

MALAYSIAN ALLERGY PREVENTION (MAP)

Guidelines for Healthcare Professionals

ENDORSED BY:



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Malaysian Allergy Prevention (MAP) Guidelines for Healthcare Professionals

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Malaysian Allergy Prevention (MAP) Guidelines for Healthcare Professionals

SECTION 1: INTRODUCTION

1.1 OVERVIEW

1. Allergic diseases are an important and growing public health problem. Prevalence has increased over the past 20 years.¹
2. Due to these concerns, the Malaysian Society of Allergy and Immunology (MSAI), the Obstetrical and Gynaecological Society of Malaysia (OGSM) and the Malaysian Paediatric Association (MPA) embarked upon an initiative to formulate the Guidelines for the Prevention of Allergy.
3. Based on a comprehensive review and objective evaluation of published scientific literature, the Guidelines were developed for healthcare professionals.
4. These Guidelines are in evolution.
5. The Recommendations in these Guidelines have been graded based on Categorisation of Evidence by the World Health Organization. (See Appendix 1)

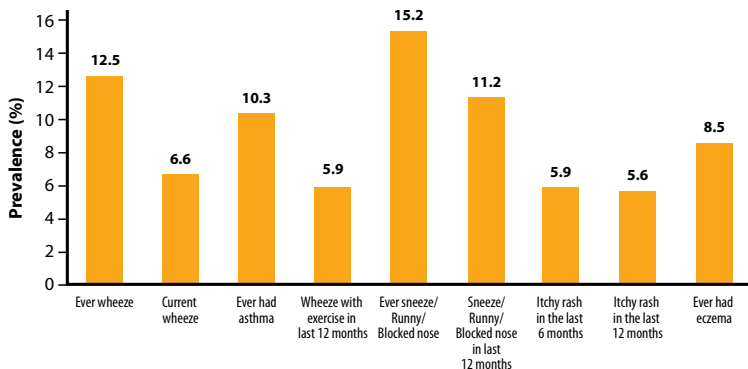
1.2 APPLICATION

These Guidelines are **NOT** applicable to infants with known allergy.

1.3 EPIDEMIOLOGY

The prevalence of childhood asthma and allergy in Malaysia was estimated in a study which used the International Study on Asthma and Allergy in Children (ISAAC) questionnaire translated into Bahasa Malaysia.²⁻⁵ The results are presented in Figure 1.

Figure 1. Prevalence of childhood asthma and allergy in Malaysia²⁻⁵



1.4 RISK GRADING OF ALLERGIC DISEASE

1. Family history is the most important risk factor;⁶ (See Table 1)

TABLE 1. Percentage of risk of allergy in offspring based on family history of allergy.

Allergic disease present in		Risk of Allergic Disease in Child (%)	Risk Grade
Parent	Sibling		
0	0	10 – 20	Low
1	0	20 – 40	Medium
0	1	20 – 40	Medium
1	1	50 – 80	High
2	0	60 – 80	High

2. A few models of allergic risk identification or grading are available. An example is given in Appendix 2.

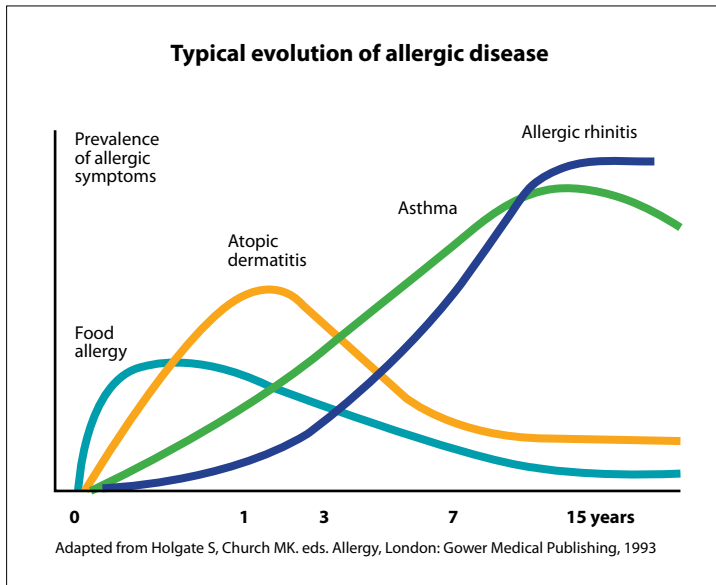
1.5 AT-RISK CHILD

1. A family history of allergy identifies a child at high-risk for allergic disease.⁶

1.6 THE ALLERGIC MARCH

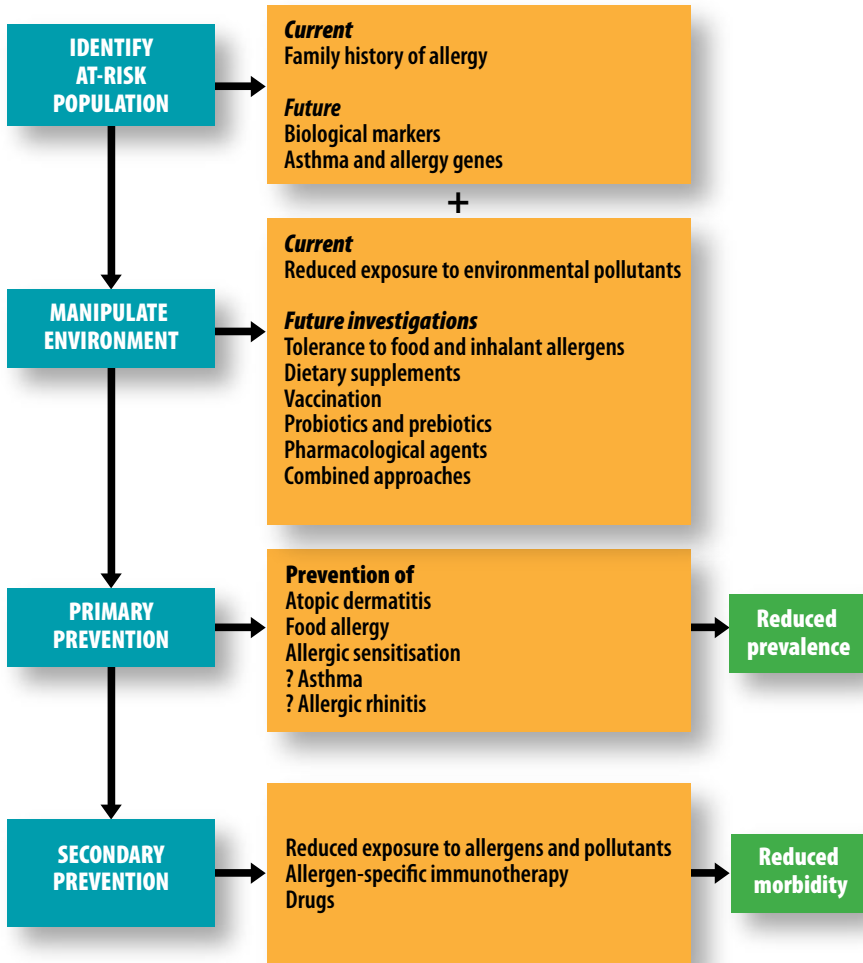
1. 60% of allergies appear during the first year of life.⁷
2. As many as 30-40% of all children are affected.⁸
3. The “Allergic March” (or the Atopic March) shows that one allergy can progress to another allergy over time.⁷ (See Figure 2)
4. Prevention strategies aim to stop the first manifestations of allergy or its progression.⁷
5. Common presentations of allergy include asthma, allergic rhinitis, atopic dermatitis, and food allergy.⁹

Figure 2. The Allergic March



1.7 STEPS FOR ALLERGY PREVENTION

Figure 3. Flowchart of the steps involved in Allergy Prevention.¹



Primary prevention refers to inhibiting the development of clinical disease before it occurs.¹

Secondary prevention refers to prevention of symptoms, exacerbation, or lung function deterioration in those who have allergy.¹

1.8 ALLERGENICITY OF FOODS

1. Different food groups have differing allergenicity.
2. A food allergen scale can provide an indication of allergenicity of food groups.
3. Appendix 3 illustrates some major food groups and their allergenicity.

1.9 MAP GUIDELINES AND USERS

1. These Guidelines are not fixed protocol.
2. Clinical judgement on the management of individual patients remains paramount.
3. Healthcare professionals, patients, and their families need to develop individual treatment plans that are appropriate to the circumstances of the patients.
4. These Guidelines are intended as a resource to guide clinical practice and to develop educational materials for patients, their families, and the public.

1.10 THE PANEL

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1.12 FUNDING

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1.13 DISCLAIMER

The content and recommendations made in these Guidelines are based on current scientific evidence and/or best clinical practice. The Panel recognises the limited number of published or available local data and the impact it may have on the recommendations.

Healthcare professionals are to exercise their discretion when utilising the information contained in these Guidelines in their clinical practice.

1.14 COPYRIGHT OWNERSHIP

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1.15 ACCESSIBILITY

The Malaysian Allergy Prevention (MAP) Guidelines are available from these websites:

- *Malaysian Society of Allergy & Immunology (MSAI)*
www.allergymsai.org
- *Obstetrical & Gynaecological Society of Malaysia (OGSM)*
www.ogsm.org.my
- *Malaysian Paediatric Association (MPA)*
www.mpaweb.org.my

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SECTION 2: MATERNAL DIET AND BEHAVIOUR

Recommendation 1 – HIGHLY ALLERGENIC FOODS

Maternal avoidance of highly allergenic foods during pregnancy or lactation is not recommended.

(Strength of recommendation — A)

1. During pregnancy or lactation, maternal avoidance of essential foods such as milk and egg is not recommended.¹⁰
2. Data is inconclusive to recommend peanut avoidance during pregnancy.¹¹
3. There is no evidence that during pregnancy, maternal avoidance of known food allergens reduces risk of their offspring developing allergic disease.¹²

Note: During pregnancy, a mother who chooses to avoid certain foods is advised to receive dietary counselling with a nutritionist in order to obtain adequate nutrition for herself and her foetus.

Recommendation 2 – INHALANT ALLERGENS

Maternal avoidance of inhalant allergen during pregnancy or lactation is not recommended.

(Strength of recommendation — B)

1. Maternal avoidance of inhalant allergen during pregnancy or lactation has not been shown to reduce allergic disease.^{13,14}

Recommendation 3 – PROBIOTICS

The use of probiotics in the prevention of allergies shows promise; however recommendations cannot be made until more studies on the probiotic strain(s), timing, dosing, and duration are available.

1. Probiotics may prevent the development of eczema.^{15,16}
2. Benefits of probiotics for eczema prevention may be strain-specific as some strains showed no benefits.¹⁷
3. The probiotic *Lactobacillus rhamnosus* GG has the most evidence on eczema prevention.^{18,19}

Recommendation 4 – PREBIOTICS

There is a paucity of studies on the use of prebiotics in prevention of allergy to recommend its use. More research is needed.

1. Prebiotics may prevent eczema.²⁰
2. Benefits of prebiotics may depend on the specific ratio of galacto- and fructo-oligosaccharides.²¹

Recommendation 5 – FISH OILS

Limited studies have shown lack of benefits for fish oil supplementation in allergy prevention. Thus, no recommendation can be made.

1. In one large study where fish oil supplements were given from around 6 months of age, there was no reduction in prevalence of asthma, wheezing, atopic dermatitis, or sensitisation.²²
2. Fish oil supplements during pregnancy initially resulted in lower risk of eczema and egg sensitisation in the first year of life but there was no reduction in incidence of IgE-mediated allergies.²³ This benefit did not extend to 3 years of age.²⁴

Recommendation 6 – ANTIOXIDANTS AND VITAMINS

No recommendation can be made as more studies are needed to examine the role of dietary supplementation in prevention of allergy.

1. There is weak evidence supporting vitamins A, D and E, and zinc for prevention of allergy.²⁵
2. Nutritional antioxidants from fruits and vegetables, and the Mediterranean diet may play a positive role.^{26, 27}

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SECTION 3: BREASTFEEDING

Recommendation 1 - BREASTFEEDING

Exclusive breastfeeding is recommended up to 6 months of age, but not shorter than 4 months of age.

(Strength of recommendation – A)

1. Breastfeeding is not specifically recommended for preventing allergy but may provide a small reduction in risk of allergic disease for those who had breastfed for at least 4 months.^{28, 29}
2. It possibly reduces the incidence of atopic dermatitis in children younger than 2 years.³⁰⁻³²
3. It reduces the early onset of wheezing before 4 years of age, but it does not necessarily reduce asthma.^{29,31}
4. It reduces the incidence of cow's milk protein allergy in the first 2 years of life, but does not necessarily reduce food allergy in general.^{33, 34}
5. There are no clear effects of breastfeeding on allergic rhinitis.³⁵⁻³⁷
6. Data are conflicting whether exclusive breastfeeding longer than 3 months has an effect on the incidence of atopic dermatitis in children.³⁸⁻⁴⁰
7. Some studies showed increased risk of allergic disease with exclusive breastfeeding beyond 6 months.³⁹⁻⁴¹

Recommendation 2 - DIETARY ALLERGENS

During breastfeeding, maternal avoidance of dietary allergens is not recommended.

(Strength of recommendation – A)

1. There is no convincing evidence that maternal avoidance of dietary allergens during breastfeeding reduces the risk of allergy in the child.⁶
2. Some studies showed that maternal avoidance of potential food allergens (such as milk, eggs, and fish) while breastfeeding may reduce the risk of atopic eczema in the first year of life.^{42, 43} However, other studies do not confirm this.^{44, 45}

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SECTION 4: INFANT FORMULA

Recommendation 1 - FORMULA MILK

There is no evidence to support the use of regular cow's milk-based formula over breast milk to reduce the risk of allergic disease.

(Strength of recommendation – A)

1. The evidence is not conclusive to support the use of a regular cow's milk-based formula over breast milk to reduce the risk of allergic disease.⁴⁶

Recommendation 2 - HYDROLYSED FORMULA

For infants at increased risk of allergic disease and who cannot be exclusively breastfed for the first 4 to 6 months, a hydrolysed formula appears to offer advantages to reduce the risk of cow's milk protein allergy and allergic disease.

(Strength of recommendation – A)

1. Partially hydrolysed whey formula and extensively hydrolysed casein formula reduce the risk of atopic dermatitis and cow's milk protein allergy when compared to regular cow's milk protein formula.^{47,48}
2. When considering a hydrolysed formula, it is advised to choose one with reduced allergenicity that has been proven or confirmed.⁴⁷

Recommendation 3 - SOY FORMULA

Soy formula is not recommended for the reduction of risk of allergy.

(Strength of recommendation – A)

1. There is no substantial evidence to support soy formula for the reduction of risk of allergies.^{41, 49}

Recommendation 4 - AMINO ACID FORMULA

Amino acid formula is not recommended for the reduction of risk of allergy.

(Strength of recommendation – D)

1. Studies are lacking for amino acid formula in the reduction of risk of allergies.^{6, 41}

Recommendation 5 - GOAT'S MILK FORMULA

Goat's milk formula is not recommended for the reduction of risk of allergy.

(Strength of recommendation – A)

1. There is no substantial evidence to support goat's milk formula for the reduction of risk of allergies.^{6, 41}

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SECTION 5: COMPLEMENTARY FOODS

Recommendation 1 – WHEN TO INTRODUCE

Complementary foods can be introduced between 4 to 6 months of age, when an infant is developmentally able to sit with support and has sufficient neck control.

(Strength of recommendation — B)

1. Introduction of complementary foods between 4 to 6 months of age modestly reduces the risk of allergy in high-risk infants.^{13, 41, 50, 51}
2. There is no evidence that dietary restrictions after the age of 4 to 6 months reduces the risk of allergy.⁵²⁻⁵⁴
3. First, introduce single-ingredient foods between 4 to 6 months of age.⁴¹
4. Introduce one new food every 3 to 5 days.⁴¹
5. Introduction of acidic fruits (berries, tomatoes, citrus fruits) and vegetables, that may cause perioral rash or irritation, does not need to be delayed since they do not usually result in systemic reactions.⁴¹
6. Consumption of a healthy diet rich in fruits, vegetables, and low saturated fat and non-processed food, has beneficial effects against asthma and food allergy.⁵⁵
7. Lesser diversity of food in the first year of life raises the risk of food allergy. Greater diversity lowers the risk of allergy.^{53, 54}
8. Use of whole cow's milk for infant nutrition should be avoided until after 1 year of age, due to increased renal solute load⁵⁶ and low iron content.⁵⁶⁻⁵⁸

9. Cow's milk protein, presented as infant formula, yoghurt, or cheese, can be introduced before the age of 1 year.^{59, 60}
10. Whole nuts should be avoided due to potential aspiration risk.^{59, 60}
11. Peanuts and tree nuts in the form of butters or other formulations can be introduced.^{59, 60}

Recommendation 2 – HIGHLY ALLERGENIC FOODS

Highly allergenic complementary foods may be introduced between 4 and 6 months of age after some complementary foods have been fed and tolerated.

(Strength of recommendation — B)

1. Emerging data suggest that introduction of solid foods *delayed* beyond 6 months of age, especially highly allergenic foods, may *increase* the risk of food allergy or eczema.^{50-52, 61-64}
2. Emerging data suggest that *early* introduction of highly allergenic foods may *prevent* food allergy in infants and children.^{50-52, 61-64}
3. Avoidance of certain foods (such as peanuts and tree nuts) could contribute to an increased risk of sensitisation to those foods.^{41, 62}

Recommendation 3 – HOW TO INTRODUCE

Counsel parents on how to introduce highly allergenic foods in the manner below.

1. Introduce highly allergenic foods *after* other complementary foods have been introduced and tolerated.⁴¹
2. Introduce an initial taste of a highly allergenic food at home, rather than at a day-care centre or a restaurant. (For some foods such as peanuts, most reactions occur in response to the initial ingestion).⁴¹
3. Gradually increase the amount of highly allergenic foods when there is no reaction.⁴¹
4. Introduce one new allergenic food every 3 to 5 days.⁴¹
5. By the age of 12 months, all the major allergenic foods should have been introduced to the diet.⁴¹

Recommendation 4 – WHEN TO REFER

Consult with an allergist or clinical immunologist for a personalised plan for introduction of complementary food for any situation below.

1. Infant has moderate to severe atopic dermatitis despite optimal management.⁶⁵
2. Infant had an immediate allergic reaction to a food.⁶⁵
3. Infant has a known food allergy.⁶⁵
4. Infant has a sibling with a peanut allergy.⁶⁵
5. Infant has positive food-specific serum IgE test to a food not yet introduced.⁶⁶
6. Infant has a convincing history of an allergic reaction, and with no detectable food-specific serum IgE.⁶⁵

Note: Routine serum food-specific IgE screening on children without a history of an allergic reaction or other symptoms/signs of food-related allergic disease is **not** recommended.

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SECTION 6: ENVIRONMENT

Recommendation 1 - HOUSE DUST MITES (HDM)

HDM avoidance has not been shown to prevent allergy but may have beneficial effect in persons with established allergic disease and sensitisation.

(Strength of recommendation — A)

1. A large intervention trial using HDM reduction strategies from the perinatal period onwards failed to reduce the risk of asthma or allergy despite 61% reduction in HDM allergen levels.²²
2. Reducing HDM levels during pregnancy does not reduce the risk of allergic disease.⁶⁷
3. Reducing HDM levels in postnatal period does not reduce the risk of allergic disease.⁶⁷

Recommendation 2 - PETS

Pet exposure at early age does not seem to increase risk for allergy and may even be protective.

(Strength of recommendation — B)

Removal of pets may be beneficial in patients with established allergic disease and sensitisation to pet allergens.

(Strength of recommendation — B)

1. Pet exposure in early infancy does not increase the risk of allergy.⁶⁸
2. In some studies, pet exposure in the first year of age was associated with lower prevalence of asthma and airway reactivity in later childhood.⁶⁹⁻⁷²
3. A systematic review concluded that exposure to pets increases the risk of asthma and wheezing in children aged over 6 years, but not below that age.⁷³

Recommendation 3 – CIGARETTE SMOKE, POLLUTANTS

Avoidance of cigarette smoke during pregnancy is recommended.

(Strength of recommendation — B)

Children should not be exposed to cigarette smoke.

(Strength of recommendation — B)

1. Maternal smoking during pregnancy has adverse effects on infant lung development.⁷⁴
2. Parental smoking is associated with wheezing illness in early childhood.⁷⁵
3. Exposure to indoor pollutants can increase the risk of allergy.⁷⁶⁻⁷⁸

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SECTION 7: THE FUTURE

Recommendation 1 - SUBCUTANEOUS IMMUNOTHERAPY (SCIT)

Immunotherapy of allergic rhinitis can prevent development of asthma.

(Strength of recommendation — B)

1. Immunotherapy is being explored as a treatment option for children with early signs of allergic disease.⁷⁹
2. Immunotherapy for allergic rhinitis made it less likely for the subsequent progression to asthma.⁷⁹⁻⁸²
3. Immunotherapy can reduce development of new sensitisations in patients mono-sensitised to aeroallergens.⁸³

Recommendation 2 – NEW STRATEGIES ON IMMUNOTHERAPY

Sublingual immunotherapy (SLIT) can prevent development of asthma and new sensitisation.

(Strength of recommendation — B)

1. Sublingual immunotherapy has been shown to have an impact on the natural history of respiratory allergy.⁸⁴⁻⁸⁸
2. New strategies on immunotherapy involve identifying other administration techniques (e.g. epicutaneous or intralymphatic routes), and improving efficacy of SCIT by the addition of omalizumab and toll-like receptor (TLR) agonists.⁸⁷⁻⁸⁹

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SECTION 8: CONCLUSIONS

Current recommendations for allergy prevention remain limited.

Recommendation 1 – CIGARETTE SMOKE

Avoid cigarette smoke.

Recommendation 2 – MATERNAL DIET

Dietary restriction of allergenic foods during pregnancy and lactation is not recommended.

Recommendation 3 – BREASTFEEDING

Exclusively breastfeed up to first 6 months of age, but not shorter than 4 months of age. (This recommendation refers to allergy prevention)

Note: World Health Organization (WHO) and the Ministry of Health, Malaysia recommend exclusive breastfeeding for the first 6 months of life.

Recommendation 4 – HYDROLYSED FORMULA

When breastfeeding is not possible, use a proven hydrolysed infant formula (partially hydrolysed whey or extensively hydrolysed casein) rather than regular infant formula.

Recommendation 5 – COMPLEMENTARY FOOD

Introduce complementary foods between 4 to 6 months of life.

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Malaysian Allergy Prevention (MAP) Guidelines for Healthcare Professionals

APPENDIX 1: World Health Organization (WHO) Categories of Evidence & Strength of Recommendation

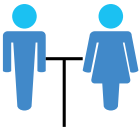
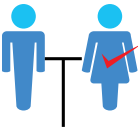
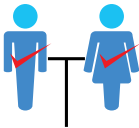
CATEGORY OF EVIDENCE		STRENGTH OF RECOMMENDATION		
Category	Evidence from	Strength	Directly based on	Or Extrapolated from
Ia	Meta-analysis of RCTs*	A	I	
Ib	At least 1 RCT*	A	I	
IIa	At least 1 non-RCT*	B	II	I
IIb	At least 1 quasi-experimental study	B	II	I
III	Non-experimental descriptive studies	C	III	I, II
IV	Expert opinion	D	IV	I, II, III

*RCT: Randomised Controlled Trial

Table adapted from the WHO Categories of Evidence and Strength of Recommendation.

Malaysian Allergy Prevention (MAP) Guidelines for Healthcare Professionals

APPENDIX 2: Family History of Allergies & Risk Grading¹⁻⁶

Risk grade for allergy	LOW	MEDIUM	HIGH
Family history of allergy	None	One 1 st degree family member	Two or more 1 st degree family members
			
Risk for allergy in offspring (%)	 10-20%	 20-40%	 50-80%

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APPENDIX 3: Food Allergen Scale

Foods are listed from the highest to the lowest allergenicity. People vary in their reactivity to foods and show a different pattern of reactivity depending on their individual characteristics. The scale is based on the typical North American diet. Persons following ethnic diets tend to show a different order of allergenicity.

Grains & flours	Vegetables	Fruits	Nuts, seeds & dried legumes	Meats & alternates	Milk & milk products
Wheat Triticale Semolina Bulgur Spelt Kamut	Tomato Spinach Celery (raw)	Strawberry Raspberry Orange Fig Mango Watermelon	Peanut Soy Hazelnut (Filbert) Sesame seed	Egg white Egg yolk	Ice cream Cow's milk: Homogenised Raw milk 1% 2% Skim
Rye	Carrot (raw) Green pea Lima bean Broad bean (Fava bean) Cabbage (heart)	Apple (raw) Apricot (raw) Peach (raw) Date Cantaloupe	Walnut Pecan Brazil nut Almond	Shellfish: - Crab - Lobster - Prawn/shrimp	Cheese: Fermented: Cheddar Camembert Blaze Swiss Edam Mozzarella
Corn		Pineapple Raisin Apple (cooked)	Cocoa bean Chocolate Coconut	- Clam - Oyster - Scallop	Goat cheese
Oats Barley	Cauliflower Brussels sprouts Green bean	Kiwi Cherry Plum/prune Apricot (cooked)	Cashew Pistachio Macadamia	Fin fish - Cod - Sole - Other white fish - Tuna - Salmon	Cottage cheese Cream cheese
White rice Brown rice Wild rice	Avocado Cabbage (outer leaves)	Loganberry Boysenberry	Dried peas Lentils Dried beans - Navy - Pinto - Garbanzo carob Sunflower seed Flaxseed	Processed meats - Pepperoni - Salami - Bologna - Wieners	Cream Sour cream
Millet T'ef	Onion Green onion Garlic	Plantain Banana Grape			Canned milk (evaporated)
Buckwheat (kasha)	Celery (cooked) Green/red peppers	Grapefruit Lemon Lime		Ham Bacon	Goat milk Sheep milk
Amaranth	Potato Cucumber Lettuce	Currants (Red/ Black)	Pumpkin seed	Pork	Processed cheese
Tapioca Cassava	Asparagus Broccoli Beets	Peach (cooked/ canned)	Bean sprouts	Chicken Beef Veal Turkey	Soft cheese (Philadelphia)
Sago Arrowroot	Squashes (all types)	Cranberry Blackberry Blueberry	Poppy seed	Wild meats - Deer - Elk - Moose - Bear - Buffalo	Yogurt Buttermilk
Quinoa	Carrot (cooked) Parsnip	Pear			Butter
	Turnip Sweet potato Yam	Rhubarb		Rabbit Lamb	Clarified butter

Reference: J.M.Vickerstaff Joneja, *Dealing with Food Allergies*. Bull Publishing Company, Colorado 2003, Page 106

NOTES

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