.25

In the 1980s, the hygiene hypothesis was established and it was proposed that increased microbial exposure in early life may protect children from developing immune hypersensitivity in later life.26 Evidence supporting early intervention

A number of studies show that food avoidance in early life may not be the most effective approach for preventing allergies. Rather, the introduction of diverse foods earlier in life may decrease the risk of developing allergic disease:

- The PASTURE/EFRAIN study was the first study to show that infants exposed to an increased diversity of food within the first year of life significantly reduced their risk of asthma, food allergy and sensitization to food allergens up to the age of 6 years.27
- The LEAP study randomly assigned infants with severe eczema, egg allergy, or both, to either consume or avoid peanuts until 60 months of age.28 Among the 530 infants in the intention-to-treat (ITT) population who initially had negative skin-prick test results, the prevalence of peanut allergy at age 6 was 13.7% in the avoidance group and 1.9% in the...