Prevention and treatment of acute constipation in infants and children

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INTRODUCTION — Constipation is a common problem throughout childhood and often accepted as a normal variation that will resolve as children get older. The opportunity for early intervention is often missed, and complications, such as anal fissure, stool withholding, and encopresis, may result. The prevention of constipation focuses on timely anticipatory guidance regarding diet, toilet training, and toileting behaviors. The treatment of constipation depends upon the age of the child and the duration of symptoms. It may involve education, dietary changes, behavior changes, and pharmacotherapy, alone or in combination [1,2].

The prevention and treatment of acute constipation will be discussed here. The definition, etiology, and diagnosis of constipation are presented separately, as is the treatment of chronic constipation and encopresis. (See "Constipation in children: Etiology and diagnosis" and "Treatment of chronic functional constipation and fecal incontinence in infants and children".)

ANTICIPATORY GUIDANCE — Discussion of dietary and bowel habits should be part of routine health supervision visits for children of all ages. There are certain times during a young child's life when constipation is likely to occur [3]. If parents are given appropriate and timely education, these episodes may be anticipated and prevented, or if not prevented, quickly treated with temporary interventions. Complaints of simple constipation should not be ignored. Painful bowel movements can lead to withholding of stool [4], worsening constipation, and eventual fecal impaction and encopresis, often without parental awareness of a problem. The pathogenesis of constipation is discussed in detail separately, but mentioned briefly here since it is relevant to the provision of anticipatory guidance. (See "Constipation in children: Etiology and diagnosis".)

Times when constipation is likely to occur include [3,5]:

- The introduction of solid foods or cow's milk
- Toilet training
- School entry

Transition to solid diet — The transition to a solid diet during infancy is a common trigger for constipation. This is because the transitional diet often includes inadequate amounts of fiber and fluid [6]. Ensuring adequate fiber and fluid intake may be helpful in preventing constipation or in treating mild episodic constipation. By contrast, there is little evidence that adding liquid or fiber to the diet is effective in treating severe chronic constipation. (See "Treatment of chronic functional constipation and fecal incontinence in infants and children".)

For infants and children younger than two years, a reasonable goal for fiber intake is about 5 grams per day. This can be accomplished by providing several servings daily of pureed vegetables, fruits, and a fiber-containing infant cereal. Most vegetables and fruits supply approximately 1 gram of fiber per serving, but prunes and peas can supply up to 2 grams. Rice infant cereal supplies a negligible amount of fiber, whereas whole wheat, barley, and multigrain cereals supply 1 to 2 grams per serving [7]. (See "Dietary recommendations for toddlers, preschool, and school-age children", section on 'Fiber'.)

Adequate amounts of fluid should be provided, although there is little evidence that increasing fluid intake beyond

these requirements prevents or treats constipation in infants or children who are not dehydrated. The minimum daily fluid intake depends upon the child's weight and ranges from 16 fluid ounces (500 mL) for a 5 kg infant, 32 ounces (960 mL) for a 10 kg child, to 42 ounces (1260 mL) for a 15 kg child, to 50 ounces (1500 mL) for a 20 kg child. (See "Maintenance fluid therapy in children".)

Transitioning from breast milk or formula to cow's milk also appears to trigger constipation in some individuals, although this association has not been established. If the development of constipation is temporally associated with transition to cow's milk, it is reasonable to do a trial of limiting cow's milk to 24 fluid ounces daily (475 to 700 mL), and/or a trial of a calcium-fortified soy milk or transition formula. The diet of these children should also be reviewed to ensure that they are receiving adequate amounts of fiber. (See "Constipation in children: Etiology and diagnosis", section on 'Cow's milk intolerance'.)

Constipation also may develop because of anal fissures, which cause the infant to withhold stool (avoid defecation) because of pain. Anal fissures may develop because of vigorous wiping of the anus during diaper changes, or because of passing hard stool.

Toilet training — Children of toilet training age are susceptible to constipation for a variety of reasons:

- Stool withholding – Toilet training may trigger constipation because toddlers may not respond to the need to defecate, and/or because children using adult-sized toilets without foot-support may not have sufficient leverage to successfully evacuate their stools. If stool passage is painful, toddlers may begin to withhold stool. Once withholding behavior has started, it can only be reversed by making the stools soft and passage of stools pain-free. Preventive measures include increasing fiber and decreasing milk intake, as described below, delaying toilet training until the child shows signs of readiness, and using a relaxed, "child-oriented" approach to toileting. If children show signs of stool withholding, it is often necessary to use short-term dietary interventions or laxatives, and sometimes to hold off on toilet training efforts. (See "Toilet training" and 'Toddlers and children' below.)

- Inadequate fiber – For prevention of constipation, we suggest a fiber goal of the child's age plus 5 to 10 grams/day, as recommended by a consensus conference on dietary fiber in childhood [8]. This translates to between 7 and 15 grams of fiber daily for children two to five years of age. The Institute of Medicine (IOM) recommends a somewhat higher goal for fiber intake: 14 grams/1000 kcals in the diet [9], which translates to about 20 grams/day in toddlers and young children. In our experience, this high target is impractical for many young children in view of other dietary goals, although the IOM target may be helpful for treatment of children with established constipation. (See "Dietary recommendations for toddlers, preschool, and school-age children", section on 'Fiber'.)

  Of note, consumption of excessive amounts of fiber can increase the risk of fecal impaction in children with stool withholding behaviors. Therefore, for children with stool withholding or a history of fecal impaction, extra fiber intake should be encouraged only after colorectal tone has been restored, eg, after several months of successful treatment with laxatives. (See "Treatment of chronic functional constipation and fecal incontinence in infants and children", section on 'Fiber'.)

- Excessive cow's milk – The excessive consumption of whole cow's milk (>32 fluid ounces [960 mL] per day) can slow intestinal motility and satiate the child, thereby diminishing the intake of other fluids and foods that promote soft stools, such as water, fruits, and vegetables [10,11]. Milk intake of 24 ounces per day (720 mL) is sufficient to meet the daily calcium requirement of children between one and five years of age. (See "Dietary recommendations for toddlers, preschool, and school-age children", section on 'Dairy products'.)

School entry — Transitioning to school can trigger constipation because of stool withholding if the child is reluctant to use the toilet at school, or because the change in schedule interferes with toileting. Moreover, as children reach school age they often use the bathroom by themselves, and parents may not be aware of the frequency or type of stools.

To avoid these problems, clinicians should encourage parents to regularly ask about their child's bowel movements. Parents also should be encouraged to monitor whether their child is holding back from or embarrassed about using the toilet at school. In addition, parents should promote routine, unhurried time on the toilet after meals. Finally, continued attention to fiber intake may help (table 1A-C). Goals for fiber intake for a six-year old child are 11 to 16 grams/day (based on the child's age plus 5 to 10 grams/day as recommended by the consensus conference on dietary fiber in childhood [8]), or 24 grams/day as recommended by the IOM [9].

ACUTE CONSTIPATION — When a history of constipation is obtained, even if it is of short duration (ie, less than two weeks), it is important to intervene to prevent the cycle of stool withholding leading to worsening or recurrent or chronic constipation. The intervention should include a follow-up plan to be sure that the constipation has resolved.

Toddlers and children — For children one year and older with hard stools and straining but minimal pain and no withholding behavior, bleeding, or anal fissure, dietary changes may be sufficient. Foods naturally high in fiber (ie, ≥3 grams of fiber per serving), (table 1B) should be recommended, along with adequate fluid intake (32 to 64 ounces [960 to 1920 mL] per day). Information regarding a high fiber diet, and a sample-menu for a 7- to 10-year-old child that can be printed out and given to parents is provided in the tables (table 1A, 1C).

For toddlers and children with stool withholding behavior, pain while defecating, rectal bleeding or anal fissure, we suggest initial treatment with an osmotic or lubricant laxative such as polyethylene glycol (PEG) without electrolytes (polyethylene glycol 3350, eg, Miralax) or mineral oil for at least a few days until the stool is consistently soft (table 2). Alternatively, several ounces of sorbitol-containing juices (eg, apple, prune, or pear) may be given daily, but tend to be less effective than PEG. Anal fissures can be treated topically with petroleum jelly. Meanwhile, the dietary measures described above should be implemented to help avoid recurrent constipation.

Infants — For infants who have not yet begun solid foods, acute constipation can be treated by the addition of undigestible, osmotically active carbohydrates to the formula, titrating the dose to induce a daily bowel movement [2]. One such option is addition of sorbitol-containing juices (eg, apple, prune, or pear). For infants four months and older, two to four ounces of 100-percent fruit juice per day is a reasonable starting dose. For infants who have begun solid foods, sorbitol-containing fruit purees can be used. To increase the fiber content of the infant's solid foods, multigrain or barley cereal may be substituted for rice cereal, and pureed peas or prunes can be substituted for other pureed fruits and vegetables [2]. Dark corn syrup has been used in the past. However, current preparations of dark corn syrup may or may not contain the glycoproteins that are fermented into osmotically active particles in the colon, so the syrup may be ineffective for treating constipation.

Glycerin suppositories or rectal stimulation with a lubricated rectal thermometer can be used occasionally if there is very hard stool in the rectum. These interventions should not be used frequently because tolerance may develop; in addition, glycerin may irritate the anus or rectal mucosa.

RECURRENT CONSTIPATION — It is important to identify and appropriately address continuing dietary problems and/or any precipitating events in infants and children who have recurrent acute episodes of constipation. Precipitating events may include recurrent episodes of painful defecation (eg, due to anal fissure, hard stool), fear of using the bathroom at school, and inadequate time to use the bathroom after meals or at school. (See 'Anticipatory guidance' above.)

Toddlers and children — Toddlers and children with recurrent episodes of constipation may need one or more of the following interventions during the time that precipitating factors are being addressed.

- Increase dietary fiber further – Children with recurrent constipation may benefit from further attention to dietary fiber intake, with relatively high targets for intake. The higher of the targets for fiber intake is 14 grams/1000 kcals in the diet, which translates to approximately 20 grams/day in early childhood, rising to 29 grams/day for adolescent girls and young women, and 38 grams/day for adolescent boys and young men [9]. Those who are unable or unwilling to consume adequate dietary fiber may need fiber supplements. Fiber supplements that are safe for children are available over-the-counter (table 3). However, to be effective, children who use these supplements should also consume 32 to 64 ounces (960 to 1920 mL) of water or other non-milk liquids

per day. Also, excessive fiber intake should be avoided in children with stool withholding behaviors or a history of fecal impaction, as discussed above. (See 'Toilet training' above.)

- Laxatives – Children with recurrent constipation also may need one or two doses of a laxative (table 2) at the onset of an episode, to clean out the hard stool and stimulate regular bowel movements. A maintenance regimen of laxatives should be considered if the stools remain hard, large in diameter, or continue to cause pain, as described for chronic constipation (table 4). (See "Treatment of chronic functional constipation and fecal incontinence in infants and children".)

- Disimpaction – Children who have not had a bowel movement for several days and cannot pass a stool may have fecal impaction. Such children may be treated with a sodium phosphate enema (using the appropriate sized enema for the child's age), followed by one or two doses of a laxative (table 2).

Infants — Infants with recurrent constipation should be treated with the same dietary interventions as described above for acute constipation (see 'Acute constipation' above). They may need additional measures to address fecal impaction. Glycerin suppositories or rectal stimulation with a lubricated rectal thermometer can be used, if necessary, to remove desiccated stool in the rectum [1,2]. However, these interventions should not be used as the mainstay of therapy since infants can become behaviorally conditioned to depend upon rectal stimulation to initiate stooling [1,12]. The use of enemas is not recommended for infants.

In infants older than six months who have ongoing or recurrent constipation despite dietary interventions, we suggest treatment with osmotic laxatives such as lactulose, sorbitol, polyethylene glycol (PEG) without electrolytes (polyethylene glycol 3350, eg, Miralax) [1,13]. The medication should be given daily, and the dose adjusted to achieve soft stools at least once daily. Stimulant laxatives (eg, senna, bisacodyl), mineral oil, and enemas should be avoided in infants because of their potential adverse effects [2].

Infants with severe or recurrent constipation, and especially those with constipation from birth, should be carefully evaluated for possible organic causes, including Hirschsprung disease, anorectal anomalies, and cystic fibrosis. (See "Constipation in children: Etiology and diagnosis", section on 'Organic causes'.)

FOLLOW-UP — Follow-up is important to avoid worsening cycles of recurrent constipation. For children with a single episode of constipation, parents should be encouraged to call if the constipation does not resolve quickly or if it recurs. For children with recurrent constipation, we suggest scheduling follow-up visits to determine whether the constipation is optimally managed.

Although it is not necessary for every child to have a daily bowel movement, intervention to soften and increase the stool frequency is essential if hard or painful stools persist. Early intervention may help to prevent fecal retention, which may progress to chronic constipation and encopresis. (See "Constipation in children: Etiology and diagnosis" and "Definition, clinical manifestations, and evaluation of functional fecal incontinence in infants and children".)

INFORMATION FOR PATIENTS — UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

- Basics topics (see "Patient information: Constipation in children (The Basics)" and "Patient information: Giving your child over-the-counter medicines (The Basics)")

- Beyond the Basics topics (see "Patient information: Constipation in infants and children (Beyond the Basics)")

SUMMARY AND RECOMMENDATIONS — Constipation is a common problem throughout childhood. Early intervention during acute or recurrent episodes of acute constipation can prevent complications such as anal fissure, stool withholding, chronic constipation, and encopresis.

Triggers and prevention

- Discussion of dietary and bowel habits should be part of routine health supervision visits for children of all ages. Children are susceptible to constipation at certain times of life [3]. These episodes may be anticipated and prevented, or if not prevented, quickly treated, if parents are given appropriate and timely anticipatory guidance. This includes:

  - Infant transitioning to a solid diet – The transitional diet often includes inadequate amounts of fiber and fluid. To avoid constipation, the diet should include at least 5 grams of fiber daily. This can be accomplished by providing several servings daily of pureed vegetables, fruits, and a fiber-containing infant cereal. The minimum daily fluid intake ranges from 16 fluid ounces (480 mL) for a 5 kg infant to 32 ounces (960 mL) for a 10 kg infant. Anal fissures or irritation also may contribute to constipation; these can be caused by vigorous wiping during diaper changes. (See 'Transition to solid diet' above.)

  - Toilet training – Children of toilet training age are susceptible to constipation because of stool withholding, inadequate fiber intake, and/or excessive milk intake. Preventive measures include increasing fiber and decreasing milk intake, delaying toilet training until the child shows signs of readiness, and using a relaxed, “child-oriented” approach to toileting. If children show signs of stool withholding, it is often necessary to use short-term dietary interventions or laxatives, and sometimes to hold off on toilet training efforts. Consumption of cow’s milk should be limited to 24 fluid ounces (720 mL) per day. The diet should include at least 7 to 15 grams of fiber daily for children two to five years. (See 'Toilet training' above.)

  - School entry – Transitioning to school can trigger constipation because of stool withholding if the child is reluctant to use the toilet at school, or because the change in schedule interferes with toileting. To avoid these problems, parents should be encouraged to monitor whether their child is holding back from or embarrassed about using the toilet at school and promote routine, unhurried time on the toilet. Goals for fiber intake for a six-year old child are at least 11 to 16 grams/day (based on the child’s age plus 5 to 10 grams/day) (table 1A-C). (See 'School entry' above.)

Acute episodes of constipation

- Acute episodes of constipation in children one year and older can usually be treated with dietary changes, including increasing fiber and ensuring adequate fluid intake if the symptoms are mild. For those with stool withholding behavior, pain while defecating, rectal bleeding or anal fissure, we suggest initial treatment with an osmotic or lubricant laxative, rather than dietary intervention alone (**Grade 2B**). Appropriate choices include polyethylene glycol (PEG) without electrolytes (polyethylene glycol 3350, eg, Miralax) or mineral oil, given for at least a few days until the stool is consistently soft (table 2). Meanwhile, dietary changes should also be instituted, to prevent relapse. Parents should be encouraged to follow-up if the constipation does not resolve quickly or if it recurs. (See 'Toddlers and children' above.)

- Acute constipation in infants can be treated by the addition of undigestible, osmotically active carbohydrates to the formula, such as sorbitol-containing juices (eg, apple, prune, or pear). For infants who have begun solid foods, sorbitol-containing fruit purees can be used. To increase the fiber content of the infant’s solid foods, multigrain or barley cereal may be substituted for rice cereal, and pureed peas or prunes can be substituted for other pureed fruits and vegetables. Glycerin suppositories or rectal stimulation with a lubricated rectal thermometer can be used occasionally if there is very hard stool in the rectum, but should not be used

frequently. (See 'Infants' above.)

Recurrent constipation

- Toddlers and children with recurrent constipation should be treated with a course of laxatives (table 2), increasing fiber intake in the diet or with supplements (using a higher target of 14 grams/1000 kcals in the diet, which translates to approximately 20 grams/day in early childhood) (table 1A-B), and/or fecal disimpaction if necessary (using a sodium phosphate enema). Meanwhile, possible precipitating factors should be addressed. Follow-up visits should be scheduled to ensure that the constipation is optimally managed. A maintenance regimen of laxatives should be considered if the stools remain hard, large in diameter, or continue to cause pain, as described for chronic constipation (table 4). (See 'Toddlers and children' above.)
- Infants with recurrent constipation should be treated with the same dietary interventions as described above for acute constipation. Glycerin suppositories or rectal stimulation with a lubricated rectal thermometer may be used occasionally to remove desiccated stool in the rectum, but should not be used frequently because infants can become behaviorally conditioned to depend upon rectal stimulation to initiate stooling. Infants with severe or recurrent constipation, and especially those with constipation from birth, should be carefully evaluated for possible organic causes. (See 'Infants' above.)

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Topic 5872 Version 16.0

GRAPHICS

Guidelines for a high fiber diet for children

Why we need fiber
Fiber helps children and adults have regular bowel movements and helps prevent constipation and other health problems. Dietary fiber helps keep the bowel and digestive tract healthy and enhances feelings of fullness after eating.
How much fiber is needed
The optimal intake for dietary fiber is 14 grams/1000 kcals in the diet, as recommended by the Institute of Medicine.*[1] For children, this translates to an intake of about 20 grams/day in early childhood, rising to 29 grams/day for adolescent girls and young women, and 38 grams/day for adolescent boys and young men. To find out the number of grams of fiber in a certain food, read the label, or see the foods listed in this table. High fiber foods contain 3 or more grams of fiber per serving.
How to help your child eat more fiber
A high fiber diet should be a balanced diet with foods from all the food groups. The most common sources of fiber are whole grain breads and cereals, legumes and nuts, fruits, and vegetables. Include these in your child's balanced diet:
Offer your child a variety of high fiber foods during the day rather than giving only one or two high fiber foods.
Mix a high fiber cereal with a cereal your child likes.
Offer fresh fruits with the skin on. Prunes and pears act as natural laxatives.
Offer raw vegetables, such as carrots, jicama, or cherry tomatoes for snacks and with meals. Offer a salad with dark green lettuce each day.
Use whole wheat bread or white bread with added fiber, brown rice, whole wheat crackers, bran muffins, barley, bran cereals, or oatmeal. Use less refined white flour breads, cereals, and other starches.
Offer 4 to 6 ounces of prune, apple, orange, or pear juice each day. Remember that fresh fruit has more fiber than juice.
Offer snacks that have fiber, like granola bars, fruit bars, fig cookies, or popcorn (after age 3 years).
Help your child develop a taste for bran. Try to include 2 to 4 tablespoons of some form of bran each day.
Add nuts or seeds to breads and salads, or use them as a snack. This is not recommended for children younger than three years.
Read labels on foods, and look for foods with 3 or more grams of fiber per serving. Have your child eat 3 or more servings each day of breads and cereals made from whole grains and bran. Have your child eat 5 or more servings of vegetables and fruits, including beans. It is important to increase water in the diet when you increase fiber.
Preventing constipation
If your child is constipated, follow the dietary guidelines above. Also, encourage your child to drink at least 4 to 8 cups (32 to 64 ounces) of fluid per day, preferably water, low-fat milk, and low-sugar decaffeinated beverages.

* Somewhat lower goals for fiber intake may be sufficient for prevention rather than treatment of constipation. A practical target is the child's age plus 5 to 10 grams per day.[2]

References:

1. *Dietary Guidelines for Americans 2005. US Department of Health and Human Services. Available at: www.health.gov/dietaryguidelines/pubs.htm.*
2. *Williams CL, Bollella M, Wynder EL. A new recommendation for dietary fiber in childhood. Pediatrics 1995; 96:985.*

Graphic 76461 Version 4.0

High fiber foods

	Fiber (grams)
Cereal (½ cup serving)	
Fiber One	13
100% Bran	12
All Bran	12
Bran Buds	12
Kashi Go Lean	5
Kellogg's Complete Bran Flakes	5
Grape Nuts	5
Raisin Bran*	3 to 5
Cracklin' Oat Bran*	4
100% Whole Grain Wheat Chex	3
Fruit and Fibre	3
Great Grains	3
Frosted Mini Wheats	3
Kellogg's Low Fat Granola	3
Cheerios	2•
Wheaties	2•
Instant oatmeal	2•Δ
Fruit	
Pear (one)	4
Strawberries (1 cup)	3
Apple (one, with skin)	3
Dried fruits (eg, raisins) (3 Tablespoons)	3
Papaya (one)	3
Peach (fresh)	2•
Plums (two)	2•
Mango	2•
Nectarine	2•
Avocado (½ medium)	2•
Tomato (one medium)	2•
Vegetables (cooked unless indicated)	
Pinto, kidney, black, lima beans (½ cup)	4 to 7

Sweet potato (1 medium)	4
Lentils (½ cup)	4
Jicama (½ raw)	3 to 4
Baked potato with skin (medium)	3
Corn (½ cup)	3
Peas (½ cup)	3
Broccoli (½ cup)	2•
Cabbage (½ cup)	2•
Spinach (½ cup)	2•
Cauliflower (¾ cup)	2•
Carrots (1 medium raw, or ½ cup cooked)	2•

%: percent.

* These cereals are also high in sugar (15 to 20 grams/serving).

• These foods contain relatively small amounts of fiber, but may still be helpful to provide a portion of the child's fiber intake.

Δ Reflects insoluble fiber, which is the most relevant type of fiber for prevention and treatment of constipation. Soluble fiber has different health benefits. Some "high fiber" forms of instant oatmeal contain up to 10 grams of fiber. However, most of this additional fiber is soluble, which may not be as valuable as insoluble fiber for prevention and treatment of constipation.

Graphic 77796 Version 4.0

High fiber diet sample menu

Sample menu for a 7- to 10-year-old child, with approximate fiber content* (estimated fiber requirement for this age group: 25 to 31 grams per day)
Breakfast (6.5 grams fiber)
1 cup instant oatmeal (2 grams fiber)*•
1 slice whole-grain toast (1.5 grams fiber)
1 teaspoon margarine or butter
1 cup strawberries (3 grams fiber)
8 ounces skim milk
Lunch (10 grams fiber)
Turkey sandwich on whole grain bread (3 grams fiber)
1 teaspoon mustard
1 ounce whole grain chips (2 grams fiber)
1 medium apple (3 grams fiber)
8 baby carrots (2 grams fiber)
Bottled water
Snack 1 (3 grams fiber)
4 fig bar cookies (3 grams fiber)
8 ounces skim milk
Dinner (8.5 grams fiber)
3 ounces pork tenderloin
½ cup mashed sweet potatoes (4 grams fiber)
½ cup green beans (1.5 grams fiber)
¼ cup baked beans (3 grams fiber)
2 teaspoons margarine or butter
8 ounces skim milk
Snack 2
½ cup vanilla bean ice-cream

* Reflects insoluble fiber, which is the most relevant type of fiber for prevention and treatment of constipation. Soluble fiber has different health benefits.
• Some "high fiber" forms of instant oatmeal contain up to 10 grams of fiber. However, most of this additional fiber is soluble, which may not be as valuable as insoluble fiber for prevention and treatment of constipation.

Graphic 62957 Version 5.0

Starting doses of laxatives for functional constipation in children[1]

Osmotic and lubricant laxatives		
Laxative	**Dose**	**Onset (hours)**
Polyethylene glycol 3350 powder (MiraLax, GlycoLax)*		24 to 96
Children (weight-based dosing)	0.4 to 0.8 g/kg per day•Δ in 2 to 8 ounces (60 to 240 mL) of noncarbonated beverage; (maximum 17 g daily for starting dose)	
Children (age-based dosing)		
Younger than 18 months	0.5 to 1 teaspoon once daily	
18 months to 3 years	2 to 3 teaspoons once daily	
Older than 3 years	2 to 4 teaspoons once daily•Δ	
Adults	17 g of powder (1 heaping tablespoon) per day, in 8 ounces of water or other noncarbonated beverage	
Lactulose (70 percent solution)		24 to 48
Children	1 mL/kg (up to adult dose), once or twice daily; (maximum 60 mL daily)	
Adults	15 to 30 mL, once daily (maximum 60 mL/day)	
Sorbitol (syrup, 70 percent solution)		24 to 48
1 to 11 years old	1 mL/kg, once or twice daily; (maximum 30 mL daily)	
12 years to adults	15 to 30 mL, once or twice daily	
Mineral oil	Caution: Should not be used in individuals at risk for aspiration, including infants, neurologically impaired children, or patients with marked gastroesophageal reflux	6 to 8
1 to 11 years old	1 to 3 mL/kg, once daily; (maximum 45 mL daily)	
12 years to adults	15 to 45 mL daily	
Magnesium	1 to 2 mL/kg, once daily	0.5 to 6

hydroxide (milk of magnesia)		
1 to 11 years old	1 to 3 mL/kg daily of 400 mg/5 mL solution; (maximum 60 mL daily)	
12 years to adults	30 to 60 mL daily of 400 mg/5 mL solution 15 to 30 mL daily of 800 mg/5 mL solution	
Stimulant laxatives		
Laxative	**Dose**	**Onset (hours)**
Senna (syrup, 8.8 mg sennosides/5 mL; or tablets 8.6 mg sennosides/tab)		6 to 12
1 to 2 years old	1.25 to 2.5 mL, once or twice daily	
2 to 6 years old	2.5 to 3.75 mL, once or twice daily	
6 to 12 years old	5 to 7.5 mL (or 1 to 2 tabs), once or twice daily	
12 years and older	5 to 15 mL (or 1 to 3 tabs), once or twice daily	
Bisacodyl (10 mg suppositories; or 5 mg tablets)		0.25 to 1 (rectal) 6 to 10 (oral)
2 to 12 years old	1/2 to 1 suppository (**or** 1 to 2 tablets), once daily	
12 years to adult	1 to 3 tablets (**or** 1 suppository), once daily	
Glycerin (glycerol) suppositories◇		0.25 to 0.5
Children 2 to 5 years	1 pediatric suppository, once daily	
Children 6 years to adult	1 adult suppository, once daily	

This table outlines **initial** doses for each laxative medication; the dose should then be increased or decreased as needed to produce regular soft stools. Refer to the text of the UpToDate topic on chronic constipation in children for guidelines about dose titration. All of the doses are for oral administration except bisacodyl and glycerin suppositories.

* Polyethylene glycol (PEG) 3350 is also known as PEG without electrolytes and macrogol. We suggest mixing polyethylene glycol powder in palatable beverages such as fruit juices, sports drinks or milk which may mask gritty texture. Trade names shown are for over-the-counter products

available in the United States and some other countries.

• Doses of 1 to 1.5 g/kg/day may be used for fecal disimpaction, for up to 6 consecutive days.[1]

Δ After dose titration, maintenance doses of PEG 3350 may be as high as 1.5 g/kg per day (maximum approximately 34 grams daily) for some patients.[2]

◇ Glycerin suppositories should not be used frequently because infants may become behaviorally conditioned to depend upon rectal stimulation to initiate stooling. In addition, glycerin may irritate the anus or rectal mucosa, causing symptoms to become chronic.

References:

1. *Tabbers MM, Dilorenzo C, Berger MY, et al. Evaluation and Treatment of Functional Constipation in Infants and Children: Evidence-Based Recommendations From ESPGHAN and NASPGHAN. J Pediatr Gastroenterol Nutr 2014; 58:265.*
2. *Pashankar DS, Bishop WP. Efficacy and optimal dose of daily polyethylene glycol 3350 for treatment of constipation and encopresis in children. J Pediatr 2001; 139:428.*

Graphic 63381 Version 5.0

Over the counter fiber supplements

Product	Amount	Frequency
Metamucil	12 years and over: 1 teaspoon or 1 tablespoon, depending on concentration and formulation	1-3 times daily
	6 to 12 years: 1/2 to 1 teaspoon or 1/2 tablespoon depending on concentration and formulation	
	Under age 6: 1/4 to 1/2 teaspoon	
Benefiber	12 years and over: 1 to 2 tablespoons	1-3 times daily
	7 to 11 years: 1/2 to 1 tablespoon	
	Under age 7: 1/4 to 1/2 tablespoon	
Citrucel	12 year and over: 1 rounded tablespoon	1-3 times daily
	6 to 12 years: 1/2 tablespoon	
	Under age 6: 1/4 to 1/2 tablespoon	

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Typical regimen for a child with recurrent or chronic constipation without fecal impaction or incontinence

Step 1	Start 2 to 4 teaspoons (3.5 teaspoons = 17 grams) of PEG 3350 (eg, MiraLax, GlycoLax) once daily, in 4 to 8 ounces (60 to 240 mL) of noncarbonated beverage (or appropriate dose of other laxative).
Step 2	Increase or decrease PEG 3350 by 1 to 2 teaspoons every 2 to 3 days, until the desired result of daily soft stools is achieved. Maximum dose is 1 heaping tablespoon (17 grams) twice daily.
Step 3	Follow-up by phone or a return visit within 1 month to be sure the laxative is effective.
Step 4	Continue to work on adding dietary fiber and extra liquids to the diet each day.
Step 5	After 6 to 8 weeks of soft daily bowel movements, begin to taper the dose of PEG 3350 by ½ to 1 teaspoon every 2 weeks, until daily movements continue without the need for a laxative.
Step 6	If stools become hard once again, increase the dose slightly and retry weaning off the laxative in another 6 to 8 weeks.
Step 7	This process may take from 2 to 4 weeks to six months, but the end result should be resolution of the constipation.

This table describes a typical regimen for children older than three years with mild or moderate constipation **without** fecal impaction. Children with mild chronic constipation may be treated with dietary changes alone rather than medication, if desired. Children **with** fecal impaction, with or without overflow incontinence, should first be disimpacted with a regimen of oral and/or rectal medications. In most cases, these steps should be combined with family education and behavior modification (toileting) to enhance efficacy and prevent relapse. For details, refer to the text of the UpToDate topic on chronic constipation in children.

PEG 3350: polyethylene glycol without electrolytes, also known as macrogol.

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Disclosures

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