

Evaluation and Treatment of Constipation

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Constipation is an often-overlooked problem in primary care practice. It deserves careful evaluation, including consideration of the many possible causes and appropriate diagnostic testing. Fortunately, most patients respond well to conservative measures.

Constipation prompts a visit to a physician by 1.2% of the US population every year (although most persons with constipation do not seek the assistance of a physician).¹ The prevalence of constipation increases with age, and is more common among women than men in all age groups.^{2,3} It is more frequent among non-whites, and more frequent in colder, poorer, and rural states.⁴

The definition of constipation varies substantially among patients, clinicians, and researchers, and includes infrequent bowel movements, difficult evacuation of feces, inability to defecate at will, and hard feces. Interestingly, the actual frequency of bowel movements does not change with age even when controlled for laxative use—evidence that the meaning of the term constipation involves more than just frequency of bowel movements.⁵

ETIOLOGY

Constipation is caused by a heterogeneous and often overlapping group of disorders. The undigested food that reaches the colon is mixed with fluid and electrolytes, bacteria, and gas. Normal colonic function requires absorption of water, a coordinated combination of segmental contractions that mix stool, propagation of contractions that move feces over short distances, and high-amplitude contractions that move fecal waste longer distances. Defecation entails a synchronized combination of voluntary contraction of striat-

ed muscle and involuntary smooth muscle contraction. Anything that limits the fluid content in fecal waste, interferes with the movement of feces through the colon, or interferes with defecation can cause constipation.

Constipation may be classified as primary or secondary, which emphasizes the need to identify and treat underlying systemic disorders before proceeding with the gastrointestinal evaluation (Table 1). However, constipation is often multifactorial in origin. Irritable bowel syndrome (59%) is the most common primary cause of severe intractable constipation, followed by isolated pelvic floor dysfunction (25%), isolated slow-transit constipation (5%), and combined slow-transit constipation and pelvic floor dysfunction (2%).⁶ In a study of 190 patients in whom irritable bowel syndrome and other identifiable causes of severe constipation were excluded, 59% had disordered defecation, 27% had slow-transit constipation, and 6% had a combination of these 2 causes. No pathology was identified in about 8% of these patients.⁷

DIAGNOSIS

History, physical examination, and baseline laboratory testing identify most secondary causes of constipation (Table 1). Patients in whom no secondary cause is found should undergo colonoscopy, or barium enema and flexible sigmoidoscopy to identify any obstructive lesions. Red flags that suggest significant organic disease include weight loss, frequent nocturnal awakening due to symptoms, blood mixed in stool, and a family history of colon cancer.

A therapeutic trial of a high-fiber diet (or fiber supplements) with or without mild laxatives is reasonable if no secondary or obstruc-

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tive cause is present. If these measures fail, or if the patient has recurrent constipation, more extensive evaluation is required. Patients in whom a gynecologic cause of constipation is suspected should also be considered for a therapeutic trial. Such a trial may reveal that the gynecologic problem is in fact unrelated to the constipation. If the trial fails, further diagnostic testing to look for any obstructive lesion may be undertaken.

History

The basic diagnostic evaluation of constipation begins by clarifying what the patient means by constipation, eliciting associated symptoms that may identify a secondary cause of constipation, and establishing the duration of constipation. A diary of the frequency and ease of defecation, and firmness of stools, may confirm the presence of constipation or identify the patient's misconceptions about normal bowel habits.⁸

Acute onset of symptoms, constipation after the age of 50, or progressive symptoms suggest an organic cause. Onset of symptoms in childhood suggests a congenital or emotional/psychological disorder. Symptoms associated with secondary causes of constipation include abdominal pain (especially if it awakens the patient from sleep), nausea, vomiting, melena, hematochezia, weight loss, hair loss, and cold intolerance. The presence of rectal pain or urinary stress incontinence suggests the possibility of disordered defecation.

A history of metabolic, neurologic, myopathic, or rheumatologic disease suggests secondary causes of constipation. The patient should also be questioned carefully to identify a history of anorexia nervosa,

bulimia, or depression with associated constipation.^{9,10} A careful review of prescription and over-the-counter medications may identify drug-induced constipation. The patient's dietary habits and level of physical activity should be determined, although the evidence from controlled trials linking constipation with diet and activity is weak at best. Prior travel to Central or South America should raise the possibility of Chagas' disease (American trypanosomiasis).

Irritable bowel syndrome is suggested by the presence of postprandial cramps, excessive "gas," abdominal pain or bloating relieved by defecation, constipation alternating with diarrhea, passage of mucus, or a feeling of incomplete evacuation. The Manning Criteria can help identify patients with a low, intermediate, or high risk of irritable bowel syndrome (Table 2).¹¹

Pelvic floor dysfunction should be considered when a patient reports the need to manually remove stool, apply perineal pressure (or vaginal pressure in women) to defecate, or strain excessively to evacuate stool. It should also be considered in patients who report difficulty evacuating soft or liquid stools.

Physical examination

Abdominal distention and tenderness suggest the possibility of an obstructive lesion of the intestinal tract. A rectal examination is necessary to search for stool with gross or occult blood, loss of rectal tone, anal fissure, or altered rectal tone. Laxity during simulated defecation or loss of anal reflex suggests neurogenic dysfunction. A rectocele can be easily identified by observing the posterior vaginal wall during simulated defecation.

Diagnostic tests

A complete blood count, serum electrolytes, serum calcium, blood glucose, blood urea nitrogen, and thyroid-stimulating hormone should be ordered to identify secondary causes of constipation. In the absence of abdominal distention or pain, abdominal radiographs are unlikely to be helpful in the differential diagnosis.

No evidence from outcomes studies suggests that colonoscopy is superior to barium enema for evaluation of constipation. However, colonoscopy may be preferable in patients who have constipation and are coincidentally at risk of colon cancer or irritable bowel syndrome. This would include patients who are 50 years of age or older, as well as

Primary and secondary causes of constipation

TABLE

Primary causes	Secondary causes
Functional	Connective tissue disease
Idiopathic	Amyloidosis
Irritable bowel syndrome	Systemic sclerosis
Pelvic dyssynergia (anismus)	Lifestyle
Slow-transit constipation	Dehydration
Neuropathic	Inadequate dietary fiber
Chagas' disease	Sedentary lifestyle
Congenital anal sphincter myopathy	Voluntary suppression of defecation
Hirschsprung's disease	Medications
Hyperganglionosis	Anticholinergics
Spinal cord injury	Anticonvulsants
Obstructive	Antidepressants
Anal stenosis	Antihistamines
Crohn's disease	Antiparkinsonian drugs
Colon cancer	Antipsychotics
Compression by tumor	Antacids
Stricture	Calcium-channel blockers
Gynecologic	Calcium supplements
Large rectocele	Diuretics
Pelvic relaxation	Iron supplements
	Laxatives (chronic abuse)
	NSAIDs
	Opiates
	Metabolic/endocrine
	Diabetes mellitus
	Heavy metal poisoning
	Hypercalcemia
	Hypokalemia
	Hypothyroidism
	Hypomagnesemia
	Porphyria
	Uremia
	Neuropathic
	Autonomic neuropathy
	Multiple sclerosis

those who have anemia, abdominal pain or distention, gross or occult blood in the stool, weight loss, or a family history of colon cancer. Barium enema with or without flexible sigmoidoscopy is appropriate in younger patients who are not at risk for colon cancer. Children and adolescents should have a barium enema to rule out Hirschsprung's disease and idiopathic megarectum.

Expanded diagnostic testing may be necessary for patients in whom there is no identifiable cause following initial evaluation and in whom initial treatment (lifestyle changes, education, and judicious use of bulk or osmotic laxatives) fails.¹² This includes colonic transit time, anorectal manometry, balloon expulsion test, and barium defecography. Primary care physicians may wish to refer patients requiring this kind of evaluation to a gastroenterologist.

TREATMENT

Bulk, saline, osmotic, and stimulant laxatives as well as enemas, suppositories, behavioral therapy, and surgery all have a place in the treatment of constipation (Table 3). However, most patients with constipation will respond to lifestyle and dietary changes.

It is important to advise patients to avoid excessive use of laxatives and to realize that it may take 4 to 6 weeks for normal bowel function to return after excessive use is stopped.

Patients whose constipation is not relieved by lifestyle and diet changes may benefit from judicious use of a laxative. There is little evidence to suggest that bulk laxatives are more advantageous than other classes of laxatives^{13,14}; however, because of their safety and other possible health benefits, it is reasonable to start treatment of chronic constipation with a bulk laxative. A saline or osmotic laxative can be added if the bulk laxative fails. Stimulant laxatives should be reserved for cases in which bulk, saline, and osmotic laxatives are ineffective. The emollient laxative, mineral oil, should be avoided because it has been associated with lipid aspiration pneumonia. Docusate, an emollient laxative, has questionable efficacy and has a limited place in the management of constipation.¹⁵

Few patients require extensive intervention such as surgery or behavioral therapy. Individual treatment options, including management of fecal impaction, are discussed below.

Lifestyle changes and patient education

Lifestyle changes and patient education are

important components in the management of constipation. In fact, reassurance and instruction will be the primary treatment for many patients. A suggested patient education hand-out, "What You Should Know About Constipation," is included with this article on page 560. (For your convenience, it may be freely duplicated and distributed.)

Suggested lifestyle changes include moderate physical activity, increased fluid intake, increased dietary fiber, and sitting on the toilet about 15–20 minutes after breakfast (taking advantage of the gastrocolic reflex). In selected patients, these changes may be useful, although specific benefits of moderate physical activity and increased fluid intake have not been conclusively proven.

Bulk laxatives

Wheat bran is one of the best and least expensive bulk laxatives. Methylcellulose (eg, Citrucel), psyllium (eg, Metamucil), and polycarbophil (eg, FiberCon) are bulk laxatives that are safe, more refined, and more concentrated than wheat bran, but they are also more expensive. Combined with diet and liquids, bulk laxatives are the most effective and "natural" long-term treatment for constipation.

Manning Criteria for the diagnosis of irritable bowel syndrome¹¹

TABLE

Count the number of symptoms that occur daily:

- Abdominal pain relieved by defecation
- More frequent stools with the onset of pain
- Looser stools with the onset of pain
- Passage of mucus
- Sensation of incomplete evacuation
- ~~Visible abdominal distention~~

With fewer than 2 symptoms daily, irritable bowel syndrome is unlikely.

With 2 or 3 symptoms daily, irritable bowel syndrome is an inter-

However, their slow onset of action (between 12 and 72 hours) limits their usefulness in acute management of constipation.

Saline laxatives

The saline laxatives include magnesium citrate (eg, Citroma) and magnesium hydroxide (eg, Milk of Magnesia). These agents decrease colonic transit time by stimulating cholecystokinin and draw fluid into the colon by their osmotic effect. Their rapid onset of action (between 30 minutes and 3 hours) makes saline laxatives an excellent choice for acute management of constipation. These laxatives

commonly cause abdominal cramping and, in patients with renal failure, may cause magnesium toxicity. Nevertheless, saline laxatives are generally safe and effective.

Therapeutic options for the management of constipation

TABLE 1

Type	Example	Dose	Evidence level*
Lifestyle			
Increase liquids in diet ¹⁷	Mineral water	2 liters/day	A
Increase fiber in diet ¹⁷	Dietary fiber	25 g/day	A
Moderate physical activity	Unspecified	Unspecified	D
Eliminate excessive use of laxatives		—	—
Bulk			
Wheat bran ¹⁸	—	20 g/day	A
Psyllium ¹⁹	Metamucil	7 g/day	A
Methylcellulose ²⁰	Citrucel	4–6 g/day	A
Calcium polycarbophil ²¹	FiberCon	4–6 g/day	A
Saline ^{13, 14}			
Magnesium citrate	Citroma	200 mL/day	A
Magnesium hydroxide	Milk of Magnesia	2.4 g/day	A
Osmotic			
Polyethylene glycol ²²	MiraLax	17 g/day	A
Sorbitol ²³	Generic	20 g/day	A
Lactulose ²⁴	Chronulac	30 mL/day	A
Stimulant ^{13, 14}			
Castor oil	Emulsoil	15–60 mL/day	A
Bisacodyl	Dulcolax	30 mg/day	A
Cascara	Generic	2–5 mL/day	A
Senna	Senokot	17–34 mg/day	A
Aloe	Generic	50–200 mg/day	A
Enema ¹²			
Tap water	—	500 mL/day	D
Saline	Generic	500 mL/day	D
Phosphate	Fleets	4.5 oz/day	D
Mineral oil retention	Generic	Generic	D
100–250 mL/day			
Suppositories ¹²			
Bisacodyl	Generic	10 mg/day	D
Glycerin	Generic	3 g/day	D
Behavioral therapy			
Biofeedback ²⁵	Pelvic floor muscle training		A
Regular time on toilet after breakfast after breakfast	15–20 minutes		D
Surgery			
Severe refractory constipation ²⁶	colectomy	Subtotal	A

Osmotic laxatives

Polyethylene glycol (eg, MiraLax) is an effective new osmotic laxative. Rapid onset of action (between 24 and 48 hours) makes an osmotic a good choice for patients who have chronic constipation that fails to respond to bulk and saline laxatives. Polyethylene glycol is equally effective, but better tolerated than the older osmotics, lactulose and sorbitol.¹⁶ Because it is not fermented, gas and cramps are minimal. Lactulose (eg, Chronulac) and sorbitol, which are poorly absorbed sugars, likewise have rapid onset of action, but flatulence and abdominal distention may limit tolerance. Sorbitol is generally less expensive than lactulose.

Stimulant laxatives

The oral stimulant laxatives include diphenylmethanes, the anthraquinones, and castor oil (eg, Emulsoil). They are more potent than bulk or osmotic laxatives, but long-term use is safe if limited to 3 days per week. Bisacodyl (eg, Dulcolax), a diphenylmethane, alters electrolyte transportation within intestinal mucosa and stimulates peristalsis. These actions may cause abdominal cramping and hypokalemia. Cascara (mildest), senna (eg, Senokot), and aloe (strongest) are anthraquinones, which are laxatives with actions and side effects similar to bisacodyl. These agents may cause a benign, reversible pigmentation of the colon (melanosis coli). It has been suggested that chronic use of these agents may damage the enteric nervous system, but a causal relationship has not been clearly established. The most prudent approach is to limit use of stimulant laxatives to constipation that is refractory to other laxatives.

Enemas and suppositories

Enemas and suppositories stimulate colonic contractions and soften stools. Water, saline, soap suds, hypertonic sodium phosphate, and mineral oil are used as enemas. Acute water intoxication can occur with water enemas, especially in infants, children, and the elderly, if they have difficulty evacuating the water. Phosphate enemas may cause hyperphosphatemia and hypocalcemic tetany in these patients and should therefore be used with caution in most patients and should not be used in children 3 years of age or younger. Glycerin and bisacodyl are stimulant suppositories that are clinically effective. Bisacodyl

and soap suds enemas cause changes in the epithelium of the rectum, and the effect of glycerin on rectal mucosa is unclear. Therefore, these agents should only be used episodically. Mineral oil enemas are used to soften hardened stool in the rectal ampulla.

Other treatment options

More aggressive measures may be necessary for specific types of constipation. These include behavioral therapy and biofeedback for pelvic floor dysfunction, and surgery for slow-transit constipation or Hirschsprung's disease.

Investigative pharmacologic treatments for constipation include agents that increase colonic contractions (prokinetic drugs) and prostaglandins. These agents have had limited efficacy and troublesome side effects. Therefore, at this time these drugs have limited usefulness in the treatment of constipation.

FECAL IMPACTION

The management of fecal impaction begins with complete evacuation of the colon. Initially, patients with hard stool in the rectum may be given mineral oil retention enemas followed by manual disimpaction. Prior to further treatment, it is important to obtain an abdominal radiograph to rule out mechanical bowel obstruction. If there is no mechanical bowel obstruction, evacuation of the impaction can be accomplished with oral polyethylene glycol (eg, GoLyteLy) until clear (up to 8 liters or more may be required for complete evacuation).¹⁶ Administration of twice-daily enemas for 3 days or more is an acceptable alternative to oral polyethylene glycol. Lifestyle changes, bulk laxatives, saline, osmotic laxatives, and enemas should be used to maintain regular defecation after the colon has been cleansed. It is reasonable to attempt to withdraw laxatives after several months of regular bowel habits.

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What You Should Know About Constipation

Your doctor may test or treat you for constipation if you have 2 or more of the following problems for several weeks or longer:

- Hard, lumpy stools
- Difficulty pushing stool out of your body when you are on the toilet
- Feeling like you need to have a bowel movement even when you've already had one
- A sense that the anal area (where stool comes out) is blocked
- Having fewer than 3 bowel movements in 1 week

Causes of constipation

To digest food and get rid of waste, the large intestine (or colon) has to mix together food and water. The intestines need to contract to move waste products through the intestine and out of the body when you go to the bathroom.

If there isn't enough water in the colon, or your intestines don't contract well, you may get constipated. Some diseases or medical conditions cause constipation, for example, being pregnant or having diabetes. Some medications can cause constipation. So can having emotional problems, poor diet, or lack of exercise.

Diagnosis: What you can expect

Your doctor may be able to tell that you have constipation just by asking about your symptoms and examining you. You may

also need blood tests to see if there is anything keeping the bowel from working well. You may have x-rays to show whether there is stool blocking the intestines.

If no cause is found, more tests may be needed. You may have one or more of the following tests, which create pictures of the intestines:

Barium enema—A material called barium, which acts like a dye, is passed into the colon. Then special x-rays are taken.

Flexible sigmoidoscopy—A thin tube is placed in the rectum and passed into the colon. A tiny light and viewer are attached. The tube allows the doctor to see about one third of the colon. You may be given medicine before the test to help reduce any discomfort.

Colonoscopy—This procedure is similar to flexible sigmoidoscopy, but the tube used is longer so that the doctor can see the whole colon. You may be given medicine before the test to help reduce any discomfort.

Treatment

Diet and laxatives

You may be told to eat a high-fiber diet or take medication called laxatives, or both. There are many kinds of laxatives. If one kind doesn't work well for you, the doctor may choose another.

Laxatives can cause side effects such as gas, bloating, or cramping. Drinking plenty of water daily can reduce these problems.

Other treatments

Your doctor may suggest enemas or suppositories. Do not start using these without your doctor's recommendation.

There are other treatments for certain types of constipation. For example, there is behavioral therapy (training yourself to behave differently), biofeedback (learning to recognize your body's signals), and, in some cases, surgery.

Helping yourself

There are many ways to fight constipation.

- Always go to the bathroom soon after you feel the urge.
- Set a routine for using the toilet, for example, after breakfast every day.
- Don't drink alcohol and caffeine. They make stools drier and harder.
- Walk, bike, or swim for at least 30 minutes daily. Physical activity keeps the intestines working well.
- Drink at least four 8-ounce glasses of fluid (other than alcohol) daily, in addition to whatever you drink with meals.
- Eat 20–35 grams of fiber daily. Increasing the fiber in your diet is the easiest way to do this. Try for 3–5 vegetables, 2–4 fruits, and 2–4 servings of whole grain cereal or bread every day.

*May be photocopied for patients

Types of laxatives

	Example	Dose*	Onset of action
Bulk			
Wheat bran	–	8 oz/day	12–72 hours
Psyllium	Metamucil	1–6 teaspoons/day	12–72 hours
Methylcellulose	Citrucel		1–3 table- spoons/day
Calcium polycarbophil	FiberCon	2–4 tablets/day	24–48 hours
Saline			
Magnesium citrate	Citroma	4–8 oz/day	1/2–3 hours
Magnesium hydroxide	Milk of Magnesia	2–4 tablespoons/	1/2–3 hours
(this dose for concentrate)			day (half)
Osmotic			
Polyethylene glycol	MiraLax	1 tablespoon/day	24–48 hours

*Most laxatives should be taken with 8 oz of juice water and some are mixed in juice or water. Therefore, it is important to read the directions