Food Challenges

Introduction and General principles

Patients with food allergy need to avoid foods as completely as necessary for as long as required, but equally one aim of food allergy management is to liberalise the diet as soon as safely possible.

- The ability to undertake a safe, supervised food challenge is an important component of any paediatric allergy service
    - Formal hospital challenge should be available in regional paediatric centres that provide care to children with food allergy
- Food challenge indications include:
    - To clarify whether a food allergy has resolved
    - To determine whether an allergen is tolerated in modified form (eg baked egg or baked milk)
    - To decide whether sensitisation reflects clinical allergy
- There is no New Zealand data about allergy test results and likelihood of tolerance, but there is other published data to inform probability of tolerance at challenge.
- It is important to take into account family preference particularly related to the likelihood of tolerance – a 10% chance of tolerance may be sufficient for some families to want to pursue challenge, but not for others.
- Current advice is that if a food is tolerated at challenge the food should then be included in the child's diet on a regular basis, therefore
- Prior to agreeing to food challenge, patients/ families need to understand the importance of, if tolerated, continued exposure to the challenge food (at least once a week) to maintain tolerance.

Red flags

- Anaphylaxis
    - Don't consider a food challenge if recent anaphylaxis:
        - Within 2 years for allergens where resolution is likely
        - A longer wait period prior to considering challenge may be appropriate for allergens where resolution is less likely (eg peanut / nut / fish)
- Previous severe reaction after small exposure.

Test results

- Allergy skin prick or specific IgE test results (usually within 3 months of challenge referral) will help determine whether challenge is appropriate.
    - Some challenges are to determine allergy, where there is sensitisation but no prior reaction. In this instance we may accept a low probability of tolerance in order to avoid unnecessarily labelling as allergic.
    - Where there is known allergy a 50% chance of tolerance at challenge may be appropriate.

- Published thresholds for allergy skin prick test or specific IgE may give an indication of high likelihood of allergy, where food challenge may not be appropriate:

	SPT in <2yr mm	SPT in >2 yr mm	sIgE in <2 yr KIUA/l	sIgE in >2 yr KIUA/l
Milk	5	7	15	30
Milk in baking	Consider*			
Egg	4	6	2	7
Egg in baking	Consider*			
Peanut	8 [b c]	8	34 [b]	15
Ara h 2	>1KuA/l			
Wheat	10 [a]	Consider*		
Soy	Any*			
Nuts	8mm	15mm		
Other	Consider*			

[a] Christensen 2014, [b] Peters 2013, [c] Johannsen 2011, [d] NW 2008

Consider* - depending on age, tests, family preference, single versus multiple allergies etc.

Conduct

- Food challenge is a valuable resource. Having a locally accepted process for referral for challenge, and review of referrals to ensure appropriateness will help ensure the resource is used carefully.
- All case series of paediatric food challenge include cases of anaphylaxis. There needs to be clear lines of responsibility for challenge supervision, and there must be availability of prompt medical review in the event of reaction.
- Informed consent should be obtained prior to starting the challenge.
- Close supervision during challenge is essential.
    - Nurses undertaking food challenges should have undertaken the agreed-on competencies (hyperlink to document)
    - Medications including adrenaline should be charted prior to commencing
        - There should be agreed on criteria for nurse administration of adrenaline without waiting for medical review
        - Hospital policies for calling for emergency back-up (resuscitation team) should be clearly understood
    - Prompt medical back up is essential
- Prior to starting challenge the child should be well, with no intercurrent infection and asthma (if present) must be well controlled to minimise risk of challenge. If eczema and allergic rhinitis are present, they should also be well controlled to enable recognition of reaction during challenge.
- Antihistamine should be avoided for 3 days prior to challenge. If on arrival a patient has taken antihistamine within the last 3 days, please discuss with consultant.

Challenge procedure

- Most challenges will be standardised or modified using current ASCIA protocol (available on www.allergy.org.au)
    - Unusual foods or circumstances (such as multi-food allergens) may require their own protocol which should be decided on in advance.
- Stopping challenge:
    - The challenge will stop if at any time objective symptoms of an allergic reaction occur using the PRACTALL 2012 criteria.

    - The purpose of challenge is to determine whether allergy is present or not, and not to establish how severe a reaction may be.
- No reaction at challenge:
    - After consumption of their final dose the child should be observed for at least 2 hours prior to discharge.
    - The child and family should be advised that the food challenged can be introduced into the diet.
    - Advice about ongoing introduction will be given as per the ASCIA food challenge protocols.
    - If other food allergies are present ongoing follow up and an updated allergic reaction management plan should be arranged.
- Incomplete challenges:
    - In certain situations, particularly in young children, it may not be feasible for the child to ingest all of the doses prescribed in the protocol.
        - There should be discussion with the supervising paediatrician regarding interpretation of the challenge outcome before discharging the child.

References

Sampson HA et al. Standardizing double-blind, placebo-controlled oral food challenges: American Academy of Allergy, Asthma & Immunology-European Academy of Allergy and Clinical Immunology PRACTALL consensus report. J Allergy Clin Immunol. 2012 Dec;130(6):1260-74. doi: 10.1016/j.jaci.2012.10.017.