

Constipation

Constipation is one of the most common gastrointestinal complaints in the United States, especially among elderly people. Both chronic and acute constipation can be a significant source of discomfort.

Constipation is diagnosed whenever bowel movements are difficult, hard, or painful. Contrary to popular wisdom, frequency of bowel movements is not a criterion for diagnosing constipation because of the wide range of variability among individuals. Most people have at least three bowel movements weekly, but some people have fewer and would not be diagnosed with constipation. Bowel movements should be fairly regular and pass with no straining or pain. Stool should be formed and pliable, as opposed to pebble-like and hard. It is also important to note that dramatic shifts in the frequency or manner of bowel movements (such as frequent diarrhea or the sudden onset of very painful, very difficult-to-pass bowel movements) should prompt an immediate visit to a physician to look for underlying causes.

Most individuals with constant constipation develop a variety of symptoms, ranging from abdominal pain, rectal discomfort, abdominal fullness and bloating, nausea, and loss of appetite to a general feeling of malaise. These individuals feel as if they never completely evacuate their bowels. Severe chronic constipation may be accompanied by fecal impaction (Arce DA et al 2002; Rao SS 2003).

Most people with chronic constipation are advised to exercise and increase their intake of fiber and liquids. While these measures are effective for some people, they do not work for everybody. Many people also use fiber supplements. However, fiber supplements aren't always effective. The Life Extension Foundation has identified superior forms of fiber that may help relieve constipation when traditional fiber supplements are not adequate. If the above measures do not relieve constipation, nutritional laxatives should be considered. There are many kinds of laxatives, but using peristaltic-stimulating laxatives, which also provide health benefits, is the safest choice.

Because constipation can be caused by serious medical conditions, such as cancer, a sudden change in bowel habits among middle-aged or elderly people warrants a thorough evaluation by a physician.

RISK FACTORS FOR CONSTIPATION

Stool is formed in the colon, which is at the lower end of the gastrointestinal tract. By the time digested food reaches the colon, most of the nutrients have been absorbed. The colon's primary job is to remove excess liquid from the intestinal contents. A large number of beneficial bacteria colonize the colon and help with digestion of any remaining nutrients. Muscular peristaltic waves propel the stool (while it is in the process of being formed) toward the rectum. The stool is aided in its passage through the colon by mucus, which provides lubrication.

Bulk-forming fiber and water are essential to the healthy formation of stool. Insoluble fiber provides bulk to the stool and retains enough water to keep the stool pliable (Hsieh C 2005). Likewise, adequate moisture is needed to keep the stool soft and prepare it for evacuation. There is, however, some disagreement among physicians about the role of fluid intake in constipation. Some studies have reported that liquid intake is not associated with constipation (Whitehead WE et al 1989).

For the most part, doctors usually consider the following to be the usual causes of constipation:

- **Lack of exercise.** Constipation has been shown to be related to inactivity (Simren M 2002). Abdominal and intestinal muscles work together to move the bowels. Weak abdominal muscles can contribute to weak bowel movements.
- **Some medications.** Some pain medications, especially narcotics, can cause constipation, as can some antidepressants, iron supplements, and calcium supplements (Muller-Lissner S 2002). Other medications that can cause constipation include calcium channel blockers, psychotropic drugs, and anticholinergics. Inadequate thyroid hormone supplementation is also thought to cause constipation.
- **Certain diseases.** Tumors and some diseases may produce a rapid change in bowel movements, or even the cessation of all bowel movements.

During the diagnostic evaluation of constipation, physicians will attempt to determine if the condition is caused by an underlying disease or medication or if it has a dietary cause. Constipation can be defined as the presence of two or more of the following symptoms, occurring for at least 12 weeks in the preceding 12 months (symptoms 1 through 5 must occur at least 25 percent of the time when defecating) (Corazziari E 2004; Voskuil WP et al 2004; Whitehead WE et al 2003):

1. Straining
2. Lumpy or hard stools
3. Sensation of incomplete evacuation
4. Sensation of anal-rectal obstruction or blockage
5. Manual maneuvers to facilitate defecation
6. Infrequent (fewer than three) bowel movements per week

Measurement of colonic transit time (how long it takes stool to move through the colon) is sometimes used to evaluate patients who have chronic constipation (Corazziari E 2004; Sakakibara R et al 2004).

Complications of constipation include hemorrhoids (which are caused by straining to have a bowel movement) and anal fissures (which are tears in the skin around the anus). As a result, rectal bleeding may occur that appears as bright red streaks on the surface of the stool (Chiarelli P et al 2000; Pfenninger JL et al 2001; Wald A 2003).

Sometimes straining causes a small amount of intestinal lining to push out from the anal opening. This condition is known as rectal prolapse. Treatment requires pushing the prolapsed portion of the bowel back into the body, which can be done manually in a doctor's office. In some cases, incarcerated rectal prolapse may occur. In this condition, the prolapsed portion of the bowel becomes trapped. This is an emergency that requires surgery (Sarpel U et al 2005).

Constipation can contribute to a loss of bladder control by weakening the pelvic floor muscles as a result of straining. A full bowel pressing on the bladder, causing it to empty prematurely or block the outflow of urine, is not uncommon. People who have bladder control problems often do not drink enough fluids for fear of incontinence, which can also worsen constipation (Chen GD et al 2003).

Among middle-aged or elderly people, severe constipation or an abrupt change in bowel habits should prompt a thorough medical evaluation. Patients should be screened for thyroid hormone levels as well as electrolyte levels (such as potassium, calcium, glucose, and creatinine). Other measures should include evaluation of fecal occult blood and a white blood cell count. Colorectal screening is mandatory in patients older than 50 years who experience a change in bowel habits. Screening tests include sigmoidoscopy or colonoscopy (flexible tube or virtual) and barium enema. These tests are used to detect colorectal cancer. Of all the diagnostic tests available, flexible-tube colonoscopy is superior at detecting polyps (defined as precancerous lesions). Polyps can be removed during flexible-tube colonoscopies.

Constipation is also a relatively common complaint among children, affecting up to an estimated 10 percent at some point. Although constipation in children is usually caused by diet, it may be an indication of a significant organic disorder that can be determined by a thorough medical history and physical examination. Constipation that is present from birth or that begins in the neonatal period is most likely congenital in origin.

FIBER THERAPY FOR CONSTIPATION

The average American eats only 10 to 15 grams (g) of fiber daily. Typical recommendations are 25 to 50 g of dietary fiber daily (Slavin JL 1987). Fiber is excellent for overall intestinal health and for alleviating chronic constipation. Although humans cannot digest fiber, the 5 pounds of friendly bacteria present in our digestive tract use fiber for fermentation and production of useful short-chain fatty acids that the cells of the intestine use for energy.

Most foods contain a mixture of soluble and insoluble fiber. Both are important in treating constipation. Soluble fiber is contained in oats, apples, lentils, barley, breads, and cereals. It is able to mix evenly with water, forming a soft gel. Insoluble fiber is contained in raw wheat bran, other whole grains, and fruits and vegetables. It mixes unevenly with water, forming a soft pulp. Your body does not absorb soluble or insoluble fiber during digestion. Fiber contributes volume to the stool mass, making it easier for the colon to push and propel larger and softer stools out of the body. Insoluble fiber encourages contraction of the colon.

Both fiber types contribute volume to individual stool masses. A larger mass of stool is easier for the colon to push against and propel, so larger, softer stools are easier to move and pass.

The following supplements may succeed at moving the bowels when regular fiber supplements fail to correct chronic constipation:

Chitosan. Chitosan is a fiber composed of chitin, a component of the shell of shellfish. Chitosan has the ability to bind fat from food in the stomach and the intestines. When fat content in the bowel increases, it makes the feces soft and smooth. If you do not obtain results from other commonly used fiber sources, six 500-milligram (mg) capsules of chitosan, along with 1000 mg of vitamin C before each meal, may help alleviate constipation. Ascorbic acid (vitamin C) helps transform chitosan in the stomach and intestine into a fat-absorbing gel. Chitosan should not be used by people who have shellfish allergies.

Glucomannan. Glucomannan is a water-soluble dietary fiber derived from the konjac root (*Amorphophallus konjac*). Glucomannan

is considered a bulk-forming laxative that promotes a larger, bulkier stool (Marsicano LJ et al 1995). Glucomannan generally helps produce a bowel movement within 12 to 24 hours.

Constipation is frequently encountered during pregnancy. A preparation of lactulose and glucomannan is effective and well tolerated in pregnant women. Pregnant women with constipation who were treated with a preparation of 3 to 6 g of glucomannan and 8 to 16 g of lactulose twice a day for 1 to 3 months showed a return of normal frequency of evacuations. The formula also helped control weight gain (Signorelli P et al. 1996).

In one study, laxative use was significantly reduced in a long-term care facility when an interdisciplinary program was implemented based on prevention and health promotion. Specifically, increased fluid and fiber intake, timely toileting habits, and regular activity or exercise led to a 50 percent reduction in the number of patients receiving laxatives (Benton JM et al 1997).

LAXATIVES AND OTHER THERAPIES FOR CONSTIPATION

Laxatives are considered a first-line medical therapy for constipation. Many people are concerned about the use of laxatives, believing that laxatives are addictive or that their long-term use will compromise the person's ability to have normal bowel movements.

The function of laxatives is to speed the passage of the intestinal contents through the gastrointestinal tract or to provide the bulk needed for the normal formation of stool.

Studies designed to evaluate whether laxatives and fiber therapies improve symptoms and the frequency of bowel movements in adults who have chronic constipation have generally shown that fiber and laxatives decreased abdominal pain and improved stool consistency compared with a placebo.

There are four classes of laxatives: bulk-forming, osmotic, stimulant, and emollient:

Bulk-forming laxatives. Bulk-forming laxatives are the most commonly recommended initial treatments for constipation. Bulk-forming laxatives may work as quickly as 12 hours after use or take as long as 3 days to be effective. Some bulk-forming laxatives are derived from natural sources such as agar, psyllium, kelp, and plant gum. Others are synthetic cellulose compounds such as methylcellulose and carboxymethylcellulose. Natural and synthetic bulk-forming laxatives act similarly. They dissolve or swell in the intestines, lubricate and soften the stool, and make the passage of bowel movements easier and more frequent. Bulk-forming laxatives are not absorbed from the intestines into the body and are safe for long-term use. They are also safe for elderly patients to use (Klaschik E et al 2003; Pietrusko RG 1977; Rousseau P 1988; Yakabowich M 1990).

Psyllium is a bulk-forming laxative that is high in fiber. Psyllium seeds contain 10 to 30 percent mucilage. The laxative properties of psyllium are caused by the swelling of the husk when it comes in contact with water. This forms a gelatinous mass and keeps the feces hydrated and soft. The resulting bulk stimulates a reflex contraction of the walls of the bowel and causes them to empty (McRorie JW et al 1998). Studies have shown that psyllium fiber is more effective than lactulose and other laxatives, and causes more frequent and bulkier bowel movements. It has also been documented to incur a lower incidence of adverse effects (Klaschik E et al 2003; McRorie JW et al 1998).

Osmotic laxatives. Osmotic laxatives work by increasing the amount of water in the small intestine and colon, which increases the size and pliability of the stool. When ingested on an empty stomach, they may take only 1 to 2 hours to take effect. Common osmotic laxatives include milk of magnesium, sorbitol, magnesium citrate, and polyethylene glycol-based formulations. Lactulose is a prescription carbohydrate osmotic laxative that is partially broken down by bacteria in the colon into acids that cause water to accumulate in the colon. Osmotic laxatives can cause severe diarrhea and dehydration, so a physician should carefully monitor their use. In some cases, too much fluid can accumulate in the colon, causing electrolyte disorders. Polyethylene glycol does not contain electrolytes and is suggested for use in patients who have heart and kidney disease.

Stimulant laxatives. Stimulant laxatives increase motor activity of the bowels by directly stimulating the nerve plexus in the intestinal wall, causing increased movement and the stimulation of local reflexes (Doughty DB 2002; Klaschik E et al 2003; Schiller LR 2004; Wald A 2003). Stimulant laxatives should only be used when osmotic laxatives have been ineffective, or in preparation for rectal or bowel examinations. Results occur in 6 to 10 hours. Examples of stimulant laxatives include senna, bisacodyl, and dehydrocholic acid. Stimulant laxatives can cause dehydration and electrolyte problems, in addition to structural and muscular changes in the colon (such as cathartic colon) over long-term use (Joo JS et al 1998). In some products, stimulant laxatives are combined with bulk-forming laxatives. Studies have shown that these combination products may be safe to use for as long as a year (Phillips C et al 2001).

Emollient laxatives. Emollient laxatives are generally divided into two groups: mineral oil and docusates. Mineral oil works by coating the inside of the colon with a thin layer of oil, which helps retain water in the colon and adds moisture and bulk to the stool. It is often used to prevent straining in patients for whom it would be dangerous to strain (Doughty DB 2002; Klaschik E et al 2003;

Wald A 2003). Generally, if physicians recommend mineral oil supplementation for constipation, they advise taking 5 to 30 milliliters (mL) of mineral oil at bedtime. However, chronic mineral oil ingestion can result in malabsorption of fat-soluble vitamins and minerals (and, in some cases, can cause inflammation of the lungs). Physicians do not recommend mineral oil for continuous treatment of constipation.

Docusates promote water retention in the fecal mass, thus softening the stool. They are generally used to prevent straining and are most beneficial when the stool is hard. However, it may be 3 days before a patient experiences results. Fecal softeners should not be used exclusively but may be useful in combination with stimulant laxatives.

DRUG THERAPIES

Prucalopride is a novel, selective and specific serotonin (5HT₄) receptor agonist that belongs to a new class of medications known as benzofurancarboxamides. Prucalopride may increase the frequency of bowel movements and improve colonic transit, which are key factors in the treatment of chronic constipation (Coremans G et al 2003; Emmanuel AV et al 2002; Sloots CE et al 2002). It works by operating on serotonin receptors in the gut that stimulate motility.

Tegaserod is a serotonin subtype 4 receptor partial agonist for patients who have chronic constipation. Tegaserod treatment produces significant improvements in the symptoms of chronic constipation and is safe and well tolerated (Farup PG et al 2004; Fisher RS et al 2004; Johanson JF et al 2004).

SUPPLEMENTS TO AID ELIMINATION

Digest RC is a natural digestive supplement introduced in Europe more than four decades ago. It stimulates peristalsis, speeds digestion of fats, and prevents stagnation of food in the digestive tract. It may reduce acid reflux, alleviate fullness and bloating, decrease digestive tract tension, alkalinize the gastric contents, relieve constipation, and normalize elimination.

Digest RC is an immune system stimulant containing six active ingredients: black radish, charcoal, cholic acid, calcium phosphate, peppermint, and artichoke, all of which offer beneficial effects. The suggested dosage is two to three tablets with every heavy meal for 2 to 3 weeks. As symptoms of discomfort are alleviated, the dosage may be reduced.

Black radish extract has a high content of fiber, which can increase peristaltic movements and add bulk to the stool (Rigo J 1982). It also can help increase the secretion of mucus in the colon, which aids in elimination (Sipos P et al 2002).

Peppermint, with its active ingredient menthol, is a natural antispasmodic that relaxes smooth muscle, the same type of muscle that lines the walls of the intestines. Among patients who have constipation secondary to irritable bowel syndrome, peppermint oil helps to relieve symptoms and improve quality of life (Grigoleit HG et al 2005).

PROBIOTICS AND PREBIOTICS FOR HEALTHY DIGESTION

The colon has a robust population of beneficial bacteria that help digest any remaining nutrients. Beneficial bacteria include *Lactobacillus acidophilus* and *Bifidobacterium bifidum*. A healthy population of beneficial bacteria is essential for proper digestion. Among elderly bed-ridden Japanese, intake of yogurt containing *B. bifidum* bacteria was reported to improve the frequency of bowel movements (Tanaka R et al 1982). Another study found that commercial probiotic preparations helped increase bowel movement frequency among elderly people (Ouweland AC et al 2002).

In addition, prebiotics, or fructose oligosaccharides, have been shown to promote normal bowel movements. Fructose oligosaccharides are sugars that are fermented by beneficial bacteria and aid in digestion. In one study, elderly patients who were constipated benefited from taking fructose oligosaccharides (Kleessen B et al 1997).

RELIEVING ACUTE CONSTIPATION

Some cases of constipation are caused by insufficient peristalsis, which means there is not enough colon contractile activity to completely evacuate the bowels. However, there are specific nutrients that, if taken at the right time, can induce healthy colon peristaltic action without producing adverse effects.

On an empty stomach, certain nutrients have been shown to induce healthy colon peristalsis. One combination is 4 to 8 grams of vitamin C powder and 1500 mg of magnesium oxide powder taken with the juice of a freshly squeezed grapefruit. A convenient product sold by several vitamin companies is a buffered vitamin C powder that contains magnesium and potassium salts mixed with ascorbic acid. Depending on the person, a few teaspoons (or, in some cases, 1 to 2 tablespoons) of this buffered vitamin C powder can produce a powerful but safe laxative effect within 45 minutes. This therapy has to be individually adjusted so it will not cause day-long diarrhea.

Also on an empty stomach, vitamin B5 (pantothenic acid) in a dose of 2000 to 3000 mg will produce a rapid evacuation of the contents of the bowels. Vitamin B5 powder is unpalatable, but there are many health benefits attributed to it, in addition to its ability to stimulate peristalsis. One way of taking vitamin B5 and other peristalsis-inducing nutrients is to use a multinutrient formula, such as Power Maker II. This better-tasting powder contains vitamin B5, vitamin C, choline, and L-arginine, all of which induce significant peristaltic action when 1 to 2 tablespoons are taken on an empty stomach.

Nutritional laxatives such as magnesium, ascorbic acid, and pantothenic acid are becoming more popular with people who have constipation that is resistant to fiber therapies.

LIFESTYLE CHANGES

Here are some steps you can take to improve your digestion and help relieve constipation:

- Increase your fiber intake. Add more fruits and vegetables, in addition to whole grains and bran, to your diet.
- Add legumes to daily meals, either as a side dish or as part of a casserole. They are among the foods that offer the most fiber per serving and they encourage the growth of bacteria in the colon, adding to stool bulk.
- Cut back on low-fiber foods such as meats, cheeses, and processed foods.
- Drink plenty of water (about eight full glasses a day). As you increase your intake of fiber, you may also need to step up your fluid intake. Caffeine-containing drinks such as coffee, tea, and colas have a mildly dehydrating effect on the body, but they do promote contractions in the bowel and can sometimes facilitate bowel movements.
- Eat on a regular schedule to give your body a chance to regulate elimination.
- Respond to your body's signals to pass stool. This will keep your bowel movements regular. Resisting the urge to move your bowels for too long can result in impaction and overflow incontinence, in which liquid stool bypasses the impacted stool and leaks out.
- Exercise. Exercise is an important factor in the management of constipation. Regular exercise (especially abdominal muscle exercises) and brisk walking are recommended according to the age and physical condition of the individual.

LIFE EXTENSION FOUNDATION RECOMMENDATIONS

Most cases of constipation are first treated by lifestyle changes and by increasing the intake of fiber and liquids. Chronic constipation caused by medications, however, may require long-term laxative therapy. In this case, patients may consider rotating their use of different kinds of laxatives (such as first using stimulatory laxatives, and then using osmotic laxatives) to maintain regular bowel movements and minimize the risk of laxative dependency. Many people use laxatives for long periods with few adverse effects.

To induce peristaltic action and relieve acute constipation within 45 to 60 minutes, try one of the following techniques:

- Mix 4000 to 8000 mg of ascorbic acid powder with 1500 mg of magnesium oxide powder. Mix the preparation with the juice of a freshly squeezed grapefruit or orange. Drink. (Take on an empty stomach.)
- Mix 1 to 6 teaspoons of a buffered vitamin C powder that contains magnesium and potassium salts along with ascorbic acid (vitamin C). Mix the preparation with room-temperature water. Drink. (Take on an empty stomach.)
- Mix 1 to 2 teaspoons of Power Maker II Sugar-Free Powder in water or juice. Drink. (Take on an empty stomach.)
- Take 2000 to 3000 mg of pantothenic acid (vitamin B5). Keep in mind that pantothenic acid is unpalatable. (Take on an empty stomach.)

The following nutrients may also help relieve chronic constipation. When using fiber supplements, it is best to start with a lower dosage and slowly add additional fiber. Remember to also drink plenty of liquids.

- **Chitosan**—One to three capsules with 8 ounces of water and 1000 milligrams (mg) of vitamin C, three times a day, preferably with meals. Start with one capsule with each meal to allow the body to adjust to a higher level of fiber.
- **Soluble fiber**—5 grams (g) once or more daily. Any side effects will gradually disappear as your body adjusts to the increased fiber intake.
- **Glucomannan**—1 to 2 g/day
- **Probiotics**—At least 300 mg of a probiotic mix containing *Bifidobacterium lactis*, *Lactobacillus acidophilus*, *Bifidobacterium longum*, *Lactobacillus paracasei*, and *Streptococcus thermophilus*.
- **Digest RC**—Two to three tablets with every fat- or protein-containing meal for 3 weeks. Dosage may be reduced after relief occurs.

CONSTIPATION SAFETY CAVEATS

An aggressive program of dietary supplementation should not be launched without the supervision of a qualified physician. Several of the nutrients suggested in this protocol may have adverse effects. These include:

Fiber

- Take fiber supplements with a full 8-ounce glass of water.
- Drink eight 8-ounce glasses of water daily while taking fiber.

Magnesium

- Do not take magnesium if you have kidney failure or myasthenia gravis.

Vitamin C

- Do not take vitamin C if you have a history of kidney stones or of kidney insufficiency (defined as having a serum creatine level greater than 2 milligrams per deciliter and/or a creatinine clearance less than 30 milliliters per minute).
- Consult your doctor before taking large amounts of vitamin C if you have hemochromatosis, thalassemia, sideroblastic anemia, sickle cell anemia, or erythrocyte glucose-6-phosphate dehydrogenase (G6PD) deficiency. You can experience iron overload if you have one of these conditions and use large amounts of vitamin C.

For more information see the Safety Appendix

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