

FROM THE FAMILY PRACTICE INQUIRIES NETWORK

# What is the most effective way for relieving constipation in children aged >1 year?

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## ■ EVIDENCE-BASED ANSWER

A combination of laxatives, behavioral therapy, and balanced diet is the treatment of choice for pediatric constipation (strength of recommendation [SOR]: **B**, based on randomized, nonrandomized, controlled and uncontrolled clinical trials). Laxatives are used for disimpaction and maintenance therapy.

Trials that compare different laxatives have shown similar effectiveness, although polyethylene glycol (PEG) 3350 (MiraLax) may be better tolerated (SOR: B). The roles of dietary changes and acupuncture have been minimally studied.

## ■ EVIDENCE SUMMARY

Constipation in toddlers is characterized by a delay or difficulty in defecation that is present for 2 or more weeks. It is a common problem, accounting for 3% of all general pediatric visits. In most children, constipation is functional without pathological cause. Treatment for pathologic constipation is not addressed here.

Laxative therapies were compared in 2 studies. An unblinded, randomized, crossover trial enrolled 37 children referred for subspecialty evaluation of functional constipation. It found that PEG 3350 and lactulose were equivalent in improving stool frequency, stool form, and ease of passage.

However, there was a significant difference in total stool transit time in subjects taking PEG compared with those taking lactulose (47.6 hours vs 55.3 hours, respectively;  $P=.038$ ). In addition, twice as many parents and guardians rated PEG effective as those rating lactulose effective (84% vs 46%); and 73% of parents preferred PEG to lactulose.<sup>1</sup>

A randomized trial compared PEG with milk of magnesia in 49 children with functional constipation and

encopresis. Follow-up at 1, 3, 6, and 12 months revealed similar effectiveness in increasing bowel movement frequency, decreasing soiling episodes, and decreasing abdominal pain. It also revealed that PEG was more palatable and better-tolerated than milk of magnesia (33% of children refused to take milk of magnesia, whereas none refused PEG). No side effects from PEG were reported.<sup>2</sup>

Behavioral modification has been studied for constipation-related encopresis. A randomized controlled trial of 87 children with fecal soiling compared the effect of enhanced toilet training (including behavioral therapy) with aggressive medical management that included disimpaction, enemas, and regular laxative therapy. After 12 months, the enhanced toilet training with behavioral therapy was more effective in reducing daily frequency of soiling (78% of the children had significantly decreased average daily frequency of soiling compared with 41% in the aggressive medical management group;  $P<.0001$ ; absolute risk reduction=0.37; number needed to treat for 1 year=2.7).<sup>3</sup>

Dietary management centers on a balanced diet with whole grains, fruits, and vegetables. A case-control study evaluated 291 subjects with constipation and compared their diet with 1602 controls. Mean daily fiber intake was lower in the constipation group. Compared with fiber intake of more than 29 g/d, the relative risk was 8.0 for fiber intake of less than 12.4 g/d.<sup>4</sup>

A nonrandomized, controlled trial of acupuncture treatment enrolled 17 children with history of constipation for a minimum of 6 months. Bowel movement frequency improved in both males ( $1.5 \pm 0.1$ /week to  $4.4 \pm 0.6$ /week;  $P<.01$ ) and females ( $1.4 \pm 0.3$ /week to  $5.6 \pm 1.1$ /week;  $P<.01$ ) after 10 acupuncture sessions. No other bowel movement parameter was reported.<sup>5</sup>

## ■ RECOMMENDATIONS FROM OTHERS

The North American Society for Pediatric Gastroenterology and Nutrition (NASPGN) recommends parental education, initial disimpaction as needed, and maintenance therapy with a balanced diet, behavioral modification, and laxatives for all children aged >1 year. Recommended laxatives include mineral oil, magnesium hydroxide, lactulose, and sorbitol. Behavior modification includes regular toileting, unhurried time on the toilet after meals, diary of stool frequency, and a reward system.<sup>6</sup> The American Academy of Pediatrics supports the above guidelines.

A multispecialty panel from the University of Michigan used a structured literature review as a basis for a consensus guideline. The resulting protocol was similar to the NASPGN protocol, with the addition of stool softeners as an alternative to laxatives.<sup>7</sup>

### CLINICAL COMMENTARY

**After disimpaction, try bowel training, exercise, dietary fiber, and increased fluid**

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Successful treatment of chronic constipation in children involves skillful use of diet and lifestyle modification, medication, and behavioral interventions, especially if encopresis accompanies the constipation. After initial disimpaction with lubricant laxatives, osmotic laxatives, and enemas, I recommend a maintenance program of bowel training, exercise, dietary fiber, and increased fluid intake. Effective bowel training includes having toilet-trained children sit on the commode after breakfast and prior to afternoon outdoor play.

In keeping with Healthy People 2010 recommendations, as well as studies that link diets rich in fiber to decreased constipation, I encourage parents of toddlers and children to provide them with ample fruits, vegetables, and 6 servings of whole grains per day. I address psychosocial aspects of chronic constipation by acknowledging that family tensions may surround a child's bowel habits, assisting parents to establish a sense of control within their child, advocating a nonpunitive approach to soiling accidents, and suggesting positive reinforcement of their child's successes.

For medical management, I use primarily lactulose, although PEG 3350 (Miralax) has also been shown effective and safe for long-term use. I avoid mineral oil, due to the rare association with lipoid pneumonia; I also avoid sodium phosphate (Fleet) enemas in children aged <2 years, due to the associated risks of electrolyte disturbances and cardiac arrest in this population.

## REFERENCES

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## **DRUG BRAND NAMES**

Cetirizine • Zyrtec  
Clemastine • Tavist  
Doxepin, topical • Zonalon  
Fexofenadine • Allegra  
Hydroxyzine • Atarax, Vistarol  
Lansoprazole • Prevacid  
Lidocaine and prilocaine, topical • EMLA cream  
Loratadine • Claritin  
Omeprazole • Prilosec  
Pantoprazole • Protonix  
Pimecrolimus • Elidel  
Polyethylene glycol 3350 • MiraLax  
Rabeprazole • AcipHex  
Tacrolimus • Prograf