Case Study: **Quality of Life and Dietary Management of Eosinophilic Esophagitis**

Background

Children with eosinophilic gastrointestinal disorders (EGID), including eosinophilic esophagitis (EoE), often follow challenging elimination diets that involve avoidance of multiple foods.[1] These dietary restrictions negatively impact participation in family meal times, school activities, and social functions, thus affecting one's quality of life (QoL). Children and adolescents with EGID have lower health-related QoL and poorer psychosocial functioning compared to healthy children and children with other chronic illnesses.[2,3] Additionally, mothers of children with EGID report higher levels of parenting stress than mothers of healthy children.[2]

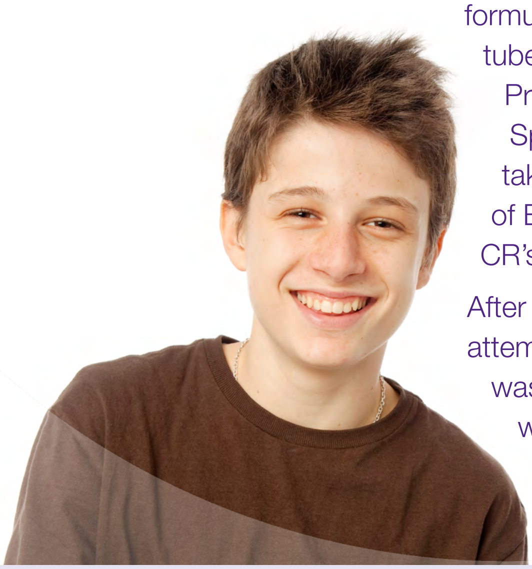
Patient History

CR is a 15-year old male diagnosed with EoE at age 9. His presenting symptoms included failure-to-thrive, vomiting, and abdominal pain. His body mass index (BMI) at diagnosis was <5th percentile for age.

CR, his family and health care providers agreed to initially trial a dietary antigen elimination approach for EoE. Under the direction of a registered dietitian, he followed the empiric six food elimination diet (SFED) restricting all cow's milk, soy, egg, wheat, peanut/tree nut, and fish/shellfish. His follow-up endoscopy with biopsies showed persistent eosinophilic esophagitis. Wanting to continue dietary antigen elimination, his parents chose to remove additional foods yielding positive allergy tests from his diet. These foods included the elimination of corn, beef, string beans, and tomato. CR required nutritional supplementation and willingly consumed 4 boxes (32 oz) of E028 Splash daily to supplement his diet during this phase. Unfortunately, repeat endoscopy revealed persistent EoE. Swallowed topical steroids were prescribed in combination with a dietary antigen elimination approach. Regardless, the combined pharmacologic and dietary approach failed to resolve CR's symptoms and eosinophilic inflammation.

Nutritional Management

At age 13, CR, his family and health care providers agreed that a complete elemental diet was the best management choice for his persistent EoE. CR was unable to orally consume the volume of elemental formula necessary to promote growth and weight gain, so a gastrostomy tube (G-tube) was placed. This allowed the delivery of Neocate® Junior with Prebiotics, Unflavored. The combination of G-tube feeding and oral E028 Splash intake met his complete nutritional needs. Esophageal biopsies taken after an elemental diet trial showed complete histologic resolution of EoE. Both growth and weight gain improved while on an elemental diet. CR's BMI exceeded the 25th percentile and he reported feeling energized.



After successful histologic EoE resolution with an elemental diet, CR attempted single, sequential food trials to rebuild his diet. However, progress was slow because of recurring esophageal inflammation and symptoms with reintroduction of particular foods. Over time, CR successfully tolerated apple, rice, pork, and carrot without recurrence of eosinophilic inflammation.

As a teen, CR's life became hectic with increased school demands and extracurricular activities. As a result, both CR and his mother expressed escalating stress that was directly associated with his tube feedings – finding time to mix formula and administer bolus feeds especially before after-school sports practices and events.

Diet Recall and G-tube Feeding Regimen:

8 AM:	1 medium apple, 1 cup puffed rice + 8 oz original rice milk
10 AM:	240 mL gravity g-tube bolus: Neocate® Junior with Prebiotics, Unflavored
12 PM:	1 slice home-cooked ham + ¾ cup carrot sticks, 1 ounce plain potato chips + 1 box E028 Splash, Tropical Fruit
3 PM:	1 serving rice crackers, 8 oz apple juice
4 PM:	240 mL gravity g-tube bolus: Neocate Junior with Prebiotics, Unflavored
6 PM:	3 slices bacon, 1 cup oven fries with 1 tsp refined oil, ½ cup applesauce, 1 box E028 Splash, Grape

Nocturnal, continuous feeds of Neocate Junior with Prebiotics: 50 mL/hr from 10 PM to 6 AM

	Calories	Protein (g)
Nutritional needs	2600 (45 kcal/kg)	58 (1 g/kg)
Neocate Junior with Prebiotics	1000	30
E028 Splash	500	15
Allowable foods	1100	30

To simplify CR's tube feeding regimen, the registered dietitian recommended ready-to-feed (RTF) Neocate® Splash, Unflavored as an alternative for powdered Neocate Junior with Prebiotics. CR used one RTF drink box for each of his gravity boluses, and two RTF drink boxes for his overnight feeds. The new approach made feeding administration easier for CR's mother and even allowed CR to dispense his own bolus feeds, thus increasing self-efficacy and confidence in managing his own care. Use of an RTF elemental formula alleviated the burden of having to mix and refrigerate formula; eliminated the need to find and pack mixing utensils/containers/water, and the need to find a suitable location to prepare formula on-the-go.

Result/conclusion:

Children and adolescents with chronic illnesses such as EoE often report lower QoL compared to healthy children. CR's case is no exception and highlights the importance of simplifying complex medical regimens. Using Ready-To-Feed Neocate Splash, Unflavored streamlined CR's feeding regimen, allowing him to self-administer feeds and gain autonomy in his own care. Use of an RTF product also reduced caregiver burden and allowed the family to venture from home safely and more frequently despite CR's daytime bolus feeding schedule.

This case study was written by Alison Cassin, MS, RD, LD, a Pediatric Dietitian

References: 1. Liacouras CA, Furuta GT, Hirano I, et al. Eosinophilic esophagitis: updated consensus recommendations for children and adults. *J Allergy Clin Immunol*. 2011;128(1):3–20. e6. **2.** Wu YP, Franciosi JP, Rothenberg MA, Hommel KA. Behavioral feeding problems and parenting stress in eosinophilic gastrointestinal disorders in children. *Pediatr Allergy Immun*. 2012; 23:730-73. **3.** Cortina S, McGraw KJ, deAlarcon A, et al. Psychological functioning of children and adolescents with eosinophil-associated gastrointestinal disorders. *Child Health Care*. 2010; 39:266-278.

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