

NORTHWESTERN UNIVERSITY
 Alan & Robert H. Lurie Children's Hospital of Chicago

Empiric Four Food Elimination Diet Induces Remission in Pediatric Eosinophilic Esophagitis: Subsequent Reintroduction Identifies Food Triggers

Amir F. Kagalwalla, Katie Amsden, Melanie M. Makhija, Joshua B. Wechsler, Anthony P. Olive, Sally Schwartz, Carla M. Davis, Kristin Johnson, Marion Groetch, Mary Ellen Riffle, Maria Manuel-Rubio, Hector Melin-Aldana, Barry K. Wershil, Margaret H. Collins, Mirna Chehade

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Disclosure

I have the following financial relationship to disclose:

- Consultant for: Nestle Nutrition.
- Grant/Research support from: NIH, FDA, APFED, RFED, Buckeye Foundation.
- Honoraria from: Speaker's Bureau for Nutricia

I will not discuss off label use and/or investigational use of any pharmaceutical in my presentation.

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Background

Empiric Elimination Diet. Six food elimination diet (SFFED)

Time Point	eos/hpf
Pre	80.2
Post	9.4

• Clinical improvement: 97%
 • 80.2 → 9.4 p<0.0001
 • Histologic Remission: 74 %

Kagalwalla A et al. Clin Gastroenterol Hep 2006; 4:1097-1102.

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Results with SFED in Children & Adults in USA and Europe are Consistent and Reproducible

Six Food Elimination Diet (SFED)

1. Milk
2. Wheat
3. Egg
4. Soy
5. Peanut/Tree nuts
6. Seafood

Study	Percentage
Kagalwalla	74%
Henderson	81%
Gonsalves	74%
Lucendo	73%

Kagalwalla A et al. Clin Gastroenterol Hepatol 2006;4: 1097-1102
 Henderson et al. J Allergy Clin Immunol 2012;129:1570-8
 Gonsalves N et al. Gastroenterology 2012; 142: 1451-1459
 Lucendo et al. J Allergy Clin Immunol 2013; 131:797-804.

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Background

Identification of Trigger Foods in Children who responded to SFED

Food	Percentage
Milk	74%
Wheat	26%
Egg	17%
Soy	10%
Peanut	6%
Seafood	0%

N = 36

Kagalwalla AF et al. JPGN 2011; 53;2:145-49.

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Hypothesis

- Four food elimination diet (4-FED) excluding cow's milk, wheat, egg & soy should induce histologic remission in a majority of pediatric patients with EoE.

Treatment Endpoints

Primary

- Histologic remission: <15 eos/hpf

Secondary

- Symptom improvement
- Endoscopic improvement
- Identification of food triggers

Methods

Inclusion criteria:

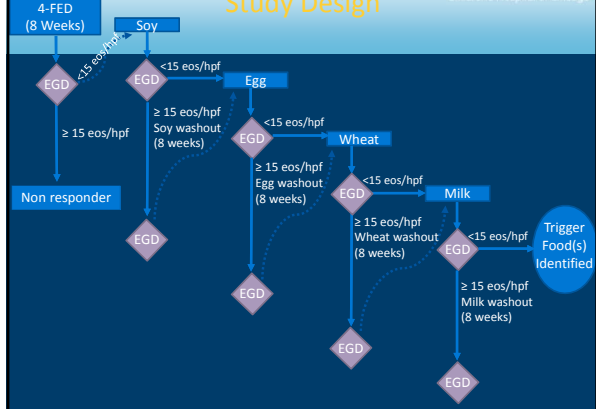
- Patients ages 1-18 years
- Symptoms of esophageal dysfunction
- Isolated esophageal eosinophilia, ≥ 15 eos/hpf after pre-treatment with PPI for 6-8 weeks

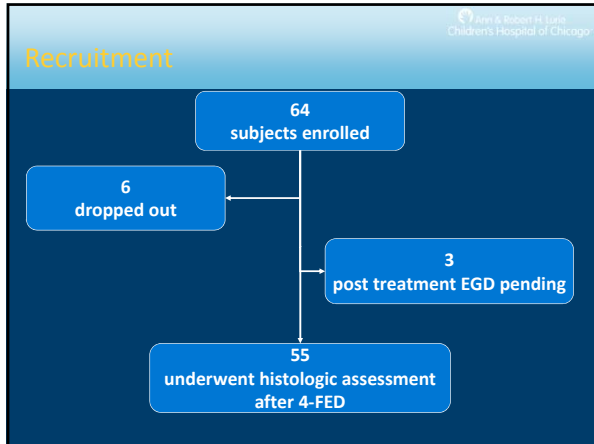
Exclusion criteria:

- Patients on oral or swallowed steroids
- Patients with concurrent EG or EC
- Other causes of eosinophilia

Liacouras CA et al. J Allergy Clin Immunol 2011;128:3-20.

Study Design

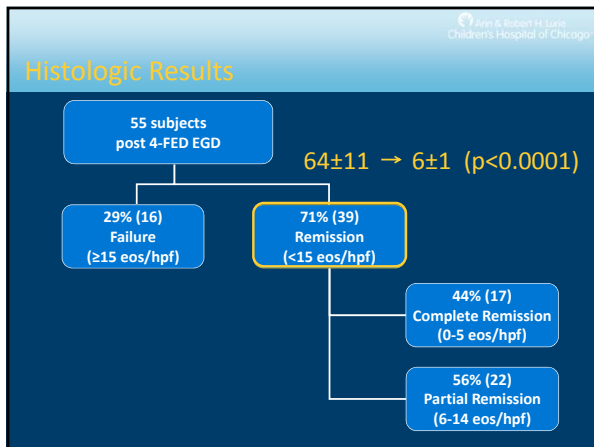




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Patient Characteristics

n = 55	
Mean age (range)	9.3 (1.8-18.4)
Male, n (%)	41 (75)
Ethnicity, n (%)	
White	43 (78)
Hispanic	5 (9)
Asian	3 (5)
Black	2 (4)
Other	2 (4)
Atopy, n (%)	50 (91)
Asthma	16 (30)
Allergic Rhinitis	35 (65)
Eczema	26 (47)
Allergic Conjunctivitis	11 (20)
Food Allergies (IgE-mediated)	19 (42)



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Symptoms in Responders (n=39)

Clinical Symptoms	Pre 4-FED (n)	Post 4-FED (n)	Resolution (%)
Abdominal pain	21	8	62
Slow eating	12	8	33
Dysphagia	11	4	64
Regurgitation / Spitting up	10	0	100
Vomiting	10	2	80
Food impaction	6	0	100
Feeding difficulties	6	1	83

- 82% of responders had resolution of one or more of their presenting symptoms following 4-FED
- Symptoms completely resolved in 18 % of responders

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Endoscopic Features of Responders (n=39)

Endoscopic Features	Pre 4-FED n (%)	Post 4-FED N	Resolution (%)	P-value
E dema	25 (71)	12	52	0.002*
R ings	4 (11)	1	75	1.000
E xudates	21 (60)	2	90	<0.001*
F urrowing	29 (83)	15	48	0.001*
S tricture	0 (0)	0	0	NA

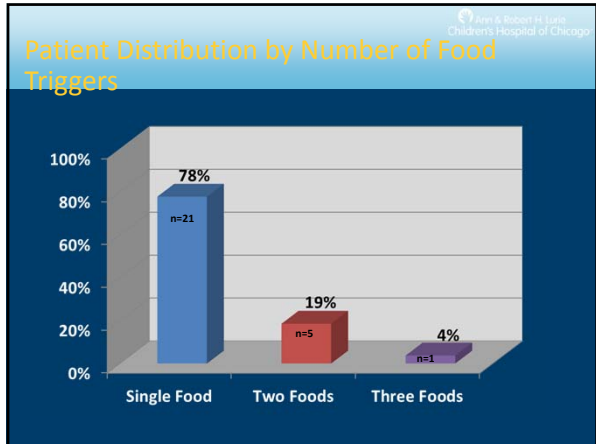
- 83% had improvement in endoscopic findings
- 31% had complete resolution of all the abnormal endoscopic features

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Food Triggers Identified

Food Trigger	n	Percentage
Milk	16	80%
Egg	8	31%
Wheat	5	23%
Soy	5	18%

n = 27



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Summary of 4-FED

- Histologic remission achieved in **71%** of children with EoE
- Symptoms improved in **82%** of responders
- Endoscopic improvement in **83%** of responders
- Specific trigger foods identified

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Conclusions

- Histologic, endoscopic and clinical improvement was achieved in a majority of children treated with 4-FED.
- 4-FED is an effective dietary treatment option to treat children with EoE and compares favorably with SFED.

Collaborating Centers

Ann & Robert H. Lurie Children's Hospital of Chicago, Chicago, IL

- A Kagalwalla, K Amsden, M Makhija, J Wechsler, S Schwartz, K Johnson, M Manuel-Rubio, H Melin-Aldana, B Wershil

Mount Sinai Medical Center, New York, NY

- M Chehade, M Groetch, M Riffle

Texas Children's Hospital, Houston, TX

- A Olive, C Davis

Cincinnati Children's Hospital Medical Center, Cincinnati, OH

- M Collins

