

Inducing Remission in Crohn's Disease with Exclusive Enteral Nutrition (EEN)

Clinical Case Study Series

Featuring:

David Suskind, MD
Pediatric Gastroenterologist,
Seattle Children's Hospital
Professor of Pediatrics, Division of Gastroenterology
University of Washington
Seattle, WA, USA

TRANSCRIPT

Narrator: Case studies are an excellent way to learn concepts to apply in clinical practice. Welcome to Abbott Nutrition Health Institute's Clinical Case Study Series, helping expand the knowledge of nutrition management in clinical practice through case study presentations.

Today's case study will focus on the nutritional management of a pediatric patient with Crohn's disease using exclusive enteral nutrition.

Our presenter is Dr. David L Suskind, Professor of Pediatrics in the Division of Gastroenterology at Seattle Children's Hospital, University of Washington.

David Suskind: When discussing nutritional therapy in Crohn's disease, it's important to begin with a broad framework.

Today, three dietary strategies have strong evidence and clinical application. Exclusive Enteral Nutrition or EEN, Partial Enteral Nutrition, PEN, with the Crohn's Disease Exclusion Diet and a whole foods diet with a good source of fiber which is low in ultra-processed foods and sugars. Each has a role either in induction or maintenance of remission. Together, they underscore the importance of nutrition as a cornerstone of Crohn's disease management.

Conversations about diet are never a one size fits all. Families approach these therapies with different expectations, concerns, and capacity for change. It is essential to validate their perspectives while normalizing nutritional therapy as an evidence-based option, equal in legitimacy to pharmacologic interventions.

Is important to first consider how we approach the conversation with our patients, before we talk about the impact of EEN in Crohn's disease. Every patient and family comes with their own perspective, experiences, and capacity for making dietary changes. For some, EEN may seem too challenging or less medicinal compared to pharmacologic treatments.

When introducing EEN, we should clearly define what it entails. Focus should be on its proven efficacy, not only in improving symptoms and inducing remission, but also in supporting nutritional status and promoting growth in pediatric Crohn's disease.

At the same time, we must acknowledge that the therapy can be difficult to maintain. By openly addressing potential concerns and working with families, you can develop strategies to overcome any barriers and to integrate EEN into daily life.

Exclusive enteral nutrition is the cornerstone of nutritional therapy for Crohn's disease. It is recommended as the first-line treatment by both the North American and European Societies for Pediatric Gastroenterology, Hepatology, and Nutrition. EEN is a first-line therapy, not only for its ability to induce remission and improve nutritional status, but also for its high rates of mucosal healing, which carry important long-term benefits in Crohn's disease.

While definitions of EEN vary slightly by study, most studies look at EEN as 6 to 10 weeks of a nutritionally complete formula without other food or drink outside of water, taken either orally or via nasogastric tube.

With this in mind, let's consider the case of Sarah, a 13-year-old girl diagnosed with moderate ileocolonic Crohn's disease. Sarah initially presented with a three-month history of progressively worsening abdominal pain, fatigue, and daily loose stools. She had lost approximately three kilos and had dropped off her growth curve, raising concerns from her parents and her pediatrician.

On exam, she appeared thin, with mild abdominal tenderness. Not only did her weight drop below the 10th percentile for age, representing a significant decline from her prior trajectory, but she had also shown no linear growth for over the last year, despite being asymptomatic at that time, a finding which is not uncommon in Crohn's disease.

Her laboratory workup revealed a CRP of 5.2 mg/dL, a fecal calprotectin level exceeding 3000 µg/g, a low serum albumin, mild anemia, and a thrombocytosis, all findings consistent with active inflammation. Colonoscopy showed patchy inflammation, ulcers, and friability involving the terminal ileum and colon, and biopsies confirmed chronic active ileocolitis. An MR enterography was done and ruled out stricture and penetrating disease.

Following a comprehensive discussion with Sarah and her family, the decision was made to move forward with exclusive enteral nutrition to get Sarah into clinical remission. This choice was grounded in strong evidence demonstrating that EEN is as effective as corticosteroids for inducing remission, while offering critical advantages for a patient at Sarah's age and stage of development.

EEN avoids steroid-related side effects, supports catch-up growth, and promotes bone health, as well as pubertal progression. For Sarah, a polymeric formula was selected, which she was able to take orally. Over an eight-week period, she consumed the formula exclusively, with no other solid foods, and received 100% of her nutritional needs through this regime. Throughout this period, our dietitians worked closely with the family to support adherence, troubleshoot challenges, and monitor clinical and biochemical progress.

With any therapy, it's essential to be clear about our goals. In Crohn's disease, those goals are well defined. Our first priority is symptomatic improvement, relief from abdominal pain, resolution of diarrhea and blood in the stool, and restoration of a healthy weight gain.

Next, we look for objective improvement in laboratory markers, normalization of CRP and albumin, and improvement in hemoglobin, signaling that the inflammatory process is resolving. Over the long term, our aim is mucosal healing: the complete resolution of ulcerations throughout the gastrointestinal tract.

This matters because mucosal healing is strongly associated with better long-term outcomes, reduced reliance on steroids, and fewer surgical interventions.

EEN accomplishes all of this, and for Sarah, the results were striking.

Soon after starting EEN, Sarah was feeling better, improving each and every day. After eight weeks of EEN, Sarah's abdominal pain and diarrhea had completely resolved, she regained the 3 kgs she had lost, and her energy and quality of life markedly improved. Biochemically, her CRP normalized, her albumin and hemoglobin improved, and her fecal calprotectin fell below 120 µg/g. At one year, repeat endoscopy and colonoscopy demonstrated mucosal healing. This highlights the profound impact that EEN has on long-term disease control.

This case illustrates not only the efficacy of EEN in inducing remission, but also its effects on mucosal healing and long-term outcomes for patients like Sarah.

There are several key takeaway points that we learned from Sarah's experience. First, the type of formula does not influence remission rates; polymeric, hydrolyzed, and elemental formulas all achieve similar

outcomes. That being said, polymeric formulas are typically a better choice given cost as well as patient tolerability.

Second, close follow-up is essential. We recommend clinic visits at two weeks and again at six to eight weeks, coupled with repeat labs, to reinforce adherence and provide tangible evidence of progress to families.

Third, EEN should be viewed not merely as a bridge, but as a remission-inducing therapy that rivals pharmacologic induction strategies and offers unique advantages in children and adolescents.

So, why do we treat with exclusive enteral nutrition? In short, it works. And it works remarkably well.

EEN induces remission in approximately 80 to 85% of children with active luminal Crohn's disease. But EEN goes beyond simply controlling symptoms. It has a high mucosal healing rate and, in fact, is more effective than steroids at achieving endoscopic mucosal healing, a key target linked to improved long-term outcomes, fewer relapses, and reduced need for surgery.

EEN also addresses the nutritional challenges often seen in pediatric Crohn's disease. It replenishes calories and nutrients, corrects micronutrient deficiencies, and reverses malnutrition and growth failure. Unlike corticosteroids, which can impair growth, EEN supports normal linear growth and pubertal progression, critical for the health and development of children and adolescents.

Finally, EEN avoids the well-known and often distressing side effects of steroids such as weight gain, mood changes, hypertension, acne, and bone demineralization, making it not only a highly effective therapy, but also one that promotes overall well-being.

Of course, challenges remain. Formula fatigue can make adherence difficult, and implementation requires dietitian support and institutional infrastructure. Access and cost can also present barriers, although insurance coverage has improved significantly in many regions.

Finally, EEN is best understood as an induction strategy, not a stand-alone long-term therapy. From the outset, clinicians must work with families to identify appropriate maintenance approaches whether pharmacologic, dietary, or combination.

In summary, Sarah's case highlights the remarkable efficacy of EEN for pediatric Crohn's disease. It induces remission in the majority of patients, promotes mucosal healing more effectively than corticosteroids, restores nutritional status and growth, and avoids the burdensome side effects of steroids. With the right support and family engagement, EEN represents an oftentimes underutilized but powerful intervention for pediatric Crohn's disease.



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