

Management of chronic constipation in adults

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INTRODUCTION

Constipation is a common complaint that may be due to a variety of causes. Appropriate management requires an evaluation for secondary etiologies, such as systemic disorders and drugs ([table 1A-B](#)). Once secondary causes have been eliminated, idiopathic constipation may be associated with normal or slow colonic transit, defecatory dysfunction (pelvic floor dysfunction), or both.

This topic review will discuss the management of idiopathic chronic constipation. The etiology and evaluation of chronic constipation, as well as the management of constipation related to chronic opiates, are discussed elsewhere. (See "[Etiology and evaluation of chronic constipation in adults](#)" and "[Prevention and management of side effects in patients receiving opioids for chronic pain](#)".)

GENERAL APPROACH

The approach to a patient with chronic constipation will depend on whether studies indicate normal or slowed colonic transit and whether there is a defecatory dysfunction ([algorithm 1](#)).

The specific choice of agents and order of their introduction varies with the etiology of the condition.

- Management of chronic constipation includes patient education, behavior modification, dietary changes, and laxative therapy. Severe, intractable, slow transit constipation is rare and may be treated with surgery, but with extreme caution; patients should be referred to specialized centers for a full evaluation prior to surgery. Treatment for normal or slow transit constipation is shown in an algorithm ([algorithm 2](#)).
- Management of defecatory dysfunction involves suppositories or biofeedback ([algorithm 3](#)).

Patients with both slow transit and defecatory dysfunction should be reevaluated after treatment of the defecatory dysfunction.

INITIAL MANAGEMENT

The initial management of idiopathic chronic constipation includes patient education, dietary changes, bulk-forming laxatives, and/or the use of non-bulk-forming laxatives or enemas. Efficacy, safety, convenience, costs, and clinical response all weigh into the choice of the initial treatment selected.

Patient education — Patient education involves efforts to reduce dependency on laxatives by emphasizing that daily bowel movements are not the norm or necessary for health, and to increase fluid and fiber intake. Patients who overuse laxatives should be advised to try to taper their use, as they introduce new measures to improve bowel function. Patients should be advised to try to defecate after meals, thereby taking advantage of normal postprandial increases in colonic motility. This is particularly important in the morning when colonic motor activity is highest. (See "[Patient education: Constipation in adults \(Beyond the Basics\)](#)".)

Dietary changes and bulk-forming laxatives — Dietary fiber and bulk-forming laxatives such as [psyllium](#) or [methylcellulose](#) are the most physiologic and effective approach to therapy. Taken together with adequate fluids, this can improve bowel habits in many patients with constipation [[1-4](#)]. Prunes were also shown to be effective in one trial [[5](#)]. The crossover trial included 40 patients with chronic constipation who were assigned to receive either prunes or

psyllium daily for three weeks followed by a one week washout period prior to switching to the other treatment. Patients reported more complete spontaneous bowel movements while receiving prunes compared with psyllium (mean 3.5 versus 2.8 per week). In addition, patients reported improved stool consistency with prunes. There were no differences in straining and global constipation symptoms. Both treatments were well tolerated.

Fiber — Fiber supplementation can improve symptoms in patients with constipation. Fiber is available in a large variety of supplements and natural foods ([table 2](#)). Because fiber supplements are low cost, easy to use, and safe, they are frequently used first in the management of constipation. Cereal fibers generally possess cell walls that resist digestion and retain water within their cellular structures. Fiber found in citrus fruits and legumes stimulates the growth of colonic flora, thereby increasing fecal mass [[6](#)]. Wheat bran is one of the more effective fiber laxatives, but may aggravate bloating and abdominal pain in irritable bowel syndrome.

There is a dose response between fiber intake, water intake, and fecal output [[7,8](#)]. Larger particle size of the fiber source, such as the large particle size of cereal products, enhances fecal bulking effects. In addition to fiber, sugar components ([sorbitol](#) and fructose) of foods such as apples, peaches, pears, cherries, raisins, grapes, and nuts are also beneficial.

The recommended amount of dietary fiber is 20 to 35 g/day. In addition to consuming foods with high fiber, patients may add raw bran (two to six tablespoons with each meal) followed by a glass of water or another beverage to achieve the fiber intake goal.

For some patients (and especially almost all those with slow transit constipation), fiber increases bloating and distention, leading to poor compliance (estimated to be as low as 50 percent) [[9](#)]. Patients should be warned that consuming large amounts of fiber can cause abdominal bloating or flatulence; this can be modulated by starting with small amounts and slowly increasing fiber intake according to tolerance and efficacy.

Bulk-forming laxatives — Bulk-forming laxatives include [psyllium](#) seed (eg, Metamucil), [methylcellulose](#) (eg, Citrucel), calcium [polycarbophil](#) (eg, FiberCon), and [wheat dextrin](#) (eg, Benefiber) ([table 3](#)). They are natural or synthetic polysaccharides or cellulose derivatives that primarily exert their laxative effect by absorbing water and increasing fecal mass. These laxatives are effective in increasing the frequency and softening the consistency of stool with a

minimum of adverse effects. They may be used alone or in combination with an increase in dietary fiber.

Despite substantial anecdotal clinical experience indicating benefit for bulk-forming laxatives, objective evidence regarding their effectiveness is inconsistent. A systematic review found evidence that [psyllium](#) increases stool frequency in patients with chronic constipation, but found insufficient evidence for other forms of fiber including calcium [polycarbophil](#), [methylcellulose](#), and bran [[10,11](#)].

Other laxatives — Patients who respond poorly to fiber, or who do not tolerate it, may require laxatives other than bulk-forming agents ([table 3](#)). There are few data comparing various non-bulk-forming laxative options [[12](#)]. The risk of side effects from these agents is minimal [[4,10,11](#)]. Thus, the choice among them is based upon costs, ease of use, patient preference, and results of response to empiric treatment.

Surfactants — There is little evidence to support the use of surfactant agents in chronic constipation. Stool softeners such as [docusate](#) sodium (eg, Colace) are intended to lower the surface tension of stool, thereby allowing water to more easily enter the stool. Although these agents have few side effects, they are less effective than other laxatives [[10](#)]. A systematic review concluded that stool softeners may be inferior to [psyllium](#) for improvement in stool frequency [[10](#)].

Osmotic agents — Polyethylene glycol (PEG), poorly absorbed or nonabsorbable sugars, and saline laxatives cause intestinal water secretion and thereby increase stool frequency. Excessive use of these agents may result in electrolyte and volume overload in patients with renal and cardiac dysfunction [[9](#)].

- PEG – PEG electrolyte solutions (eg, GoLYTELY) and powdered preparations (eg, MiraLAX) that do not contain electrolytes are available for the treatment of chronic constipation [[13,14](#)]. A systematic review found evidence that polyethylene glycol is effective in improving stool frequency and consistency [[10](#)]. A reasonable approach is to start with 17 g of powder dissolved in 8 oz of water once daily and titrate up or down (to a maximum of 34 g daily) to effect. There is no need to use PEG more than once daily. If patients do not respond, one can decrease PEG to 8.5 from 17 g daily and add a stimulant laxative every other to every third day as needed.

- Synthetic disaccharides – [Lactulose](#) (eg, Enulose) is a synthetic disaccharide. It is not metabolized by intestinal enzymes; thus, water and electrolytes remain within the intestinal lumen due to the osmotic effect of the undigested sugar. Lactulose requires some time (24 to 48 hours) to achieve its effect. [Sorbitol](#) is an equally effective and a less expensive alternative. A systematic review found evidence that lactulose is effective in improving stool frequency and consistency [10]. Both lactulose and sorbitol may cause abdominal bloating and flatulence. PEG, however, is superior to lactulose [15].
- Saline – Saline laxatives such as milk of magnesia, [magnesium citrate](#), or water containing high amounts of [magnesium sulfate](#) are poorly absorbed and act as hyperosmolar solutions [16]. Hypermagnesemia, seen primarily in patients with renal failure, is the major complication.

Stimulant laxatives — Stimulant laxatives such as [bisacodyl](#) (eg, some forms of Dulcolax), [senna](#) (eg, Senokot), and sodium picosulfate (eg, Dulcolax drops) primarily exert their effects via alteration of electrolyte transport by the intestinal mucosa. They also increase intestinal motor activity. A randomized four-week trial of sodium picosulfate (10 mg daily) in 45 patients with chronic constipation demonstrated improved bowel function for those receiving medication compared with placebo [17].

A second randomized trial looked at the use of [bisacodyl](#) [18]. In this trial, 368 patients were assigned to receive either bisacodyl (10 mg daily) or placebo for four weeks. At baseline, patients in both groups reported having a mean of 1.1 complete spontaneous bowel movements per week. At the end of treatment, patients in the bisacodyl group had significantly more complete spontaneous bowel movements per week compared with the placebo group (5.2 versus 1.9). Bisacodyl was also superior to placebo with regard to quality of life scores. Overall, bisacodyl was well tolerated, although diarrhea and abdominal pain were more common in the bisacodyl group compared with the placebo group (53 versus 2 percent and 25 versus 3 percent, respectively).

Continuous daily ingestion of these agents may be associated with hypokalemia, protein-losing enteropathy, and salt depletion. Thus, these drugs should be used with caution if taken chronically [19].

There is no convincing evidence that chronic use of stimulant laxatives causes structural or functional impairment of the colon, nor does it increase the risk for colorectal cancer or other

tumors [20,21].

MANAGEMENT OF SEVERE CONSTIPATION

Patients with severe constipation have generally failed the above measures and require a different approach to therapy.

Suppositories — For treatment of defecatory dysfunction, we favor an initial trial of suppositories ([glycerin](#) or [bisacodyl](#)) since suppositories can be effective in liquifying stool and thereby overcoming obstructive defecation.

Disimpaction — Patients with a fecal impaction (a solid immobile bulk of stool in the rectum) should initially be disimpacted starting with manual fragmentation if necessary. After this is accomplished, an enema with [mineral oil](#) will help to soften the stool and provide lubrication.

If disimpaction is unsuccessful or only partially successful, we order a water-soluble contrast enema (Gastrografin or Hypaque) administered under fluoroscopy to assure absence of any obstruction and to eliminate more proximal impactions. Occasionally, fractionation of impacted stool beyond the reach of the finger must be accomplished using flexible or rigid sigmoidoscopy with instrumentation. The colon must then be thoroughly evacuated. This can be accomplished with daily warm water enemas for up to three days, or by drinking a balanced electrolyte solution containing polyethylene glycol (PEG) until cleansing is complete. We prefer warm water enemas (three to six ounces) in older adults because of the potential dangers of [sodium phosphate](#) enemas in this age group [22,23]. This was demonstrated in a retrospective series in which the use of sodium phosphate enemas in older adults (mean age 80 years, all but one of age 70 years or older) was associated with complications including hypotension and volume depletion, hyperphosphatemia, hypo- or hyperkalemia, metabolic acidosis, severe hypocalcemia, renal failure, and electrocardiogram changes (prolonged QT interval) [22]. We suggest that sodium phosphate enemas be avoided in older adults.

[Sorbitol](#), [lactulose](#), or electrolyte-free PEG-containing solution may be given after bowel cleansing to produce one stool at least every other day. The patient is instructed to use the bathroom after meals to take advantage of meal-stimulated increases in colonic motility. [Bisacodyl](#) or glycerine suppository is administered if there is no defecation after two days to prevent recurrence of fecal impaction. Alternatively, enemas may be administered. These

approaches have achieved success rates of up to 78 percent of patients with idiopathic constipation, although relapses are not uncommon [24]. Treatment failures have been attributed to patient and family noncompliance; underlying disturbances of bowel function may also have a role.

A modified program may be used in demented or bedridden patients with fecal impaction. After disimpaction and bowel cleansing with enemas or PEG-containing solutions, a fiber-restricted diet together with cleansing enemas once or twice per week will assist nursing management by decreasing the buildup of stool and recurrence of fecal impaction.

Behavioral approaches — Habit training has been used successfully in children with severe constipation. A modified program may also be helpful in adults with neurogenic constipation, dementia, or those with physical impairments.

Biofeedback — Biofeedback is a behavioral approach that can be used to correct inappropriate contraction of the pelvic floor muscles and external anal sphincter during defecation in patients with defecatory dysfunction such as dyssynergic defecation [25,26].

Various instruments, including anal plugs and anorectal manometers, have been used to monitor external anal sphincter pressures during attempted expulsion of the apparatus. The patient watches the recordings of electromyography (EMG) activity or sphincter pressure responses and is asked to modify inappropriate responses through trial and error.

Clinical improvement has been reported in adults who have received EMG biofeedback for defecatory dysfunction [26-31]. Two controlled trials in such patients found that biofeedback was more effective than laxatives [26,30]. Approximately two-thirds of patients with dyssynergic defecation have coexisting slow transit constipation. In this group of patients, biofeedback improves bowel function, dyssynergia, and colonic transit by improving outlet dysfunction [25]. However, biofeedback does not appear to benefit patients with slow transit constipation without dyssynergic defecation [29]. (See "[Overview of gastrointestinal motility testing](#)".)

Biofeedback is not widely available, has not been well standardized, and results may vary at different centers. However, where available, it is an attractive alternative for patients with pelvic floor dysfunction and severe constipation as it provides the potential for treatment without laxatives.

Pharmacologic therapy

Guanylate cyclase-C receptor agonists

Linaclotide — [Linaclotide](#) is a minimally absorbed peptide agonist of the guanylate cyclase-C receptor that stimulates intestinal fluid secretion and transit. Linaclotide has been approved by the US Food and Drug Administration for the treatment of chronic idiopathic constipation at a dose of 145 micrograms daily [32]. A dose of 72 micrograms daily can also be used based on patient presentation and tolerability of the higher dose [33,34]. However, the role of linaclotide in treating chronic constipation and the long-term risks and benefits remain to be determined. In two large phase 3 trials of patients with chronic constipation, the linaclotide treated groups (both 145 microgram and 290 microgram) had significantly higher rates of three or more complete spontaneous bowel movements (CSBM) per week and an increase in one or more CSBMs from baseline during at least 9 out of 12 weeks as compared with placebo (145 micrograms: 21 and 16 percent; 290 micrograms: 19 and 21 percent; versus placebo: 3 and 6 percent). The most common and dose-related adverse event was diarrhea that led to discontinuation of treatment in 4 percent of patients in both linaclotide-treated groups [35].

Plecanatide — [Plecanatide](#) has been approved by the US Food and Drug Administration for the treatment of chronic idiopathic constipation at a dose of 3 mg daily [36]. The safety and efficacy of plecanatide was evaluated in two 12 week, placebo-controlled trials. A total of 2683 patients with chronic constipation were randomly assigned to receive a placebo or plecanatide (3 mg or 6 mg once daily) [37,38]. Patients treated with plecanatide at both dosages were more likely to experience improvement in the frequency of complete spontaneous bowel movements as compared with placebo (20 percent versus 13 percent). The most common adverse effect was diarrhea that led to discontinuation of treatment in approximately 1 percent of patients treated with plecanatide.

Lubiprostone — [Lubiprostone](#) is a locally acting chloride channel activator that enhances chloride-rich intestinal fluid secretion [39]. Its approval was based upon two placebo-controlled trials that included a total of 479 patients with chronic idiopathic constipation who were randomly assigned to active treatment (either 24 or 48 mcg daily) or placebo for four weeks [40]. Significantly more patients receiving active treatment achieved the primary endpoint (an increase in spontaneous bowel movements to at least three per week) during each week of observation. Corresponding improvement was observed for abdominal bloating, discomfort, stool frequency, and straining.

Three subsequent open-label trials involving a total of 871 patients showed persistent improvement compared with baseline in abdominal bloating, discomfort, and constipation for 6 to 12 months [40]. The most common side effect was nausea, which occurred in approximately 30 percent of patients (compared with 5 percent in placebo). The incidence of nausea was dose-dependent and was lower with the 24 mcg dose (17 percent). In addition, diarrhea was reported in 13 percent of patients (compared with 1 percent for placebo). The approved dose is 24 mcg taken twice daily with food, which is believed to decrease the frequency of nausea.

The role of [lubiprostone](#) in the treatment of chronic constipation remains to be determined. There have been no comparisons with other options for treatment of severe constipation, and its long-term safety is not yet established. Until further data are available (and because it is expensive compared with other options and induces nausea), it is best reserved for patients with severe constipation in whom other approaches have been unsuccessful.

Misoprostol — [Misoprostol](#) is a prostaglandin analog which has been used successfully to treat some patients with severe constipation [41,42]. Anecdotal experience suggests that misoprostol (200 mcg daily or every other day and increased by 200 mcg daily to every other day at weekly intervals as tolerated to efficacy) can be effective when used with PEG (without electrolytes) in doses ranging from 17 to 34 g daily. Misoprostol should not be used in women who could become pregnant since it induces labor and can lead to loss of the fetus. It can also increase menstrual bleeding.

Colchicine — [Colchicine](#) may be effective for the treatment of chronic constipation. A randomized trial found that patients treated with one milligram daily, compared with those treated with placebo, had improved scores for symptoms of constipation at the end of the two-month trial [43]. Others have reported effectiveness for doses of 0.6 mg three times daily [42]. Colchicine should not be used in patients with renal insufficiency. The drug can induce a myopathy.

Prucalopride — Available in Europe and Canada, but not in the United States, this 5HT₄ prokinetic agent in a dose of 1 to 4 mg once daily has been shown to be superior to placebo in 4- to 12-week trials, and safe and well tolerated in patients age 65 or older [44-46]. Patients from three of the trials were followed in open-label studies for up to 24 months. The improvement in quality of life scores seen at the end of the 12-week trials was maintained for up to 18 months [47]. A non-inferiority comparison study found that PEG 3350-electrolyte

solution was not inferior to [prucalopride](#) and may have some advantages including lower costs [48].

Colectomy — Subtotal colectomy with ileorectal anastomosis can dramatically ameliorate incapacitating constipation in carefully selected patients [49,50]. At least five criteria should be met prior to consideration of surgery:

- The patient has chronic, severe, and disabling symptoms from constipation that are unresponsive to medical therapy.
- The patient has slow colonic transit of the inertia pattern. (See "[Etiology and evaluation of chronic constipation in adults](#)".)
- The patient does **not** have intestinal pseudoobstruction, as demonstrated by radiologic or manometric studies.
- The patient does **not** have pelvic floor dysfunction based on anorectal manometry, balloon expulsion testing, or defecography.
- The patient does **not** have abdominal pain as a prominent symptom.

The outcome of surgical treatment was illustrated in a study that included 74 patients with severe, refractory slow transit constipation who underwent colectomy and ileorectostomy [50]. Postoperative complications included small bowel obstruction (9 percent) and prolonged ileus (12 percent). Most patients were satisfied with the results of surgery (97 percent) and reported a good or improved quality of life (90 percent) during a mean follow-up period of 56 months. Similar complication rates have been found by others [51]. A review of 13 studies of 362 patients who underwent colectomy and who were followed for a mean of 106 months reported a high degree of patient satisfaction (88 percent) [52].

Other approaches

- **Surgery** — Patients complaining of constipation may present with rectoceles and rectal intussusceptions. However, surgical repair of these problems may not alleviate symptoms of difficult defecation. Thus, caution must be used when attributing defecatory difficulties to these entities. Improved rectal evacuation when pressure is placed on the posterior wall of the vagina during defecation should be demonstrated before considering a rectocele repair. In addition, tests to exclude pelvic floor dysfunction should be done prior to surgery.

(See ["Etiology and evaluation of chronic constipation in adults", section on 'Defecography'](#) and ["Clinical manifestations, diagnosis, and nonsurgical management of posterior vaginal defects"](#).)

Surgery is the treatment of choice for Hirschsprung disease. (See ["Congenital aganglionic megacolon \(Hirschsprung disease\)"](#).)

- **Acupuncture** — Data from at least one randomized trial support the use of acupuncture [53]. However, long term follow-up was not assessed in this trial and patients were not blinded. Additional studies are needed before acupuncture can be recommended for treatment of chronic idiopathic constipation.

SOCIETY GUIDELINE LINKS

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See ["Society guideline links: Constipation"](#).)

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 education: Constipation in adults \(The Basics\)"](#) and ["Patient education: High-fiber diet \(The Basics\)"](#))

- Beyond the Basics topics (see "[Patient education: Constipation in adults \(Beyond the Basics\)](#)") and "[Patient education: High-fiber diet \(Beyond the Basics\)](#)")
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SUMMARY AND RECOMMENDATIONS

Constipation is a common complaint and often responds to dietary changes and various laxatives.

- Idiopathic constipation may be associated with normal or slow colonic transit, defecatory dysfunction, or both ([algorithm 1](#)). (See '[General approach](#)' above.)
- Initial management of chronic constipation includes patient education, behavior modification, dietary change, bulk-forming laxatives, and the use of non-bulk-forming laxatives or enemas ([algorithm 2](#)). (See '[General approach](#)' above.)
- In patients over the age of 70 years, we suggest that warm water enemas rather than [sodium phosphate](#) enemas be used for the treatment of constipation (**Grade 2C**). The use of sodium phosphate enemas in older adults has been associated with complications including hypotension and volume depletion, hyperphosphatemia, hypo- or hyperkalemia, metabolic acidosis, severe hypocalcemia, renal failure, and electrocardiogram changes (prolonged QT interval). (See '[Disimpaction](#)' above.)
- Management of defecatory dysfunction often involves suppositories or biofeedback ([algorithm 3](#)). (See '[General approach](#)' above.)
- As initial management in the treatment of idiopathic constipation, we suggest dietary fiber and bulk-forming laxatives such as [psyllium](#) or [methylcellulose](#), together with adequate fluids (**Grade 2C**). (See '[Dietary changes and bulk-forming laxatives](#)' above.)
- For patients who do not tolerate bulk-forming laxatives or respond poorly to fiber, we suggest an osmotic laxative next if tolerated (**Grade 2C**). Other options include stool softeners, stimulant laxatives ([bisacodyl](#), [senna](#), and sodium picosulfate), and secretory agents ([lubiprostone](#), [linaclotide](#), [plecanatide](#)). (See '[Other laxatives](#)' above.)
- Management of severe constipation and defecatory dysfunction may involve suppositories, biofeedback or subtotal colectomy under specific circumstances. (See

['Management of severe constipation'](#) above.)

- Various pharmacologic therapies ([lubiprostone](#), [misoprostol](#), [colchicine](#)) have been used to treat severe constipation with limited success. (See ['Pharmacologic therapy'](#) above.)

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GRAPHICS

Causes of chronic constipation

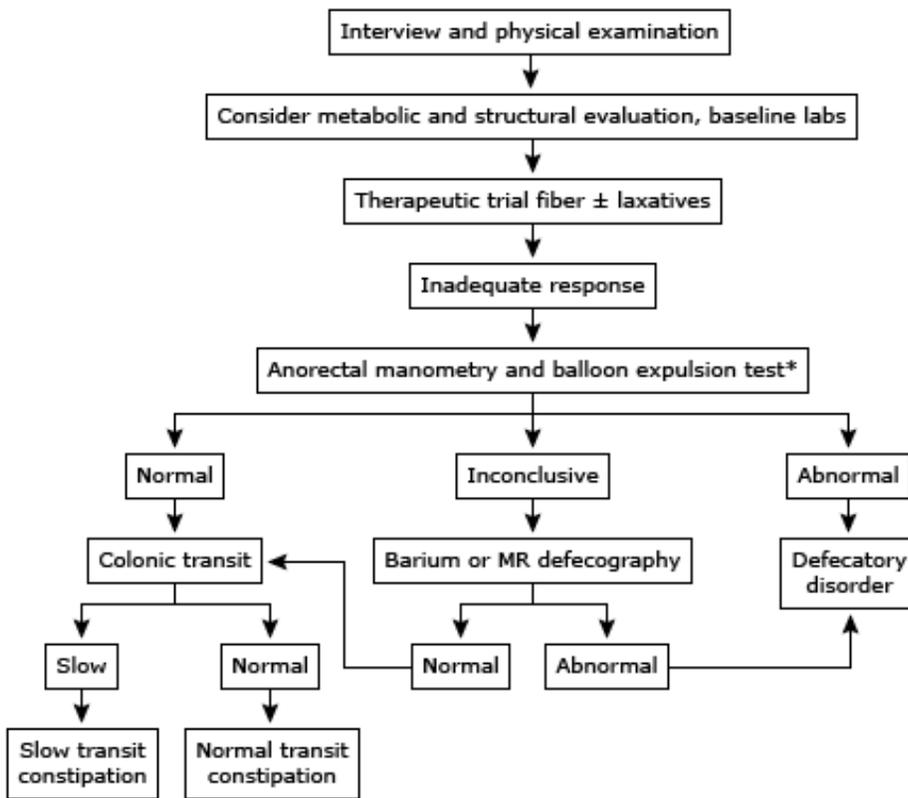
Neurogenic disorders	Non-neurogenic disorders
Peripheral	Hypothyroidism
Diabetes mellitus	Hypokalemia
Autonomic neuropathy	Anorexia nervosa
Hirschsprung disease	Pregnancy
Chagas disease	Panhypopituitarism
Intestinal pseudoobstruction	Systemic sclerosis
Central	Myotonic dystrophy
Multiple sclerosis	
Spinal cord injury	Idiopathic constipation
Parkinson disease	Normal colonic transit
Irritable bowel syndrome	Slow transit constipation
Drugs	Dyssynergic defecation
See separate table	

Graphic 70425 Version 1.0

Drugs associated with constipation

Analgesics
Anticholinergics
Antihistamines
Antispasmodics
Antidepressants
Antipsychotics
Cation-containing agents
Iron supplements
Aluminum (antacids, sucralfate)
Barium
Neurally active agents
Opiates
Antihypertensives
Ganglionic blockers
Vinca alkaloids
Calcium channel blockers
5HT3 antagonists

Evaluation algorithm for chronic constipation



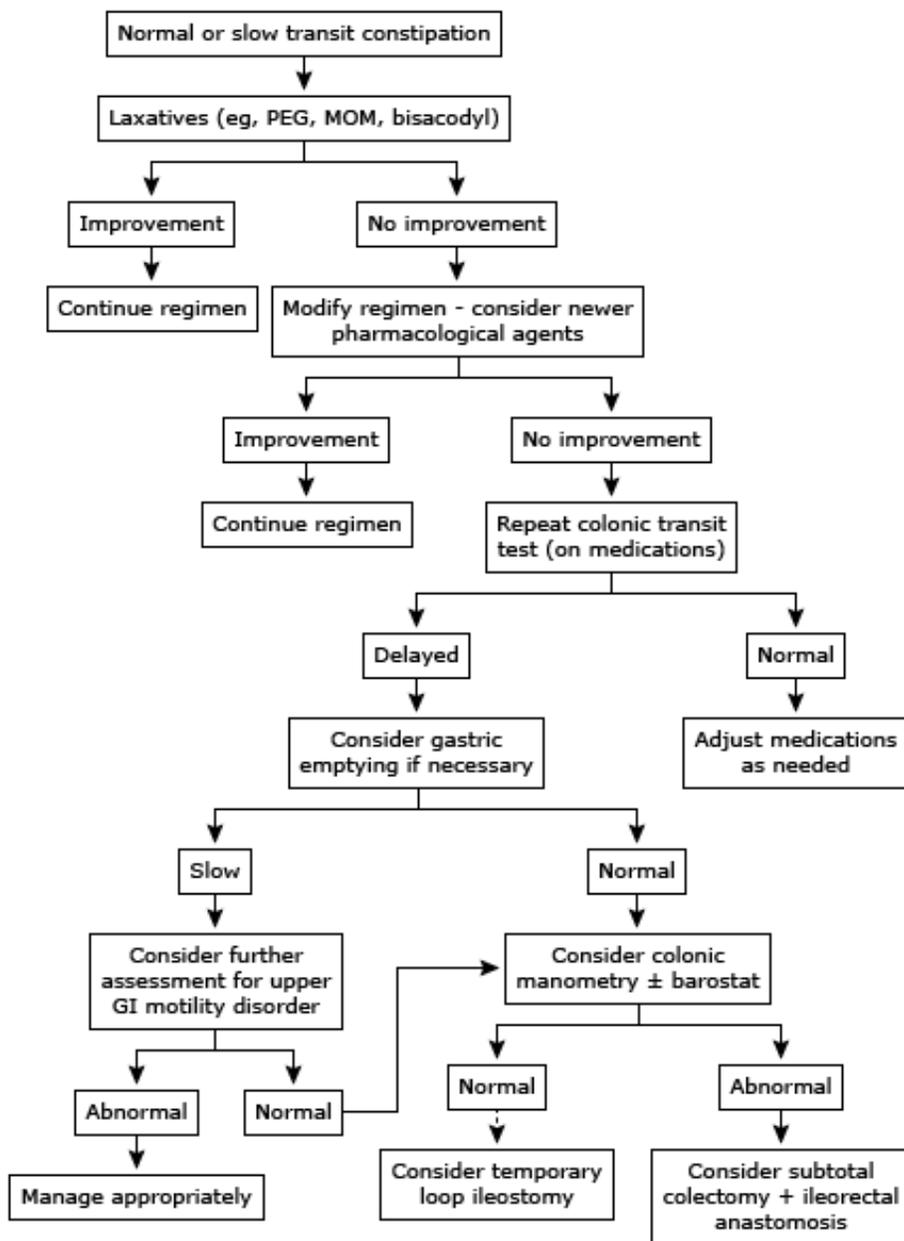
MR: magnetic resonance.

* Because anorectal manometry, rectal balloon expulsion test may not be available in all practice settings, it is acceptable in such circumstances to proceed to assessing colonic transit with the understanding that delayed colonic transit does not exclude a defecatory disorder.

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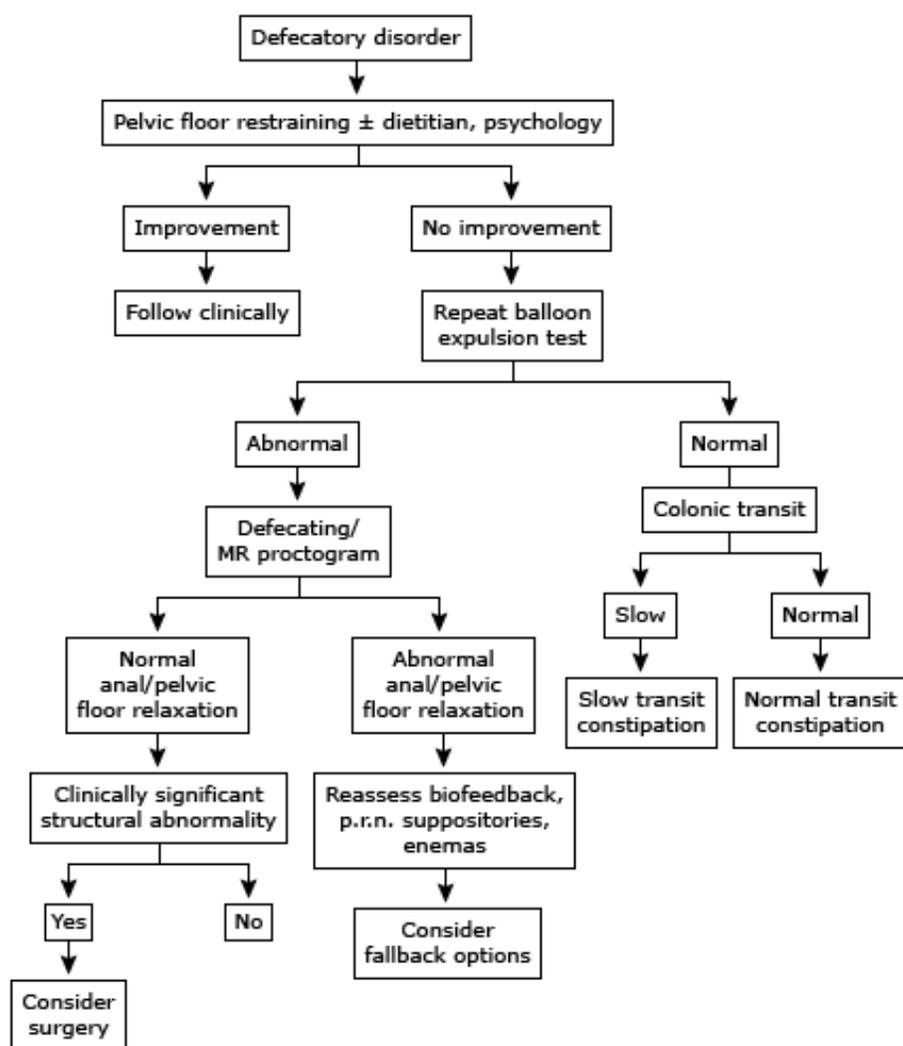
Treatment algorithm for normal or slow transit constipation



PEG: polyethylene glycol; MOM: milk of magnesia; GI: gastrointestinal.

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Treatment algorithm for defecating disorders



MR: magnetic resonance; p.r.n.: as needed.

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Dietary fiber content of frequently consumed foods

Food	Fiber, g/serving
Fruits	
Apple (with skin)	3.5/1 medium-sized apple
Apricot (fresh)	1.8/3 apricots
Banana	2.5/1 banana
Cantaloupe	2.7/half edible portion
Dates	13.5/1 cup (chopped)
Grapefruit	1.6/half edible portion
Grapes	2.6/10 grapes
Oranges	2.6/1 orange
Peach (with skin)	2.1/1 peach
Pear (with skin)	4.6/1 pear
Pineapple	2.2/1 cup (diced)
Prunes	11.9/11 dried prunes
Raisins	2.2/packet
Strawberries	3.0/1 cup
Juices	
Apple	0.74/1 cup
Grapefruit	1.0/1 cup
Grape	1.3/1 cup
Orange	1.0/1 cup
Vegetables	
Cooked	
Asparagus	1.5/7 spears
Beans, string, green	3.4/1 cup
Broccoli	5.0/1 stalk
Brussels sprouts	4.6/7-8 sprouts
Cabbage	2.9/1 cup (cooked)
Carrots	4.6/1 cup
Cauliflower	2.1/1 cup
Peas	7.2/1 cup (cooked)
Potato (with skin)	2.3/1 boiled
Spinach	4.1/1 cup (raw)
Squash, summer	3.4/1 cup (cooked, diced)
Sweet potatoes	2.7/1 baked
Zucchini	4.2/1 cup (cooked, diced)

Raw	
Cucumber	0.2/6-8 slices with skin
Lettuce	2.0/1 wedge iceberg
Mushrooms	0.8/half cup (sliced)
Onions	1.3/1 cup
Peppers, green	1.0/1 pod
Tomato	1.8/1 tomato
Spinach	8.0/1 cup (chopped)
Legumes	
Baked beans	18.6/1 cup
Dried peas	4.7/half cup (cooked)
Kidney beans	7.4/half cup (cooked)
Lima beans	2.6/half cup (cooked)
Lentils	1.9/half cup (cooked)
Breads, pastas, and flours	
Bagels	1.1/half bagel
Bran muffins	6.3/muffin
Cracked wheat	4.1/slice
Oatmeal	5.3/1 cup
Pumpernickel bread	1.0/slice
White bread	0.55/slice
Whole-wheat bread	1.66/slice
Pasta and rice cooked	
Macaroni	1.0/1 cup (cooked)
Rice, brown	2.4/1 cup (cooked)
Rice, polished	0.6/1 cup (cooked)
Spaghetti (regular)	1.0/1 cup (cooked)
Flours and grains	
Bran, oat	8.3/oz
Bran, wheat	12.4/oz
Rolled oats	13.7/1 cup (cooked)
Nuts	
Almonds	3.6/half cup (slivered)
Peanuts	11.7/1 cup

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Medications for treatment of constipation

Medication	Usual adult dose	Onset of action	Side effects
Bulk-forming laxatives*			
Psyllium	Up to 1 tablespoon (≈3.5 grams fiber) 3 times per day	12 to 72 h	Impaction above strictures, fluid overload, gas and bloating
Methylcellulose	Up to 1 tablespoon (≈2 grams fiber) or 4 caplets (500 mg fiber per caplet) 3 times per day	12 to 72 h	
Polycarbophil	2 to 4 tabs (500 mg fiber per tab) per day	24 to 48 h	
Wheat dextrin ^{††}	1 to 3 caplets (1 gram fiber per caplet) or 2 teaspoonsful (1.5 gram fiber per teaspoon) up to 3 times per daily	24 to 48 h	
Surfactants (softeners)			
Docusate sodium	100 mg 2 times per day	24 to 72 hours	Well tolerated. Use lower dose if administered with another laxative. Contact dermatitis reported.
Docusate calcium	240 mg 1 time per day	24 to 72 hours	
Osmotic agents			
Polyethylene glycol (macrogol)	8.5 to 34 grams in 240 mL (8 ounces) liquids	1 to 4 days	Nausea, bloating, cramping
Lactulose	10 to 20 grams (15 to 30 mL) every other day. May increase up to 2 times per day.	24 to 48 hours	Abdominal bloating, flatulence
Sorbitol	30 grams (120 mL of 25 percent solution) 1 time per day	24 to 48 hours	Abdominal bloating, flatulence
Glycerin (glycerol)	One suppository (2 or 3 grams) per rectum for 15 minutes 1 time per day	15 to 60 minutes	Rectal irritation
Magnesium sulfate	One to two teaspoonsful (≈5 to 10 grams) dissolved in 240 mL (8 ounces) water 1 time per day	0.5 to 3 hours	Watery stools and urgency; caution in renal insufficiency (magnesium toxicity)
Magnesium citrate	200 mL (11.6 grams) 1 time per day	0.5 to 3 hours	
Stimulant laxatives			
Bisacodyl	10 to 30 mg as enteric coated tabs 1 time per day	6 to 10 hours	Gastric irritation
	10 mg suppository per rectum 1 time per day	15 to 60 minutes	Rectal irritation
Senna	2 to 4 tabs (8.6 mg sennosides per tab) or 1 to 2 tabs (15 mg sennosides per tab) as a single daily dose or divided twice daily	6 to 12 hours	Melanosis coli

Other			
Lubiprostone	24 micrograms 2 times per day	24 to 48 hours	Nausea, diarrhea
Linaclotide	145 micrograms 1 time per day	12 to 24 hours	Diarrhea, bloating

All doses shown are for oral administration unless otherwise noted. Phosphate containing laxatives are not recommended. Mineral oil (enema and oral liquid) laxatives are not generally recommended except as enema following disimpaction (see text).

* Initiate at one-half or less of dose shown and gradually increase as needed to minimize gas and bloating. Administer with 180 to 360 mL (6 to 12 ounces) water or fruit juice. Do not administer within one hour of other medications. Fiber content per dose may vary. Consult individual product label.

¶ US trade name Benefiber.

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Contributor Disclosures

Arnold Wald, MD Consultant/Advisory Board: Ironwood [IBS and Constipation (linzess)]. **Nicholas J Talley, MD, PhD** Grant/Research Support: Commonwealth Labs (IBS diagnostic). Consultant/Advisory Boards: Adelphi Values [Functional dyspepsia (patient-reported outcome measures)]; GI therapies [Chronic constipation (Rhythm IC)]; Allergens, Napo Pharmaceutical (IBS); Outpost Medicine (IBS); Samsung Bioepis (IBD); Synergy [IBS]; Theravance [Gastroparesis]. Patent Holder: Biomarkers of irritable bowel syndrome [Irritable bowel syndrome]; Licensing Questionnaires [Mayo Clinic Talley Bowel Disease Questionnaire - Mayo Dysphagia Questionnaire]; Nestec European Patent [Application 12735358.9]; Singapore 'Provisional' Patent [NTU Ref TD/129/17 "Microbiota Modulation Of BDNF Tissue Repair Pathway"]. **Shilpa Grover, MD, MPH, AGAF** Other Financial Interest: (Spouse) Novartis [travel honorarium].

Contributor disclosures are reviewed for conflicts of interest by the editorial group. When found, these are addressed by vetting through a multi-level review process, and through requirements for references to be provided to support the content. Appropriately referenced content is required of all authors and must conform to UpToDate standards of evidence.

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