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Eosinophilic Esophagitis

Identifying and treating Eosinophilic Esophagitis In the Primary Care Setting

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Disclosures

Advisory Board

Ardelyx (2022)

Regeneron (2022)

Phathom (2022)

Evoke (2021)



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Eosinophilic Esophagitis

The learner will be able to:

Identify signs and symptoms associated with Eosinophilic Esophagitis (EOE)

Describe the diagnostic work up for EOE

Describe treatment options and goals for EOE



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Eosinophilic Esophagitis

QUESTION:

What do cats and Santa Claus and scrambled eggs have to do with EOE?



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Eosinophilic Esophagitis

Definition:

A chronic, immune/antigen mediated esophageal disease, characterized by clinical symptoms related to esophageal dysfunction and histologically by eosinophil-predominant inflammation

Eosinophilic Esophagitis

FIRST REPORTED CASE: 1978, Landres et al on PET Scan

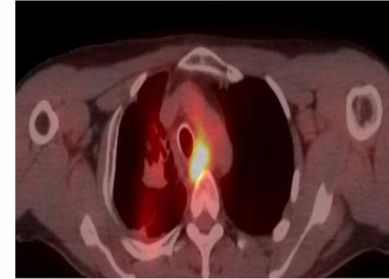
First recognized as a distinct clinical entity in 1993

PREVALENCE

0.5-1 case per 1000 individuals (Hirano et al, 2018)

North and South America, Europe, Asia, and Australia.

Detected in most US states



Higher prevalence:

- in northeastern states
- lower prevalence in western states

Prevalence within the United States may differ between climate zones

- higher prevalence in cold and arid zones versus tropical zones.
- Seasonal exacerbations of symptoms that have been described suggested a possible role of aeroallergens

(Liacouras CA et al)



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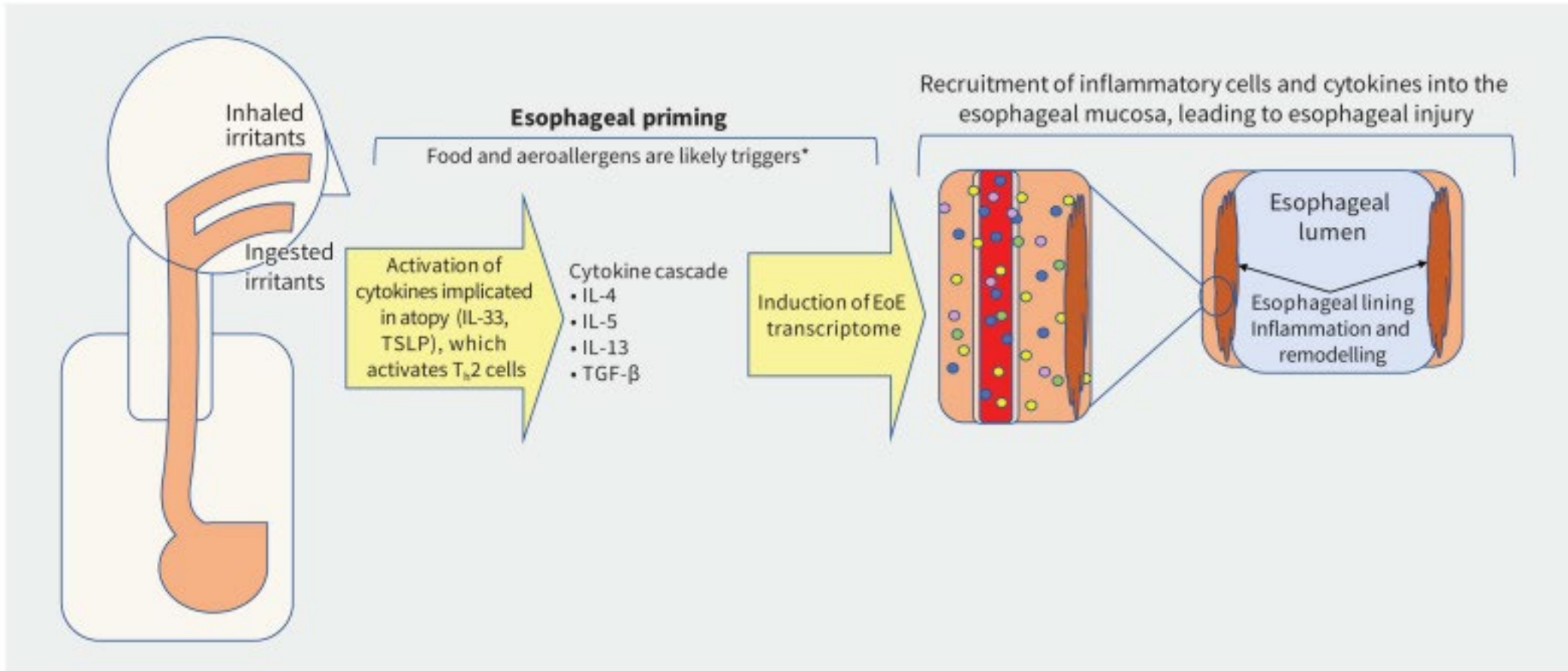
Pathogenesis

- Genetic
- Environmental
- and host immune system factors

Defect in esophageal epithelium

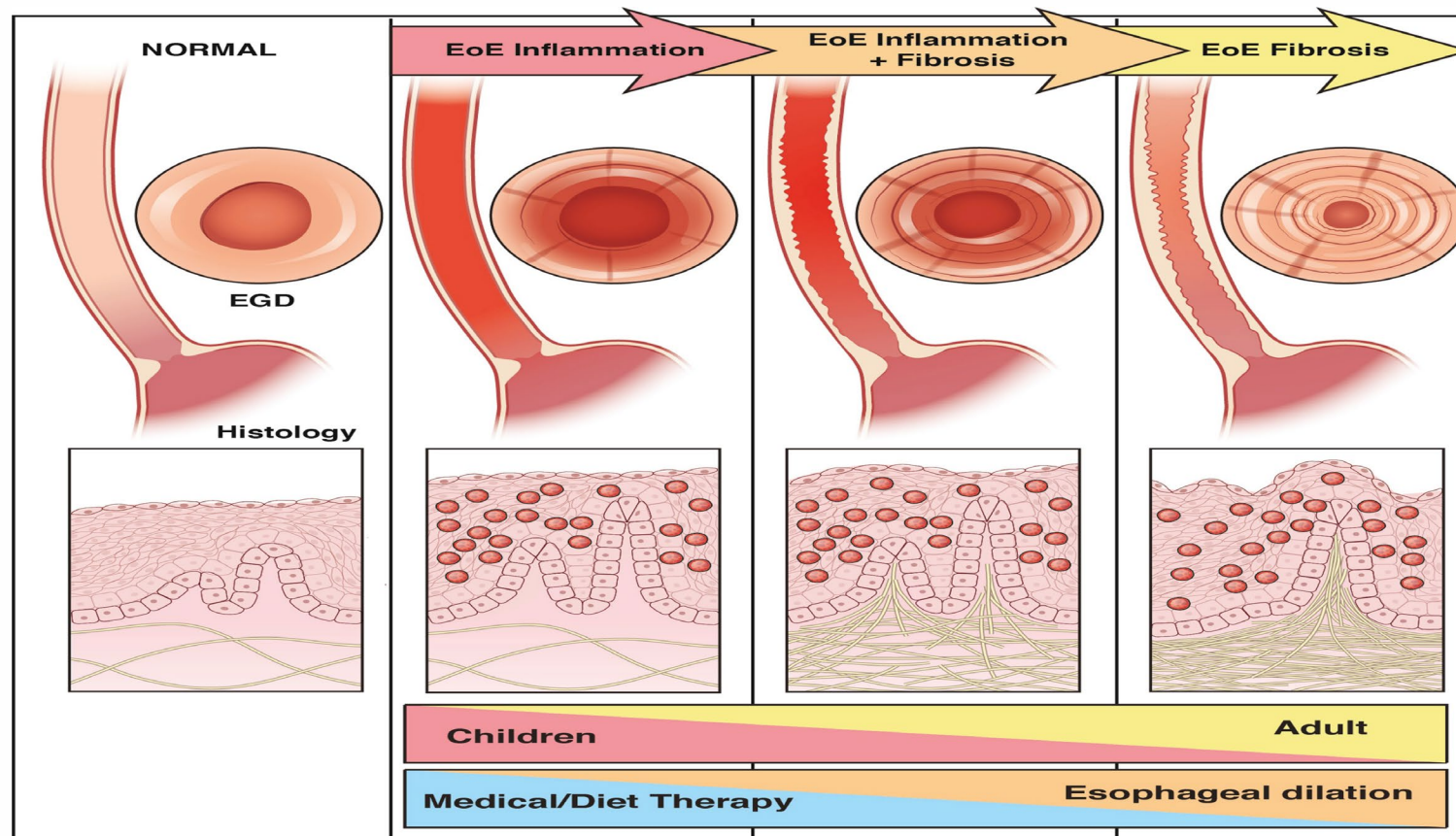
- genetic susceptibility, mediated by genes expressed by the esophageal epithelia rather than eosinophils.
- The esophagus of EoE patients has an impairment of epithelial cell differentiation and barrier function.

Eosinophilic Esophagitis



CMAJ. 2024

Eosinophilic Esophagitis



American Gastroenterology Association

Eosinophilic Esophagitis

DIAGNOSIS

GOOD PATIENT HISTORY

Allergies

- 6 foods
- **RED FLAG: multiple allergens listed in allergies**

Personal and/or family history of:

- Asthma
- Atopic dermatitis (eczema, chronic urticaria)
- Dysphagia, EOE, ask if family members ever needed dilation

SCREENING TOOL: IMPACT

Imbibe fluids with meals

Modify food

Prolonged meal times

Avoid hard-textured foods

Chew excessively

Turn away (tablets, pills)



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Eosinophilic Esophagitis :Food Allergens



Eosinophilic Esophagitis

CLINICAL SYMPTOMS

ADULTS

- DYSPHAGIA-especially solids: most common symptom: 70%
Correlation with higher eosinophil count? (U Kapel, RC, et al)
- Regurgitation of food
- Chest pain
- Heartburn
- Food impaction
- Need for Heimlich?

CHILDREN

- ABDOMINAL PAIN/DYSPEPSIA (31.0%)
- Difficulty feeding (infants) eating (children)
- Vomiting
- Dysphagia
- Food impaction
- Failure to thrive, including poor growth, malnutrition and weight loss



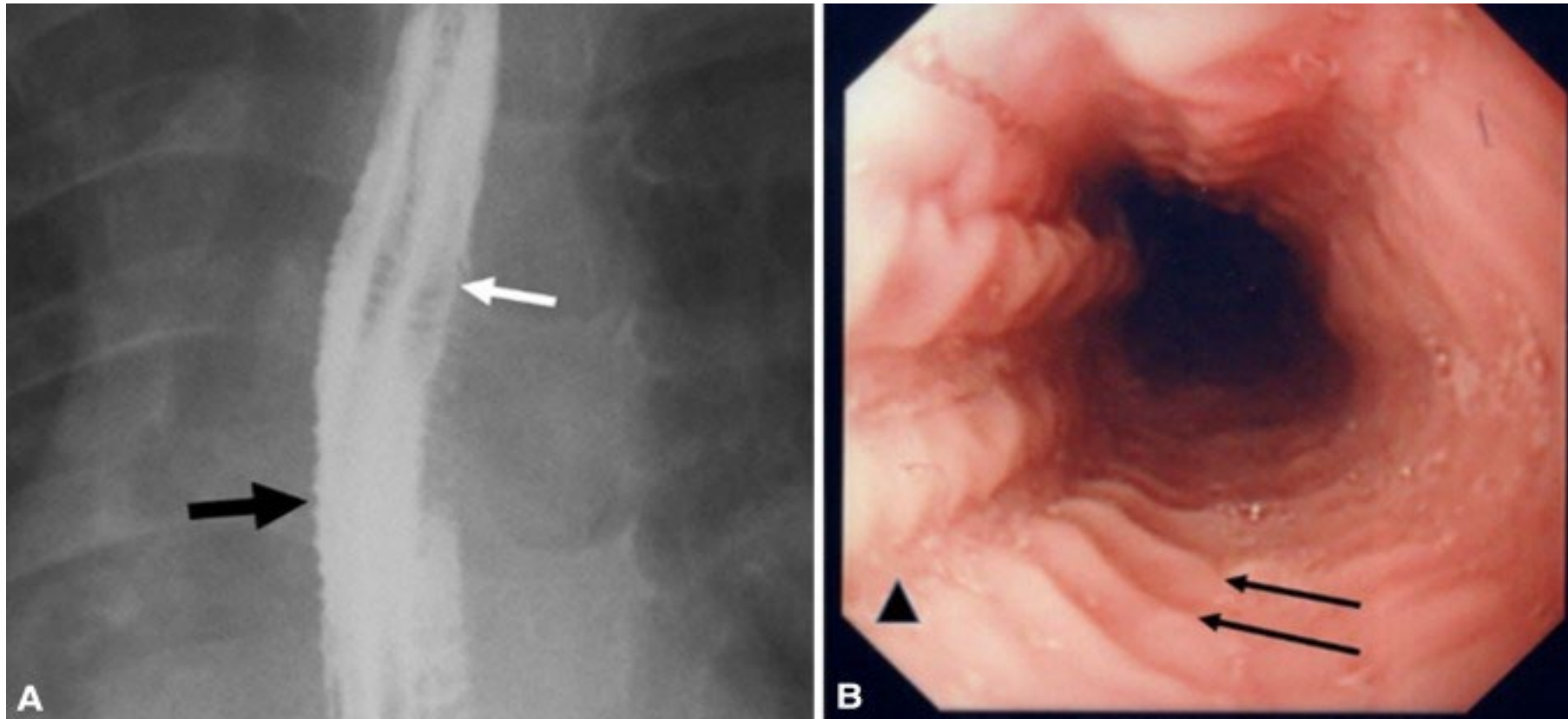
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Eosinophilic Esophagitis

DIAGNOSTIC TESTING

- Upper endoscopy: Gold standard to identify active disease measured by number of eosinophils: >15 per high powered field (HPF), 2 samples in each: proximal, mid and distal esophagus
- Imaging:
 - helpful to evaluate strictures possible trachealization
 - not definitive for diagnosis of EOE
- pH testing: overlap with GERD?

Eosinophilic Esophagitis



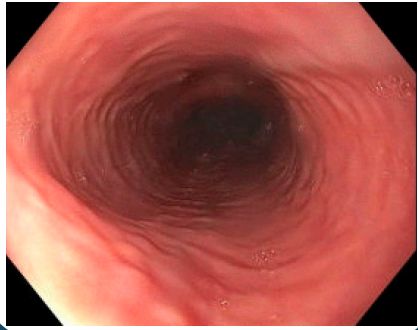
Abdominal Radiology

Eosinophilic Esophagitis

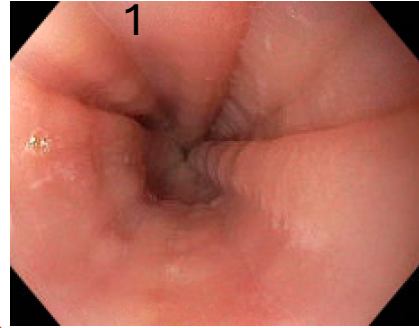
Normal Esophagram



Rings = 1



Edema =



Edema

- Grade 0: Distinct vascularity
- Grade 1: Absent or decreased

Rings

- Grade 0: None
- Grade 1: Mild (ridges)
- Grade 2: Moderate (distinct rings)
- Grade 3: Severe (scope will not pass)

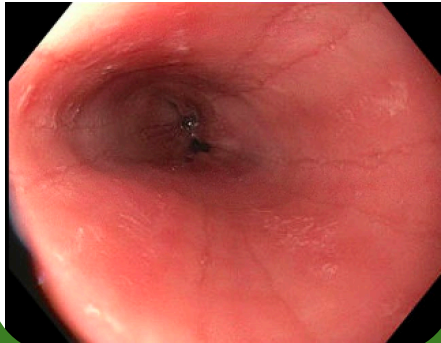
Exudate =



Exudate

- Grade 0: None
- Grade 1: Mild ($\leq 10\%$ surface area)
- Grade 2: Severe ($>10\%$ surface area)

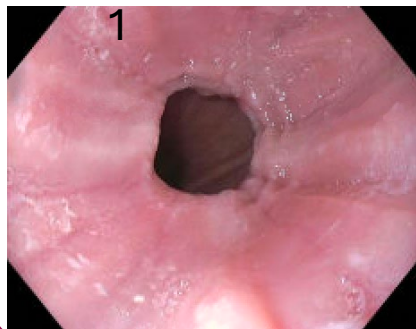
Furrows = 1



Furrows

- Grade 0: None
- Grade 1: Mild
- Grade 2: Severe

Stricture =



Stricture

- Grade 0: Absent
- Grade 1: Present

**Total EREFS =
6**

Eosinophilic Esophagitis: Treatment

Proton Pump Inhibitors

30-40% effective

double standard dose

First line adult

Pediatric treatment: depends on institution

Topical Corticosteroids

Swallowed steroid BID

65% remission

NPO 30 minutes after

Ex: -budesonide slurry vs suspension

-Fluticasone

Food elimination diet

Biologic: blocks IL-4-13 pathway, decreases markers of type 2 inflammation

FDA approved 2022

52 week data: histologic response: 70-82%

Approved in peds: at least 15 kg

Ex: Dupilumab, prefilled syringe versus pen, once a week,

Patient teaching



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Eosinophilic Esophagitis: Food Elimination

Recommend patients read ALL labels for hidden sources of trigger foods

APA/Healthchildren.org: extensive list of foods to avoid and identify hidden sources (i.e. fish gelatins)

UCSD Protocol for Food Elimination Diet in Eosinophilic Esophagitis (EoE)

All established EoE patients requesting dietary therapy should be referred to gastroenterology, allergy & immunology, and a dietitian.

6 Food versus single/2 food elimination diets

Eosinophilic Esophagitis :Food Allergens



Eosinophilic Esophagitis

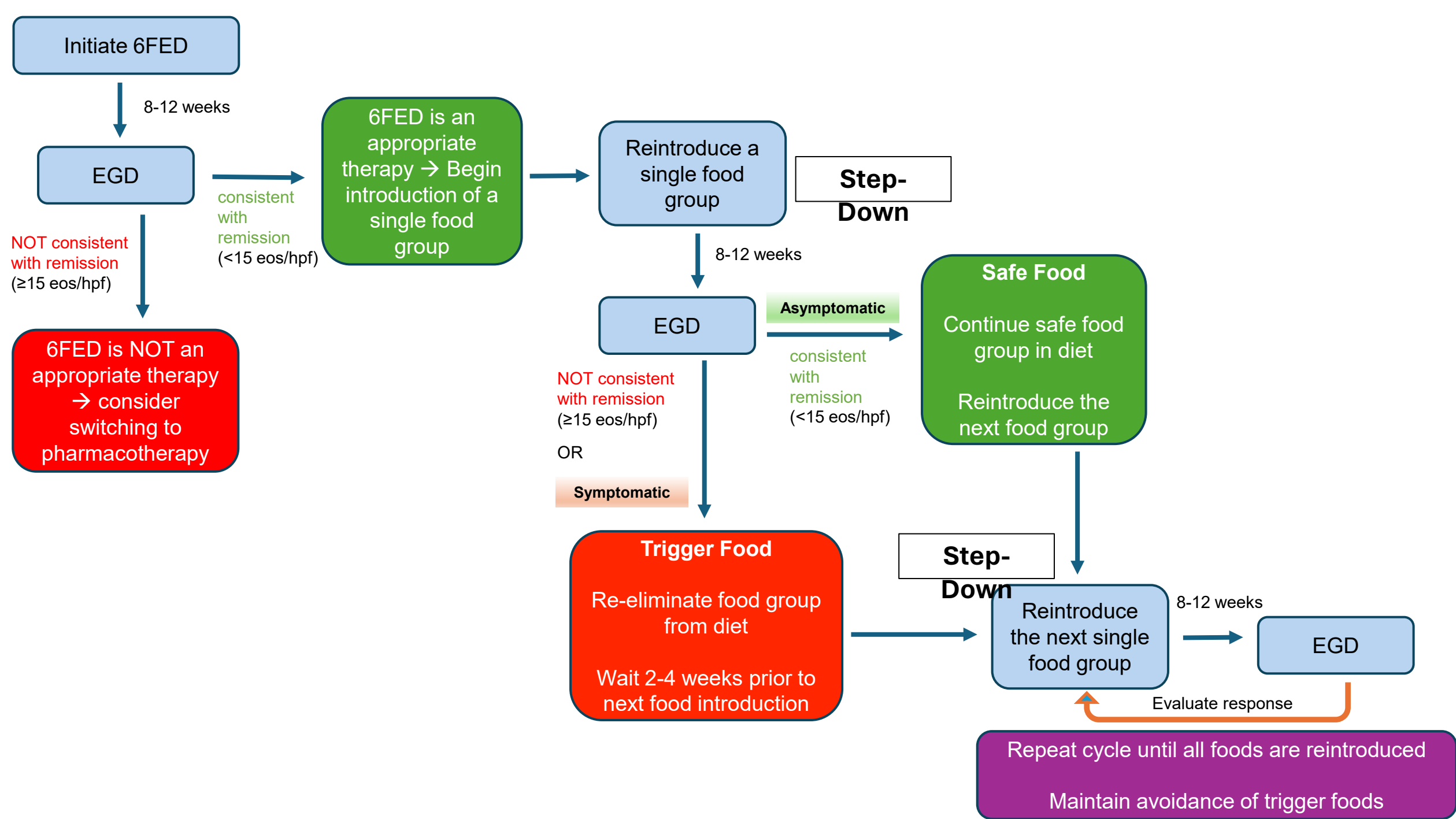
UCSD Protocol for Food Elimination Diet in Eosinophilic Esophagitis (EoE)

Implicated Foods/Food Groups Triggers¹⁻¹¹

Adult		Pediatric	
Food/Food Group	Trigger Prevalence	Food/Food Group	Trigger Prevalence
1) Cow's Milk	44 – 62%	1) Cow's Milk	65 – 85%
2) Wheat	22 – 60%	2) Hen's egg	17 – 40%
3) Hen's Egg	5 – 44%	3) Soy	10 – 40%
4) Soy	10 – 24%	4) Wheat	26 – 37%
5) Fish/Shellfish	10 – 19%	5) Nuts (peanut, tree nuts)	6 – 20%
6) Nuts (peanut, tree nuts)	10 – 17%		



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Eosinophilic Esophagitis

GRADE: for clinical practice recommendations

Grading of Recommendations

Assessment

Development

Evaluations

Levels

High- authors have confidence that true effect is similar to estimated effect

Moderate-authors believe true effect is probably close to established effect

Low- true effect might be markedly different from estimated effect

Very Low-true effect is probably markedly different from estimated effect

Subjective: risk of bias, imprecision, inconsistency



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AGA Institute and the Joint Task Force on Allergy-Immunology Practice Parameters Clinical Guidelines for the Management of Eosinophilic Esophagitis, 2020

Suggestion	Level of Strength/grade
In patients with symptomatic esophageal eosinophilia, the AGA/JTF suggests using proton pump inhibition over no treatment.	Conditional recommendation, very low-quality evidence
In patients with EoE, the AGA/JTF recommends topical glucocorticosteroids over no treatment.	Strong recommendation, moderate quality evidence
In patients with EoE, the AGA/JTF suggests topical glucocorticosteroids rather than oral glucocorticosteroids.	Conditional recommendation, moderate quality evidence
In patients with EoE, the AGA/JTF suggests using elemental diet over no treatment.	Conditional recommendation, moderate quality evidence Comment: Patients who put a higher value on avoiding the challenges of adherence to an elemental diet and the prolonged process of dietary reintroduction may reasonably decline this treatment option.

AGA Institute and the Joint Task Force on Allergy-Immunology Practice Parameters Clinical Guidelines for the Management of Eosinophilic Esophagitis, 2020

Suggestion	Level of Strength/grade
In patient with EoE the AGA/JTF suggests using an empiric six-food elimination diet over no treatment.	Conditional recommendation, low quality evidence Comment: Patients who put a higher value on avoiding the challenges of adherence to diet involving elimination of multiple common food staples and the prolonged process of dietary reintroduction may reasonably decline this treatment option
In patients with EoE, the AGA/JTF suggests allergy testing-based elimination diet over no treatment.	Conditional recommendation, very low quality evidence Comment: Due to the potential limited accuracy of currently available, allergy-based testing for the identification of specific food triggers, patients may prefer alternative medical or dietary therapies to an exclusively testing-based elimination diet.
In patient with EoE in remission after short-term use of topical glucocorticosteroids, the AGA/JTF suggests continuation of topical glucocorticosteroids over discontinuation of treatment.	Conditional recommendation, very low quality evidence Comments: Patients who put a high value on the avoidance of long-term topical steroid use and its possible associated adverse effects, and/or place a lower value on the prevention of potential long-term undesirable outcomes (eg, recurrent dysphagia, food impaction, and esophageal stricture), could reasonably prefer cessation of treatment after initial remission is achieved, provided clinical follow-up is maintained.

AGA Institute and the Joint Task Force on Allergy-Immunology Practice Parameters Clinical Guidelines for the Management of Eosinophilic Esophagitis, 2020

Suggestion	Level of Strength/grade
In adult patients with dysphagia from a stricture associated with eosinophilic esophagitis, the AGA/ JTF suggests endoscopic dilation over no dilation	Conditional recommendation, very low-quality evidence Comment: Esophageal dilation does not address the esophageal inflammation associated with EoE.
In patients with EoE the AGA/JTF recommends using anti–interleukin-5 therapy only in the context of a clinical trial.	No recommendation; knowledge gap
In patients with EoE, the AGA/JTF recommends using anti–IL-13 or anti–IL-4 receptor-α therapy for EoE only in the context of a clinical trial.	No recommendation; knowledge gap
In patients with EoE the AGA/JTF suggests against the use of anti-IgE therapy for EoE.	Conditional recommendation; very low-quality evidence
In patients with EoE, the AGA/JTF recommends topical steroids over no treatment	strong recommendation, moderate quality evidence
In patients with EoE, the AGA/JTF suggest using montelukast, cromolyn sodium, immunomodulators, and anti-TNF only in the context of a clinical trial.	No recommendation; knowledge gap

Eosinophilic Esophagitis

TREATMENT CONSIDERATIONS

Upper endoscopy (EGD)

Dilation as needed

- Ideal Treatment: repeat every 8-12 weeks until endoscopic and histologic remission is achieved
- EREFS: 0
- No stricture
- Eosinophils <15 per HPF
- Food elimination often requires repeat EGDs

Goal: determine which treatment allows patient to achieve maintenance, with plan to remain on treatment for life

Repeat EGD if patient was in remission but now with dysphagia, food impactions, regurgitation of food

Considerations: Pregnancy, side effects of medications, cost

Eosinophilic Esophagitis

EMERGING DATA: Areas for research

- Edwards-Salmon S (2022): Comparing Eosinophilic Esophagitis in a Black and Non-Black Pediatric Cohort.
 - Retrospective chart review: 2010-2018
 - Single urban pediatric hospital system: 143 black pediatric patients compared with 142 non-black pediatric patients with similar distribution of age and sex (predominantly male, 5.1 and 6.7 years old)
 - Findings:
 - Comorbidities more common in black group (food allergies, atopic dermatitis, asthma, and allergic rhinitis)
 - Black patients: more likely to present with failure to thrive (FTT)/poor growth
 - Non-black patients: more likely to present with abdominal pain
 - Statistically significant difference between the groups in achieving remission using current therapies. The black group had higher rates of nonadherence to medical therapies.



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Eosinophilic Esophagitis

Areas for research:

Mahone et al, 2016: Race-specific characteristics in pediatric eosinophilic esophagitis in an urban inner-city clinic

- 34 subjects median age for initial atopy was 2 (1-5) years.
- The median age for EoE diagnosis was 5 (3-8) years.
- Age of EoE diagnosis was higher for Black or African Americans than non-Black or African Americans ($P = .01$).
- No difference in the total number of food sensitizations
- Environmental allergy testing: Black or African Americans were more likely to be sensitized for weeds, dog, and mold.
- Histopathologic analysis: Black or African American: more prominent mid esophageal eosinophilia at median 50/hpf
- Hispanic or LatinXs have more prominent lower esophageal eosinophilia at median 40/hpf

Conclusion: Black or African Americans are more likely to present at an older age, have aeroallergen sensitization, and have more prominent mid-esophageal eosinophilia



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Eosinophilic Esophagitis

Clinical Pearls in the primary care setting:

- **Dysphagia:** ALWAYS refer for EGD, request esophageal biopsies-proximal, mid, distal, (not just random); indicate suspect EOE in referral
- Referral to gastroenterology for ongoing care if not already established
- Patient history
 - Asthma
 - GERD
 - Atopy
- Patient allergen history
- Patient medication history
 - Already on PPI or topical corticosteroid?
 - Asthma treatment

KNOWING WHY YOUR PATIENT IS ON TREATMENT AND WHEN TO FOLLOW UP
- Imaging studies
 - Stricture
 - Feline esophagus



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Eosinophilic Esophagitis

Conclusion

- Dysphagia should always be evaluated via upper endoscopy (with esophageal biopsies when there is suspicion of EOE)
- EOE: may be considered lifetime diagnosis
- Goal is to achieve remission and remain on maintenance therapy
- Consider changing therapy based on patient preference and restrictions (cost, lifestyle)
- Consider symptoms and comorbidities when evaluating for EOE

Eosinophilic Esophagitis

QUESTION:

What do cats and Santa Claus and scrambled eggs have to do with EOE?



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References

Eosinophilic esophagitis (EoE): Genetics and immunopathogenesis, Uptodate, January 2023

U Kapel RC, Miller JK, Torres C, Aksoy S, Lash R, Katzka DA SO; Eosinophilic esophagitis: a prevalent disease in the United States that affects all age groups. *Gastroenterology*. 2008;134(5):1316.

Kia, L. Hirano, I. Advances in the endoscopic evaluation of eosinophilic esophagitis, *Current Opinion in Gastroenterology*, 01 Jul 2016, 32(4):325-331

Underwood, B., Troutman, T.D.; Schwartz, J.T. Breaking down the complex pathophysiology of eosinophilic esophagitis, November, 2022

Liacouras CA, Furuta GT, Hirano I, Atkins D, et al; Eosinophilic Esophagitis: Updated consensus recommendations for children and adults *Journal of Allergy Clinical Immunology*. 2011 July

Dellon ES, Hirano I. Epidemiology and natural history of eosinophilic esophagitis. *Gastroenterology*. 2018

Gupta M, Grinman M. Diagnosis and management of eosinophilic esophagitis. *CMAJ*. 2024 Feb

Al-Hussaini A, AboZeid A, Hai A. How does esophagus look on barium esophagram in pediatric eosinophilic esophagitis? *Abdominal Radiology (NY)*. 2016

Landres RT, Kuster GG, Strum WB. Eosinophilic esophagitis in a patient with vigorous achalasia. *Gastroenterology*. 1978

References

- Edwards-Salmon S, Moraczewski J, Offerle T, Sinclair EM, Xiang Y, Gillespie S, Kruszewski P. Comparing Eosinophilic Esophagitis in a Black and Non-Black Pediatric Cohort. J Pediatric Gastroenterology Nutrition. 2022
- Mahon M, Romo ND, de Vos G, Levanon D. Race-specific characteristics in pediatric eosinophilic esophagitis in an urban inner-city clinic. Ann Allergy Asthma Immunol. 2021 Sep
- Ikuo Hirano,¹ Edmond S. Chan,² Matthew A. Rank,³ Rajiv N. Sharaf,⁴ Neil H. Stollman,⁵ David R. Stukus,⁶ Kenneth Wang,⁷ Matthew Greenhawt,⁸ and Yngve T. Falck-Ytter, Clinical Guidelines for the Management of Eosinophilic Esophagitis, Practice Parameters AGA Institute and the Joint Task Force on Allergy-Immunology Practice Parameters, Gastroenterology, 2020
- Rank, MA, Sharaf, RN, Furuta, GT et al. Technical review on the management of eosinophilic esophagitis: A report from the AGA Institute and the Joint Task Force on Allergy-Immunology Practice Parameters. Gastroenterology, 2020
- Kliwer, KL, Gonsalves, N, Dellon, ES, et al. One-food versus six food elimination diet therapy for the treatment of eosinophilic oesophagitis: a multicentre, randomized, open-label trial. The Lancet Gastroenterology and Hepatology, 2023, May