What treatments work best for constipation in children?

Zia Rahman, MD, and Fereshteh Gerayli, MD
Johnson City Family Medicine Residency Program, Johnson City, Tenn

Nakia Joye Carter, MS
Quillen College of Medicine Library, East Tennessee State University, Johnson City

Evidence-based answer

Osmotic laxatives produce the best results. Fiber and behavior modification may have a role. Increased fiber and behavior modification are the most often recommended first steps in managing chronic functional constipation (CFC) in children, but only limited evidence supports this approach (strength of recommendation [SOR]: **B** for fiber, 1 randomized controlled trial [RCT]; **C** for behavior modification, 1 small trial).

For pharmacologic management, the best evidence supports osmotic laxatives (SOR: **A**, 6 fair- to good-quality RCTs).

Evidence summary

CFC with or without encopresis is a common pediatric problem that's distressing to both the child and family. High-quality RCTs on managing CFC are lacking. Our search located 7 relevant RCTs[1-7] and 2 relevant systematic reviews.[8,9] The **TABLE** summarizes the RCTs.

Fiber may help—and doesn't hurt

A fair-quality crossover RCT (31 children, mean age 7 years, with CFC) compared fiber (glucomannan) with placebo for 4 weeks.[1] More children were successfully treated with fiber than placebo (45% vs 13%; number needed to treat [NNT]=3.125; *P*<.05). Parents rated children as doing better on fiber (68% vs 13%), and abdominal pain occurred less often (10% vs 42%; *P*<.05). No adverse effects were associated with fiber.

Osmotic laxatives, especially PEG, get results

A recent high-quality RCT compared the osmotic laxative polyethylene glycol 3350 plus electrolytes (PEG + E) with placebo in 51 children with CFC, 2 to 11 years of age.[2] The mean number of defecations per week was higher for children on PEG + E (3.12 vs 1.45; *P*<.001); straining or pain and stool consistency improved.

One good-quality RCT (100 children, 6 months to 15 years old with CFC) compared PEG + E with lactulose.[3] Both significantly increased stool frequency and decreased encopresis. However, PEG + E had a markedly higher success rate (56% vs 29%; NNT=3.7; *P*=.02). The 8-week trial found significantly more complaints about bad taste in the PEG + E group; the lactulose group reported higher rates of abdominal pain, straining, and pain at defecation. The only dropout because of adverse events (bad taste) occurred in the PEG + E group.

Another good-quality RCT showed that PEG + E effectively relieved fecal impaction (92% of 63 children) and was superior to lactulose for maintenance treatment. The rate of adverse effects (abdominal pain) was 64% with PEG + E and 83% with lactulose.[4]

One fair-quality RCT of 48 children

FAST TRACK

Polyethylene glycol plus electrolytes works well, but bad taste can be a problem.

TABLE

How laxatives for childhood constipation compare

INTERVENTION VS COMPARISON	NNT	EFFECTIVE DOSE	AVERAGE COST/MONTH
Glucomannan vs placebo[1]	3	100 mg/kg/d	$10-$30*
PEG + E vs placebo[2]	2	7-42 g/d	$14-$60*
PEG + E vs lactulose[3]	4	3-6 g/d vs 6-12 g/d	$20 vs $20
PEG + E vs mineral oil for disimpaction over 2 days[5]	5	20 mL/kg/h x 4 h/d 30-120 mL BID	$20 vs $20
Mineral oil vs senna[6]	3	3 mL/kg/d vs 1-4 tab/d	$8 vs $5
Lactulose vs senna[7]	4	15 mL/d vs 20 mL/d	$20 vs $10

*Retail price varies by manufacturer.
NNT, number needed to treat; PEG + E, polyethylene glycol 3350 plus electrolytes.

FAST TRACK

Low doses of PEG may be an effective long-term therapy for hard-to-manage constipation.

with fecal impaction compared PEG with mineral oil. PEG was more effective, but high-volume PEG caused more vomiting and less compliance.[5]

A small RCT found that mineral oil treated constipation more successfully than senna at 3 and 10 months of follow-up.[6] One poor-quality RCT found that senna was less effective than lactulose and had more side effects (colicky pain, diarrhea).[7]

A Cochrane systematic review found no RCTs of stimulant laxatives for CFC and concluded that evidence concerning the efficacy of these agents is insufficient.[8]

Few studies focus on nonpharmacologic management

A Cochrane systematic review of 9 small, poor-quality RCTs in children with functional fecal incontinence found no significant improvement when biofeedback was added to conventional treatment for as long as 12 months (odds ratio=1.11; 95% confidence interval, 0.78-1.58).[9] In 1 small trial, however, adding behavior modification to laxative therapy significantly reduced soiling episodes.

Notably, few studies have focused on nonpharmacologic management of CFC, and most laxative trials are of short duration.

Recommendations

The Constipation Guideline Committee of the North American Society for Pediatric Gastroenterology states that using medication in combination with behavior management can decrease time to remission in children with CFC. Lubricants (mineral oil) and osmotic laxatives (magnesium hydroxide, lactulose, and sorbitol) are safe and effective. Stimulants (senna and bisacodyl) can help some patients whose conditions are difficult to treat. Low doses of PEG may be an effective long-term therapy for hard-to-manage constipation.[10]

The University of Michigan Guidelines on CFC and soiling are similar. After clean-out, they recommend a maintenance phase that includes behavioral, dietary, and medication components. Osmotic laxatives and lubricants are recommended for long-term treatment; stimulant laxatives should be reserved for short-term use.[11] ■

References

1. Loening-Baucke V, Miele E, Staiano A. Fiber (glucomannan) is beneficial in the treatment of childhood constipation. *Pediatrics*. 2004;113:e259-e264.
2. Thomson MA, Jenkins HR, Bisset WM, et al. Polyethylene glycol 3350 plus electrolytes for chronic constipation in children: a double-blind, placebo-controlled, crossover study. *Arch Dis Child*. 2007;92:996-1000.

3. Voskuijl W, De Lorijn F, Verwijs W, et al. PEG 3350 (Transipeg) versus lactulose in the treatment of childhood functional constipation: a double-blind randomised, controlled, multicentre trial. *Gut*. 2004;53:1590-1594.
4. Candy DC, Edwards D, Geraint M. Treatment of faecal impaction with polyethylene glycol plus electrolytes (PEG + E) followed by a double-blind comparison of PEG+E versus lactulose as maintenance therapy. *J Pediatr Gastroenterol Nutr.* 2006;43:65-70.
5. Tolia V, Lin CH, Elitsur Y. A prospective randomized study with mineral oil and oral lavage solution for treatment of faecal impaction in children. *Aliment Pharmacol Ther.* 1993;7:523-529.
6. Sondheimer JM, Gervaise EP. Lubricant versus laxative in the treatment of chronic functional constipation of children: a comparative study. *J Pediatr Gastroenterol Nutr.* 1982;1:223-226.
7. Perkin JM. Constipation in childhood: a controlled comparison between lactulose and standardized senna. *Curr Med Res Opin.* 1977;4:540-543.
8. Price KJ, Elliott TM. What is the role of stimulant laxatives for constipation and soiling in children? *Cochrane Database Syst Rev.* 2001;(3):CD002040.
9. Brazzelli M, Griffiths P. Behavioural and cognitive interventions with or without other treatments for the management of faecal incontinence in children. *Cochrane Database Syst Rev.* 2006;(2):CD002240.
10. Constipation Guideline Committee of the North American Society for Pediatric Gastroenterology. Evaluation and treatment of constipation in infants and children: recommendations of the North American Society for Pediatric Gastroenterology, Hepatology and Nutrition. *J Pediatr Gastroenterol Nutr.* 2006;43:e1-e13.
11. University of Michigan Health System. Functional constipation and soiling in children. Ann Arbor, MI: University of Michigan Health System; February 2003. Available at: http://cme.med.umich.edu/pdf/guideline/peds08.pdf. Accessed January 27, 2008.