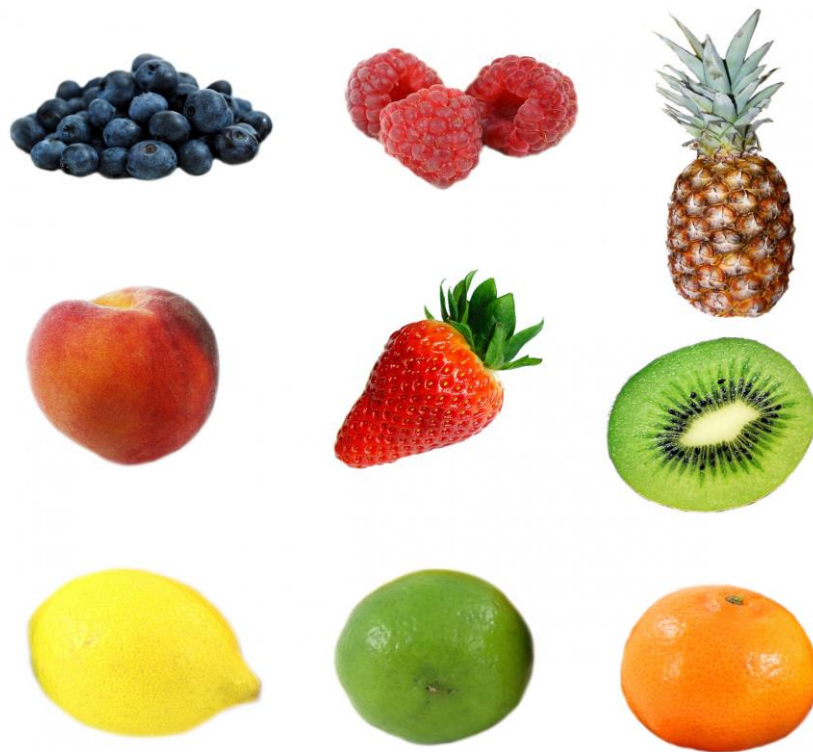



# Paediatric Nutrition


## Evidence Update



**May 2018**  
**(Quarterly)**

Respecting everyone  
Embracing change  
Recognising success  
Working together  
**Our hospitals.**



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# Training Calendar 2018

*All sessions are one hour*

## May (13.00-14.00)

22nd (Tue) **Critical Appraisal**

30th (Wed) **Statistics**

## June (12.00-13.00)

7th (Thu) **Literature Searching**

11th (Mon) **Critical Appraisal**

20th (Wed) **Statistics**

28th (Thu) **Literature Searching**

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# Journal Tables of Contents

Click on the **journal title (+ Ctrl)** for the most recent tables of contents.

If you would like any of the papers in full text then please email the library:  
[library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk)

## [American Journal of Clinical Nutrition](#)

[High-dose vitamin D3 in the treatment of severe acute malnutrition: a multicenter double-blind randomized controlled trial](#)

[Javeria Saleem](#); [Rubeena Zakar](#); [Muhammad Z Zakar](#); [Mulugeta Belay](#); [Marion Rowe](#) ...

The American Journal of Clinical Nutrition, Volume 107, Issue 5, 1 May 2018, Pages 725–733,  
<https://doi.org/10.1093/ajcn/nqy027>

[A meat- or dairy-based complementary diet leads to distinct growth patterns in formula-fed infants: a randomized controlled trial](#)

[Minghua Tang](#); [Audrey E Hendricks](#); [Nancy F Krebs](#)

The American Journal of Clinical Nutrition, Volume 107, Issue 5, 1 May 2018, Pages 734–742,  
<https://doi.org/10.1093/ajcn/nqy038>

## [Journal of Human Nutrition & Dietetics](#)

## [Journal of the Academy of Nutrition and Dietetics](#)

## [Gut](#)

## [BMJ](#)

## [Lancet](#)

## Updates

**NICE** National Institute for  
Health and Care Excellence

[Pediatric Gastroesophageal Reflux Clinical Practice Guidelines: Joint Recommendations of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition \(NASPGHAN\) and the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition \(ESPGHAN\)](#) [PDF]

01 March 2018 - Publisher: European Society for Paediatric Gastroenterology Hepatology and Nutrition

This document serves as an update of the North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition (NASPGHAN) and the European Society for Pediatric Gastroenterology, ...

[Evidence-based nutrition guidelines for the prevention and management of diabetes](#) [PDF]

Source: [Diabetes UK](#) - 01 March 2018 - Publisher: Diabetes UK

A key strategy applied in these current guidelines was to formulate recommendations from the available evidence highlighting the importance of foods, rather than focusing on individual nutrients,



[Physical activity, diet and other behavioural interventions for improving cognition and school achievement in children and adolescents with obesity or overweight](#)

Anne Martin, Josephine N Booth, Yvonne Laird, John Sproule, John J Reilly, David H Saunders

Online Publication Date: March 2018

**UpToDate**<sup>®</sup>

### **Safety of polyethylene glycol (PEG) for constipation (May 2018)**

Polyethylene glycol (PEG) is an effective and commonly used treatment for constipation in children. However, theoretical concerns have been raised as to whether absorbable PEG metabolites such as ethylene glycol might cause neuropsychiatric effects. Now, a new study reports that serum concentrations of ethylene glycol increase transiently after an oral dose of PEG, but remain well below the threshold for toxicity [46]. The total dose of ethylene glycol

ingested with chronic use of PEG is well below the amount allowed by the Environmental Protection Agency in drinking water. Thus, neurotoxicity is very unlikely with acute or chronic use of PEG. Behavioral symptoms that are occasionally reported in children during PEG treatment are more likely related to the known association of constipation with comorbid neuropsychiatric conditions. (See "[Chronic functional constipation and fecal incontinence in infants and children: Treatment](#)", section on 'Polyethylene glycol'.)

### **Other - NHS 'Behind the Headlines', Guidance etc**

Nothing relevant to add

## Database Articles

Below is a selection of articles related to paediatric nutrition that were recently added to the healthcare databases. If you would like any of the following articles in full text, or if you would like a more focused search on your own topic, then get in touch: [library@uhbristol.nhs.uk](mailto:library@uhbristol.nhs.uk)

### **1. Management of Ready-to-Use Parenteral Nutrition in Newborns: Systematic Review.**

**Author(s):** Mena, Karen Daniela Romero; Espitia, Olga Lucia Pinzón; Vergara, José Alejandro Daza

**Source:** JPEN. Journal of parenteral and enteral nutrition; Apr 2018

**Publication Date:** Apr 2018

**Publication Type(s):** Journal Article Review

**PubMedID:** 29701872

**Abstract:**Parenteral support has increased the possibility of neonatal recovery. However, complications associated with its use have been documented. One commercial method developed to decrease the complications of this type of support is the ready-to-use parenteral nutrition (PN), a 3-chamber bag that provides a complete nutrient mix. This systematic review seeks, through the Preferred Reporting Items for Systematic Reviews and Meta-Analyses methodology, to establish the benefits in newborns. Seven databases and gray literature were used. The search was limited to publications from 2007-2017 and to articles written in English, Spanish, and Portuguese. Articles that did not meet the inclusion criteria and studies with low quality evaluated with the Scottish Intercollegiate Guidelines Network guidelines, which were without information about the study or analytical methods, were excluded. A total of 24,193 articles were obtained, which were initially evaluated by title and abstract according to the inclusion criteria. A total of 24,167 articles were discarded, obtaining 27 eligible for follow-up evaluation. After a detailed evaluation of the full text, 13 articles were selected. It was found that ready-to-use PN has the potential benefit to reduce the risks for infections, provide an adequate supply of nutrients, generate growth within the expected range, provide ease of use, decrease prescription errors, and potentially reduce costs. It is necessary to evaluate the short- and long-term impact of its use.

**Database:** Medline

### **2. Enteral Nutrition in the Management of Pediatric and Adult Crohn's Disease.**

**Author(s):** Hansen, Tawnya; Duerksen, Donald R

**Source:** Nutrients; Apr 2018; vol. 10 (no. 5)

**Publication Date:** Apr 2018

**Publication Type(s):** Journal Article Review

**PubMedID:** 29701656

Available at [Nutrients](#) - from Europe PubMed Central - Open Access

Available at [Nutrients](#) - from mdpi.com

**Abstract:** Genetic and environmental factors are thought to profoundly influence the pathophysiology of Crohn's disease (CD). Changes in dietary and hygiene patterns affect the interactions between the immune system and environment. The gut microbiome is responsible for mediating host immune response with significant dysbiosis observed in individuals with CD. Diet therapy using exclusive enteral nutrition (EEN) has been studied as primary therapy for the management of CD. EEN may cultivate the presence of beneficial microbiota, improve bile acid metabolism, and decrease the number of dietary microparticles possibly influencing disease and immune activity. In this review, we will address the current evidence on EEN in the management of adult and pediatric CD. In adults, EEN appears to be moderately beneficial for the induction of remission of CD; however, its use is understudied and underutilized. Stronger evidence is in place to support the use of EEN in pediatric CD with the added benefit of nutrition support and steroid-sparing therapy during the growth phase. Overall, EEN is an established therapy in inducing CD remission in the pediatric population while its role as primary therapy of adult Crohn's disease remains to be defined.

**Database:** Medline

### 3. Enteral nutritional therapy for induction of remission in Crohn's disease.

**Author(s):** Narula, Neeraj; Dhillon, Amit; Zhang, Dongni; Sherlock, Mary E; Tondeur, Melody; Zachos, Mary

**Source:** The Cochrane database of systematic reviews; Apr 2018; vol. 4 ; p. CD000542

**Publication Date:** Apr 2018

**Publication Type(s):** Journal Article Review

**PubMedID:** 29607496

Available at [Cochrane Database of Systematic Reviews](#) - from Cochrane Collaboration (Wiley)

**Abstract:** BACKGROUND Corticosteroids are often preferred over enteral nutrition (EN) as induction therapy for Crohn's disease (CD). Prior meta-analyses suggest that corticosteroids are superior to EN for induction of remission in CD. Treatment failures in EN trials are often due to poor compliance, with dropouts frequently due to poor acceptance of a nasogastric tube and unpalatable formulations. This systematic review is an update of a previously published Cochrane review. OBJECTIVES To evaluate the effectiveness and safety of exclusive EN as primary therapy to induce remission in CD and to examine the importance of formula composition on effectiveness. SEARCH METHODS We searched MEDLINE, Embase and CENTRAL from inception to 5 July 2017. We also searched references of retrieved articles and conference abstracts. SELECTION CRITERIA Randomized controlled trials involving patients with active CD were considered for inclusion. Studies comparing one type of EN to another type of EN or conventional corticosteroids were selected for review. DATA COLLECTION AND ANALYSIS Data were extracted independently by at least two authors. The primary outcome was clinical remission. Secondary outcomes included adverse events, serious adverse events and withdrawal due to adverse events. For dichotomous outcomes, we calculated the risk ratio (RR) and 95% confidence interval (CI). A random-effects

model was used to pool data. We performed intention-to-treat and per-protocol analyses for the primary outcome. Heterogeneity was explored using the Chi<sup>2</sup> and I<sup>2</sup> statistics. The studies were separated into two comparisons: one EN formulation compared to another EN formulation and EN compared to corticosteroids. Subgroup analyses were based on formula composition and age. Sensitivity analyses included abstract publications and poor quality studies. We used the Cochrane risk of bias tool to assess study quality. We used the GRADE criteria to assess the overall quality of the evidence supporting the primary outcome and selected secondary outcomes.

**MAIN RESULT** Twenty-seven studies (1,011 participants) were included. Three studies were rated as low risk of bias. Seven studies were rated as high risk of bias and 17 were rated as unclear risk of bias due to insufficient information. Seventeen trials compared different formulations of EN, 13 studies compared one or more elemental formulas to a non-elemental formula, three studies compared EN diets of similar protein composition but different fat composition, and one study compared non-elemental diets differing in glutamine enrichment. Meta-analysis of 11 trials (378 participants) demonstrated no difference in remission rates. Sixty-four per cent (134/210) of patients in the elemental group achieved remission compared to 62% (105/168) of patients in the non-elemental group (RR 1.02, 95% CI 0.88 to 1.18; GRADE very low quality). A per-protocol analysis (346 participants) produced similar results (RR 1.04, 95% CI 0.91 to 1.18). Subgroup analyses performed to evaluate the different types of elemental and non-elemental diets (elemental, semi-elemental and polymeric) showed no differences in remission rates. An analysis of 7 trials including 209 patients treated with EN formulas of differing fat content (low fat: 20 g/1000 kCal) demonstrated no difference in remission rates (RR 1.03; 95% CI 0.85 to 1.26). Very low fat content (< 3 g/1000 kCal) and very low long chain triglycerides demonstrated higher remission rates than higher content EN formulas. There was no difference between elemental and non-elemental diets in adverse event rates (RR 1.00, 95% CI 0.63 to 1.60; GRADE very low quality), or withdrawals due to adverse events (RR 1.29, 95% CI 0.80 to 2.09; GRADE very low quality). Common adverse events included nausea, vomiting, diarrhea and bloating. Ten trials compared EN to steroid therapy. Meta-analysis of eight trials (223 participants) demonstrated no difference in remission rates between EN and steroids. Fifty per cent (111/223) of patients in the EN group achieved remission compared to 72% (133/186) of patients in the steroid group (RR 0.77, 95% CI 0.58 to 1.03; GRADE very low quality). Subgroup analysis by age showed a difference in remission rates for adults but not for children. In adults 45% (87/194) of EN patients achieved remission compared to 73% (116/158) of steroid patients (RR 0.65, 95% CI 0.52 to 0.82; GRADE very low quality). In children, 83% (24/29) of EN patients achieved remission compared to 61% (17/28) of steroid patients (RR 1.35, 95% CI 0.92 to 1.97; GRADE very low quality). A per-protocol analysis produced similar results (RR 0.93, 95% CI 0.75 to 1.14). The per-protocol subgroup analysis showed a difference in remission rates for both adults (RR 0.82, 95% CI 0.70 to 0.95) and children (RR 1.43, 95% CI 1.03 to 1.97). There was no difference in adverse event rates (RR 1.39, 95% CI 0.62 to 3.11; GRADE very low quality). However, patients on EN were more likely to withdraw due to adverse events than those on steroid therapy (RR 2.95, 95% CI 1.02 to 8.48; GRADE very low quality). Common adverse events reported in the EN group included heartburn, flatulence, diarrhea and vomiting, and for steroid therapy acne, moon facies, hyperglycemia, muscle weakness and hypoglycemia. The most common reason for withdrawal was inability to tolerate the EN diet.

**AUTHORS' CONCLUSIONS** Very low quality evidence suggests that corticosteroid therapy may be more effective than EN for induction of clinical remission in adults with active CD. Very low quality evidence also suggests that EN may be more effective than steroids for induction of remission in children with active CD. Protein composition does not appear to influence the



effectiveness of EN for the treatment of active CD. EN should be considered in pediatric CD patients or in adult patients who can comply with nasogastric tube feeding or perceive the formulations to be palatable, or when steroid side effects are not tolerated or better avoided. Further research is required to confirm the superiority of corticosteroids over EN in adults. Further research is required to confirm the benefit of EN in children. More effort from industry should be taken to develop palatable polymeric formulations that can be delivered without use of a nasogastric tube as this may lead to increased patient adherence with this therapy.

**Database:** Medline

#### **4. Higher versus lower amino acid intake in parenteral nutrition for newborn infants.**

**Author(s):** Osborn, David A; Schindler, Tim; Jones, Lisa J; Sinn, John Kh; Bolisetty, Srinivas

**Source:** The Cochrane database of systematic reviews; Mar 2018; vol. 3 ; p. CD005949

**Publication Date:** Mar 2018

**Publication Type(s):** Research Support, Non-u.s. Gov't Journal Article Review

**PubMedID:** 29505664

Available at [Cochrane Database of Systematic Reviews](#) - from Cochrane Collaboration (Wiley)

**Abstract:**BACKGROUND Sick newborn and preterm infants frequently are not able to be fed enterally, necessitating parenteral fluid and nutrition. Potential benefits of higher parenteral amino acid (AA) intake for improved nitrogen balance, growth, and infant health may be outweighed by the infant's ability to utilise high intake of parenteral AA, especially in the days after birth.OBJECTIVE The primary objective is to determine whether higher versus lower intake of parenteral AA is associated with improved growth and disability-free survival in newborn infants receiving parenteral nutrition. Secondary objectives include determining whether: • higher versus lower starting or initial intake of amino acids is associated with improved growth and disability-free survival without side effects; • higher versus lower intake of amino acids at maximal intake is associated with improved growth and disability-free survival without side effects; and • increased amino acid intake should replace non-protein energy intake (glucose and lipid), should be added to non-protein energy intake, or should be provided simultaneously with non-protein energy intake. We conducted subgroup analyses to look for any differences in the effects of higher versus lower intake of amino acids according to gestational age, birth weight, age at commencement, and condition of the infant, or concomitant increases in fluid intake. SEARCH METHODS We used the standard search strategy of the Cochrane Neonatal Review Group to search the Cochrane Central Register of Controlled Trials (2 June 2017), MEDLINE (1966 to 2 June 2017), Embase (1980 to 2 June 2017), and the Cumulative Index to Nursing and Allied Health Literature (CINAHL) (1982 to 2 June 2017). We also searched clinical trials databases, conference proceedings, and citations of articles. SELECTION CRITERIA Randomised controlled trials of higher versus lower intake of AAs as parenteral nutrition in newborn infants. Comparisons of higher intake at commencement, at maximal intake, and at both commencement and maximal intake were performed. DATA COLLECTION AND ANALYSIS Two review authors independently selected trials, assessed trial quality, and extracted data from included studies. We performed fixed-effect analyses and expressed treatment effects as mean difference (MD), risk ratio (RR), and risk difference (RD) with 95% confidence intervals (CIs) and assessed the quality of evidence using the GRADE approach. MAIN RESULTS Thirty-two studies were eligible for

inclusion. Six were short-term biochemical tolerance studies, one was in infants at > 35 weeks' gestation, one in term surgical newborns, and three yielding no usable data. The 21 remaining studies reported clinical outcomes in very preterm or low birth weight infants for inclusion in meta-analysis for this review. Higher AA intake had no effect on mortality before hospital discharge (typical RR 0.90, 95% CI 0.69 to 1.17; participants = 1407; studies = 14; I<sup>2</sup> = 0%; quality of evidence: low). Evidence was insufficient to show an effect on neurodevelopment and suggest no reported benefit (quality of evidence: very low). Higher AA intake was associated with a reduction in postnatal growth failure (2 to ≤ 3 g/kg/day); that occurred with increased amino acid and non-protein caloric intake; that commenced on intake at 8.3 mmol/L (typical RR 0.69, 95% CI 0.49 to 0.96; participants = 505; studies = 5; I<sup>2</sup> = 68%), although the incidence of hyperglycaemia treated with insulin was not different. **AUTHORS' CONCLUSIONS** Low-quality evidence suggests that higher AA intake in parenteral nutrition does not affect mortality. Very low-quality evidence suggests that higher AA intake reduces the incidence of postnatal growth failure. Evidence was insufficient to show an effect on neurodevelopment. Very low-quality evidence suggests that higher AA intake reduces retinopathy of prematurity but not severe retinopathy of prematurity. Higher AA intake was associated with potentially adverse biochemical effects resulting from excess amino acid load, including azotaemia. Adequately powered trials in very preterm infants are required to determine the optimal intake of AA and effects of caloric balance in parenteral nutrition on the brain and on neurodevelopment.

**Database:** Medline



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July 3<sup>rd</sup>: **Welcome Centre, BRI 10.00-16.00**

July 4<sup>th</sup>: **Canteen (Level 9, BRI) 12.00-14.00**

August 8<sup>th</sup>: **Foyer, Education Centre 12.00-14.00**

August 29<sup>th</sup>: **Foyer, St Michael's Hospital 12.00-14.00**

September 5<sup>th</sup>: **Canteen (Level 9, BRI) 12.00-14.00**

September 11<sup>th</sup>: **Welcome Centre, BRI 10.00-16.00**

October 3<sup>rd</sup>: **Terrace (Level 4, Education Centre) 12.00-14.00**

November 7<sup>th</sup>: **Canteen (Level 9, BRI) 12.00-14.00**

December 5<sup>th</sup>: **Foyer, Education Centre 12.00-14.00**

December 11<sup>th</sup>: **Welcome Centre, BRI 10.00-16.00**



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