

Multi-Nut/Multi-Food OIT

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Disclosures

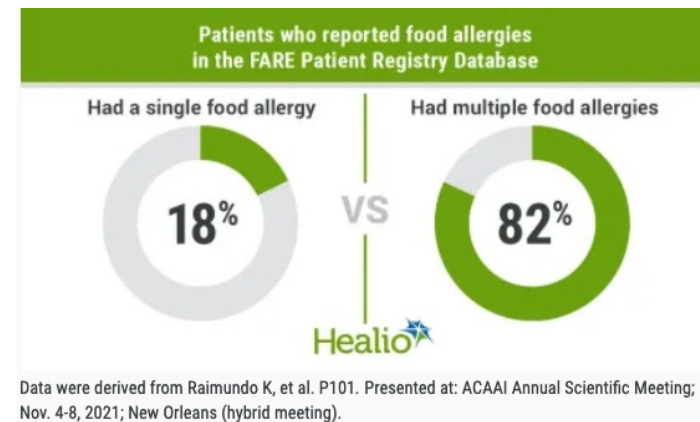
- Cour Pharmaceuticals - investigator

Objectives

- Explain the rationale for multi-food OIT
- Discuss the data on multi-food OIT
- Modify OIT procedures to include multi-food OIT

Incidence of Multiple Food Allergies

- “Convincing” multi-food allergy 40% of children with one food allergy
- 33% of peanut allergy have tree nut
- 25% of peanut allergy <2yo have milk or egg allergy
- 61% of tree nut allergy have peanut allergy
- 55% of sesame allergy have peanut allergy
- 44% of sesame allergy have tree nut allergy
- 35% of egg allergy have milk allergy
- 29% of egg allergy have peanut allergy



Sampson HA, et al. *J Allergy Clin Immunol*. 1997;100:444-451

Aktas, et al. *J Allergy Clin Immunol*. 2020;145:supp AB243

Warren, et al. *Ann Allergy Asthma Immunol*. 2022;S1081-1206(22)02012-9

Why Treat Multiple Foods Simultaneously?

PRO multi-food	CON multi-food
Reduce the burden of care by avoiding multiple rounds of OIT	Increases the burden of care by complicating dosing
Shorter time to desensitization	May be too much OIT food for some patients
Decrease OIT fatigue	Limits the target dose
Decrease reaction-anxiety over accidental exposures sooner	May decrease the number of foods that may be free eaten

Goals of Multi-food OIT

- Goals of OIT
 - Cross contamination
 - Bite-proof
 - Free eating
- Goals of multi-food OIT
 - There may be different goals for different foods in the mix
 - Most families want to free-eat staple foods
 - Many families are only interested in bite-proof for non-staples
- Goals must be flexible
 - Match the target dose with the interests of the parents and the desires of the child



Matching the Goal to the Patient

- 8 yo female with proven reactivity to peanut, cashew, walnut, and almond
- Start four-food OIT with bite-proofing target of 2000mg of each nut protein with a planned maintenance of 1000mg
- Upon reaching the target doses, the patient announces that she likes cashew and would like to free eat cashew
- Holding peanut, walnut, and almond at 1000mg, continue cashew escalation to the free eating target of 6000mg (maintenance 2000mg)

Multi-food OIT in Young Children

- Quantity limitations
 - At DFAC we decrease the target doses by 50% for children <4 years of age
 - At DFAC multi-food is generally limited to two foods in children <4 years of age
- Infant/toddler OIT is generally limited to food allergies that are unlikely to be outgrown
 - E.G., seeds or nuts
 - Infants and toddlers with a nut or seed allergy who are going to start OIT and are allergic to a staple food, e.g., milk, egg, wheat, soy, may be considered for multi-food OIT
 - If the staple food sIgE is very high or rising significantly
 - Shared decision making
- Limiting the total quantity of OIT food is very important in young children

Common Combinations

- Multi-nut/seed
- Multiple “staple” foods, e.g., milk, egg, wheat, legumes
- Staple foods plus nuts and seeds



Minimizing Multi-Food Quantity

- Exploit tree nut cross reactivities
 - Cashew/pistachio¹
 - Walnut/pecan¹
 - Walnut OIT desensitizes 58% of hazelnut allergic patients²
- Consider powdered foods
 - Egg white
 - Non-fat dry milk
- Use one OIT food as a vehicle for others
 - Add nut or wheat flours or egg white powder to whole milk or make a smoothy
 - Use the preferred nut milk as a base and add other nut flours
 - Walnut meal is gritty, other nut flours are not – for many patients walnut milk is a good base

1. Wasserman, et al. Ann Allergy Asthma Immunol. 2021;127:149-151.

2. Elizur, et al. The Lancet Child & Adolescent Health. 2019;3:312-321

Multi-food Oral Immunotherapy as Safe and Effective as Single Food Therapy

Figure 1. Outcome of OIT courses

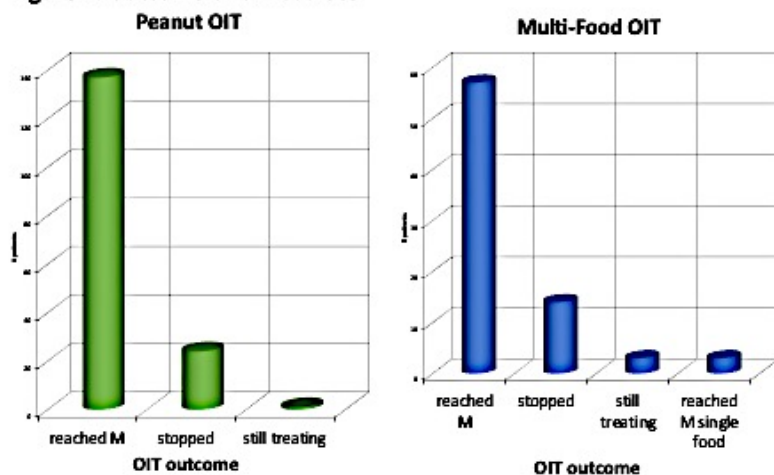


Table 3. Reactions treated with epinephrine in 1st year.

	Peanut	Multi-Food
# patients (%) / # reactions	22 (14%) / 26	6 (8%) / 8
Phase: Day 1 / <u>Updose</u> / M	0 / 20 / 5	1 / 6 / 1
Location: office / home	3 / 23	2 / 6
# Epi/reaction: 1 / 2 / 3	23 / 3 / 0	8 / 0 / 0
Severity: mild / moderate	22 / 4	8 / 0
# ER visits after Epi (%)	12 (46%)	1 (13%)

Preschool Peanut vs Multi-Food OIT

<=60 months old	N	Age (median)	Day 1 reaction	Day 1 Epi	Maintenance < 1 year	Maintenance	Epi reactions
Peanut	58	40 months	9 (16%)	1	40 (69%)	51 (88%)	5 (9%)
Multi-food	35	43 months	5 (14%)	0	21 (60%)	28 (80%)	3 (9%)

**Updated Data: Windom Allergy
AAAAI Abstract 2022**

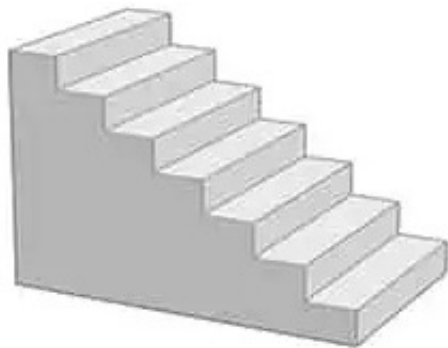
Courtesy of Dr. Jean Ly, Windom Allergy

Multi-Food Outcomes – CHOP, JACI:IP, 2023

- Multi-food outcome
 - 151 patients – 78 single-food, 73 multi-food
 - Most multi-food patients received 2 or 3 OIT foods
- Outcome
 - 67.9% of single-food patients reached maintenance
 - 86% of multi-food patients reached maintenance for at least one food
 - 68% of multi-food patients reached maintenance for all foods
- 10% of patients failed Day 1 and did not continue OIT
 - Each food was initiated separately
 - Initial and final doses were high

Day One Adjustments for Multi-food

- Starting doses are the same as food single-food OIT
 - Starting doses at DFAC are low
- If there are two foods, the day 1 dosing plan is the same as for single-food OIT
- If there are three foods, the day 1 target is reduced by one step
- If there are four foods, the day 1 target is reduced by two steps



One or two foods



Three foods



Four foods

Dose Adjustments for Multi-food

- Escalation target adjustments
 - Patients receiving OIT for two foods target free eating
 - Patients receiving OIT for three or more foods
 - Target free eating for staple foods
 - Target bite-proofing for less commonly eaten foods
 - Choosing the right target is a Shared Decision Making discussion
 - Flexibility to move the target up or down is crucial
- Maintenance dose adjustments
 - Bite-proof foods – generally 1000mg protein
 - Staple foods/free eating foods – generally 2000mg protein

Food Should Be Fun...



For Everyone!