FOOD ALLERGY

prevention

THERE IS NO RELIABLE METHOD TO IDENTIFY NEWBORN BABIES WHO ARE AT RISK OF FOOD ALLERGY. LENGTH OF BREASTFEEDING AND DELAYED INTRODUCTION OF HIGHLY ALLERGENIC FOODS UNTIL AFTER 12 MONTHS HAVE NOT BEEN FOUND TO BE SIGNIFICANT FACTORS IN THE PREVENTION OF FOOD ALLERGY.

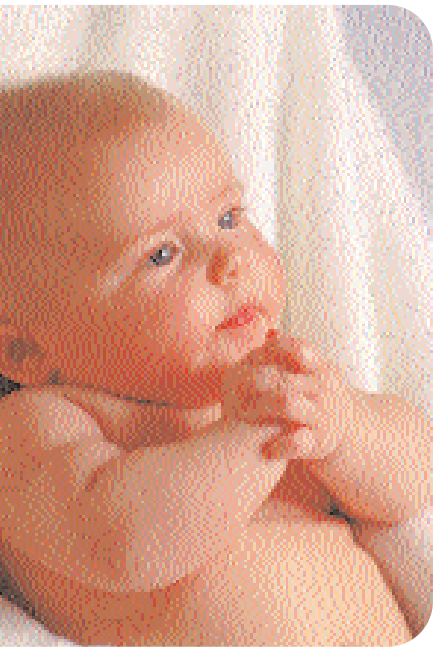
Even though some type of allergy to dust, drugs or insect stings is common, the severity of the allergies in the family history is not that predictive. In the majority of instances parents of infants and children with food allergy had not considered the possibility that their child would be at risk of a food allergy because their own atopic symptoms were *not that bad*. Mothers without any allergy symptoms are more likely to overlook the possibility that their infant may have a food allergy.

In our experience families with one child with a food allergy, 20% of siblings have a food allergy. 50% or more have some allergy symptom. In 39 families where the parents were aware of the risk, and where some avoidance measures were instituted, 44% of infants were sensitized to one or more foods. Although there was a reduction in the probability of sensitization to eggs, milk, peanuts and nuts, there were still a significant number of children with allergies to these and other foods.

Food allergen	Skin test results in children with eczema (%, n=794)	Skin tests in children where mothers' diet was modified during breastfeeding (%, n=39)
Egg	71	28
Milk	38	20
Peanut	65	10
Nut	34	10
Sesame	18	8
Soy	4	5
Wheat	13	3

TABLE 1 *Allergen sensitization at 6 to 12 months of age in children where maternal diet was modified to prevent food allergy.*

Although 44% had one positive skin test, these children had fewer allergies than expected and there were fewer problems with egg, milk, peanut and egg allergies.



Factors associated with sensitization to one or more foods included:

- Overlooking the range of foods that could be a problem
- Sensitization to foods in the alternative diet
- Using the older child's allergies as a guide for dietary avoidance strategies
- Failure of environmental avoidance of peanuts and fish
- Social, nutritional and emotional difficulties with maternal dietary modification over many months while breastfeeding

Current recommendations for prevention of allergen sensitization

Once a child is sensitized to an allergen, avoidance measures affect the whole family diet and that of the care environment as failure to practice avoidance measures can potentially lead to life-threatening reactions.

Efforts to prevent sensitisation to the serious food allergens such as peanuts and nuts are therefore worthwhile.

This policy is always being reviewed as new evidence comes to light. It would be good to think there were some magic answers rather than diligence and application but unfortunately this is not the case.

There are many research studies in the area of allergy prevention. Unfortunately in most studies food allergy and food intolerance are mixed together and so the evidence can be misleading.

Recent articles on *Lactobacillus GG*, bacteria that is used to ferment milk to make yogurt, were headlined as preventing allergies. This was somewhat misleading as the studies found eczema was not as bad in the intervention group but the skin tests were the same. In other intervention studies the children have been described as being atopic because they had eczema even though the skin tests were all negative.

The evidence from our dietary intervention studies on allergy prevention in subsequent siblings of children with food allergy has taught us a lot. Our approach has been modified as a result of some very negative experiences where mothers have become very distressed trying to meet the recommendations and infants have acquired some severe allergies through oversights in avoidance details not well described.

It is important to approach allergy prevention with the knowledge that it is not possible to prevent all allergies.

Breastfeeding is important for the nutrition of the rapidly growing infant although there is scant evidence that children who are never breastfed are actually harmed by this choice.

Milk allergies are not more common in children fed on the bottle.

The immune system is programmed in the direction of the allergy pathway well before the birth of the infant. The programming starts about halfway through the pregnancy. Allergens can cross the placenta and several mothers have reported having real cravings in the last months of the pregnancy for foods that their infant subsequently showed allergies to. This has been particularly evident where the infant has a milk allergy. Whether this period before birth is important for allergy prevention remains to be proven. Because maternal dietary prevention measures need to continue 100% of the time over an extended period when calorie demands can be higher than average, **WE NO LONGER PRESCRIBE A SPECIFIC REGIMEN THAT IS TOO DEMANDING.** Instead our focus is on minimizing the environmental exposure to food allergens that can be a lifelong problem like peanuts and high fat nuts.

Any protein containing food can be an allergen given the chance. The richest foods cause most food allergies but foods like cereals and legumes can also be a problem if the child has a strong allergy tendency or the breastfeeding mother has eaten a lot as part of a modified diet.

The dietary changes need to start before the baby arrives and continue during the period of breastfeeding. Even after weaning fully from the breast, all contact with peanuts and nuts should be avoided around the highly allergic infant.

Remember you have to eat while your pregnant and breastfeeding and you will feel hungrier than usual. Some planning is necessary (diligence and application again). Dietary modifications during pregnancy and breastfeeding are often not recommended because of the possibility of impaired weight gain. There have been problems with weight maintenance in our experience. This occurred where the breastfed infant reacts to many foods in the maternal diet and the mother has not wanted to wean or the baby has refused supplementary formula and the mother has chosen to continue to breastfeed.

Suggested maternal dietary approach

1. No bingeing.

We feel that it is prudent to avoid bingeing on any food in the second half of the pregnancy and during breastfeeding. This is easily achieved by following the amounts of foods set out in the dietary guidelines for all Australians. If you are hungry then you should be proportional increments in the amounts of cereals, vegetables, fruits, legumes and meats avoiding nuts, eggs, cheese and chocolate.

REMEMBER ALL CHOCOLATE IS A POTENTIAL SOURCE OF CONTACT WITH PEANUTS AND NUTS.

2. Egg avoidance.

Since eggs fell off the favoured food list when the nutrition watchers regarded high cholesterol foods poorly, most women don't find it too hard to avoid eggs. It is hard to avoid all egg and even if there are only small amounts in the diet egg protein fragments

can be found in breast milk. Highly allergic infants nearly always have a transient egg allergy but avoiding all but incidental egg in biscuits and ordinary cake doesn't seem to cause a problem. Quiche, boiled eggs and scrambled eggs will surely sensitize an allergy prone infant.

3. Complete peanut and nut avoidance in the household.

Since peanut and nut allergies can last forever abstinence for a while is worth the effort. Complete avoidance of peanut butter, peanuts and nuts in the household is strongly recommended. Apart from peanuts, cashews, walnuts, pecans, almonds, Brazil nuts, hazelnuts, pistachios, macadamias and pine nuts have all caused severe allergies.

4. Seed avoidance.

Sesame seed paste (tahini) seems to be quite allergenic in highly atopic infants and can cause anaphylactic reactions in infancy. In all but the most allergic children, the allergy fades later in childhood. There is no problem with sesame seeds on buns. Other oily seeds such as sunflower seeds etc can also cause allergies but these aren't much of a problem. In general, it would be wise not to have too much all at once.

5. Milk and dairy foods precautions.

In most instances the mothers of children with a dairy allergy have had a lot of milk, cheese and chocolate. On many days their intake has exceeded ordinary requirements. Dairy allergy tends to be less of a problem than peanut, nut and egg allergy and it usually fades by school age. Complete avoidance may cause more stress than the long-term problem with an allergy warrants. This should be discussed. Many mothers choose to continue to have some low fat milk with a calcium supplement, or they have a rice drink depending on what they prefer accepting the outcome. Remember having more dairy food does not increase the calcium content of breast milk and it has only a minor impact of the calcium balance during breastfeeding.

6. Fish and seafoods precautions.

Fish allergies can be a lifelong problem and just the smell of fish can cause severe reactions in affected individuals. Fish allergies tend to be due to the large fish like cod, ling (a type of cod), perch, barramundi etc and generally occur in families with a history of fish allergies or in households where fish is cooked on a regular basis. Since large fish also have the highest levels of mercury eating too much is not wise anyway. Fish can be cooked on a barbeque outside if there are strong family preferences for this food. Canned tuna doesn't seem to be much of a problem. Crustaceans high in fats are probably best eaten only in small quantities or avoided. Smoked salmon, which is quite fatty, can cause significant allergies.

7. Soybeans and other legumes.

Highly atopic infants of mothers who have soy instead of dairy can show antibodies to soy. Likewise chickpeas and lentils can also cause allergies. It is rare for allergies to these foods to be severe like peanut and nut allergies. Usually the allergies just cause symptoms such as face rashes and flaring of eczema.

8. Chicken, beef, pork and lamb.

Meat allergies can occur especially if they are used to supplement a diet low in dairy and other protein foods. Pork allergies tend to be more of a problem when it is eaten with a lot of fat attached. For this reason lean meat is suggested.

9. Wheat and other cereals.

Any of the cereals like wheat, oats, barley and buckwheat can cause an allergy. Like allergies to soy, lentils and legumes other than peanuts, the reactions tend to be mild and they only cause symptoms in the most highly allergic infants.

10. Vegetables.

It is quite common for highly allergic babies to have positive skin tests to potato and to react to potato in the diet. The reactions are rarely worse than flaring of the eczema or some abdominal pains and a bit of loose stools. There is no reason to modify any vegetable component in the diet during pregnancy. Babies with intolerance may react to tomato and spicy foods while they are breastfed.

11. Fruits.

Avoidance of citrus is often recommended as part of a *hypoallergenic* diet. Reactions to citrus are usually due to intolerance and rarely due to allergy. Kiwi fruit is probably the most allergenic of all the fruits and allergies occasionally develop in highly allergic children. If there is evidence of intolerance after the baby arrives a blander diet may help.

Environmental measures

1. Total cigarette smoke avoidance.

2. A well-ventilated household. Kitchens where there are gas cook tops should be well ventilated as fumes can be as irritant as cigarette smoke.

3. Dust mite allergen precautions.

It would be wrong to make definite statements about the role of carpets in house dust mite allergen sensitization. It is quite difficult to avoid house dust mite in the coastal areas of Australia as the climate is so house dust mite friendly. An allergy to house dust mite is more likely if there are high levels in the family home. We have been impressed by the presence of house dust mite allergies in children who have second hand mattresses or who sleep very close to the floor where there is old carpet. We have also been impressed by the absence of house dust mite allergen sensitization in children born into houses where there is no carpet.

Avoid sheepskin underlays in beds and prams as they hold a lot of dander and moisture to encourage dust mites.

Keep soft fluffy toys and blankets to a minimum. Freeze them from time to time to kill off the mites.

4. Latex avoidance.

Latex is an uncommon allergy even in highly allergic infants but once sensitization occurs it can significantly impact on lifestyle. Although there are latex teats and dummies it is the powdered latex products such as gloves, condoms, catheters and balloons that cause allergies to develop. Powdered kitchen or disposable gloves may be used by mothers especially if they are prone to hand dermatitis. A possible source of latex to cause an allergy in a highly allergic infant may be from the powder containing the highly allergenic latex particles coming into contact with the infant prone to allergies directly from the gloves or the mother's hands straight after her gloves are removed.

It is best to avoid excess use of latex gloves, latex pillows, rubber mattress protectors, and rubber and bath mats in the infant's bath and latex masks on spacers used for asthma treatment. Latex gloves may be used in the childcare setting for nappy changes. Check which type is being used.

5. Pet precautions.

CATS. There is no simple answer to preventing a cat allergy. Cats and other small furry pets like rabbits, guinea pigs and mice are highly allergenic. People get very emotional about their cats and cat allergy particles are everywhere.
A relative or a close friend who has a cat brings a lot of cat allergy particles when they come to visit and this can be just as bad as having your own cat. Getting rid of a cat from a house does not get rid of the allergy particles as they can be found in high levels for months afterwards.

DOGS don't seem to be associated with allergies in the way that cats are.
However dog food can contain milk and other allergenic proteins. Small children seem to like to eat the dry dog food and there have been a number of allergy reactions to the feeds.

BIRDS create a lot of dander and seed debris around the cage.
Moulds grow in the dander. Bird feed may also contain peanuts.

FISH tanks create humidity so they should not be kept in a poorly ventilated environment. Fish food can be allergenic.

When it is time to wean

There is apparently a window of opportunity for allergen sensitization. The more highly allergenic the food is, the longer this period seems to be. Remember that the presence of eczema is highly predictive for a food allergy but the severity of the eczema is not an indicator for the severity of the food allergy. There can be just as many food allergies in the child with no eczema as there is in the child with eczema.

Formula

If a formula is necessary before 6 months of age, a protein hydrolysate is recommended. Nearly all of the formula companies have one or more of these formulas eg. NUTRAMIGEN, PEPTI-JUNIOR, ALFARÉ and the new NAN HA.

These are more expensive than regular formula but it is worth the cost if the allergy is prevented. Please note that a lactose-modified formula is not *hypoallergenic*. One of protein-modified formulas is better than soy as an option.

In children who are at a high risk of developing an allergy, we find it less stressful if the child is skin tested to see if there are any allergies after 6 months of age. A negative skin test to milk at this age is quite reliable.

In the child who has already had a severe allergy reaction to milk NEOCATE is a safer option before 6 months. After 6 months if there are no problem with cereals, fruits and vegetables or other foods then soy is usually well tolerated.

Milk or soy formula introduced after 6 months have not caused a new allergy to develop in our experience. Adverse reactions are mostly due to intolerance.

Cereal

Reactions to rice cereal are rarely due to an IgE mediated allergy. Children with severe food intolerance can react adversely to rice with vomiting, colic, diarrhoea and skin rashes.

New wheat allergies don't develop after 6 to 8 months in our experience.

There are lots of cereals on the market now. Try to explore a range of grains rather than just having a wheat flour bread and a wheat flour based pasta or cereal.

Vegetables

Introduce a range of blander vegetables first. Reactions to potato may be allergy or intolerance. Reactions to almost all other vegetables are due to intolerance reactions. Remember that intolerance reactions are dose-related so reactions to juices, honey, Vegemite and tomato sauces and pastes used in pasta are common in children with food intolerance.

Fruit

Fruit reactions are due to intolerance. Occasionally banana and kiwifruit reactions are due to an allergy. Start with the blandest fruits such as apples and pears. Introduce the fruits with stronger tastes more carefully to detect intolerance reactions. Kiwi fruit allergies in particular seem to develop at any age.

Meats

Meat and chicken allergies only occur in children with allergies to egg, milk or peanuts. Introducing them after 7 or 8 months has not caused any new allergies. Pork allergies are occasionally a problem but not more so than beef or chicken.

Processed meats

These are all preserved and not recommended for young children. In salamis and devon the meats are not cooked so there is always the risk of them containing harmful bacteria.

Lentils and chickpeas

These are no more allergenic than meats and can be introduced at around 8 or 9 months.

Tahini and humus

Sesame allergies are very common in babies prone to allergies. Reactions in babies can be as severe as peanut allergies. In children prone to allergies this type of food should be avoided in the first few years.

Eggs

If there is no sensitization to egg then introducing this food after a year of age has not been a problem.

Peanuts and nuts

We have observed new nut allergies developing in children who were skin test negative and then given cashews or peanuts up to about 15 months of age. Since there can be significant exposure through chocolate the source of the sensitization is not always obvious. We cannot say whether new nut allergies can develop after this age. We have not observed new peanut or nut allergies developing in school age children. Occasionally adults will tell us that a relative developed a nut allergy later in life.

Fish

We have seen new fish allergies develop during the second and third year of life. Cooking fish in the house is clearly a risk factor so not adding it to the diet may not be enough to prevent the allergy. The allergies are to the big fish. If the skin test is negative and there are not many food allergies we have suggested introducing tinned tuna or whiting without any adverse outcome to date. Fish fingers seem to be well tolerated.

Seafood

New allergies to prawns and lobster seem to be develop at any age.

Copies of this brochure can be obtained from:
Allergy Unit, RPA Hospital Phone: 02 9565 1464 Fax: 02 9519 8420 allergy@email.cs.nsw.gov.au