



## Constipation and Fecal Incontinence in the Elderly Population

YVONNE ROMERO, M.D., JONATHAN M. EVANS, M.D., KEVIN C. FLEMING, M.D., AND SIDNEY F. PHILLIPS, M.D.

- **Objective:** To describe the assessment and management of constipation and fecal incontinence in elderly patients.
- **Design:** We reviewed pertinent publications in the recent medical literature and outlined effective management strategies for constipation and fecal incontinence in the geriatric population.
- **Results:** Constipation can be classified into two syndromes—functional constipation and rectosigmoid outlet delay. Evaluation consists of elicitation of a detailed history, directed physical examination, and selected laboratory tests. Management involves nonpharmacologic (such as exercise and fiber) and

pharmacologic measures. Fecal incontinence in elderly patients can be due to stool impaction, medications, dementia, or neuromuscular dysfunction. Management options include modification of contributing disorders, pharmacologic therapy, and behavioral techniques.

- **Conclusion:** Constipation and fecal incontinence are common and often debilitating conditions in elderly patients. Management should be highly individualized and dependent on cause, coexisting morbidities, and cognitive status.

(*Mayo Clin Proc* 1996; 71:81-92)

Constipation is the most common digestive complaint in the United States, accounting for 2.5 million physician visits annually.<sup>1</sup> The occurrence is highest among persons 65 years old or older.<sup>1</sup> As a result, an estimated \$400 million is spent on laxatives annually in the United States.<sup>2-4</sup> Constipation, along with other functional bowel complaints, has been shown to diminish the quality of life and the feeling of well-being.<sup>2,3,5</sup> In addition, especially in the aged, constipation can lead to serious complications such as fecal impaction, fecal incontinence, and dilatation and even perforation of the colon.<sup>6</sup> Fecal incontinence is a common and serious problem; it can have a major influence on the quality of life and the care of geriatric patients. In this article, we review the assessment and management of these symptoms in the elderly population.

### CONSTIPATION

**Definition and Epidemiology.**—Studies of constipation are hampered by the lack of a universally accepted definition of constipation. Historically, constipation has been defined as

the passage of fewer than three bowel movements per week;<sup>7</sup> however, many patients define constipation differently. In a population-based study of persons older than 65 years of age, 26% of men and 34% of women reported that they suffered from constipation.<sup>8</sup> They complained of straining, incomplete evacuation, difficulty or pain with defecation, or hard stools.<sup>6,8,9</sup> Nevertheless, only 2% of men and 3% of women reported having three or fewer bowel movements per week.<sup>10,11</sup> Furthermore, diaries of stool frequency have shown that patients tend to underestimate the number of bowel movements that they pass.<sup>12</sup> Overall, 30 to 50% of elderly persons regularly use laxatives,<sup>2,10,11,13,14</sup> and the use of laxatives is most closely associated with having to strain to pass a bowel movement rather than having infrequent stools.<sup>13</sup>

In view of the discrepancy between what physicians and patients perceive as constipation, a recent international workshop defined and classified constipation on the basis of stool frequency, consistency, and difficulty of defecation.<sup>15,16</sup> With these recommendations, constipation has been categorized into two syndromes—functional constipation (slow transit) and rectosigmoid outlet delay (Table 1).

Rectosigmoid outlet delay refers to anorectal dysfunction. It is characterized by prolonged defecation (usually needing to spend more than 10 minutes to complete a bowel movement) or having the feeling of anal blockage (often

From the Division of Gastroenterology and Internal Medicine (Y.R., S.F.P.) and Section of Geriatrics (J.M.E., K.C.F.), Mayo Clinic Rochester, Rochester, Minnesota.

Individual reprints of this article are not available. The entire Symposium on Geriatrics will be available for purchase as a bound booklet from the Proceedings Circulation Office at a later date.

Table 1.—Definitions of Constipation Established by International Workshop on Constipation

<b>Functional constipation</b>
≥2 of the following complaints present for at least 12 mo:*
Straining at least 25% of the time
Lumpy or hard stools at least 25% of the time
Feeling of incomplete evacuation at least 25% of the time
≤2 bowel movements in a week
<b>Rectal outlet delay</b>
Anal blockage more than 25% of the time and
Prolonged defecation or
Manual disimpaction (when necessary)

\*When patients are not taking laxatives.  
Data from Whitehead and associates.<sup>15,16</sup>

having to press in or around the anus to aid defecation). Rectosigmoid outlet delay can be a result of anal fissures, other painful perineal diseases, prior rectal or perineal surgical procedures, megacolon, trauma (including normal childbirth), or anorectal incoordination (dyschezia).

With use of these definitions, a population-based study of noninstitutionalized persons 65 years of age or older found the prevalence of constipation to be 40%.<sup>17</sup> The prevalence of rectosigmoid outlet delay was 21%; this syndrome occurred most frequently in elderly women.<sup>17</sup>

**Pathogenesis.**—Why constipation is such a common complaint among the elderly population is uncertain, although several mechanisms have been proposed. The frequency of bowel movements is not decreased with normal aging,<sup>10,18,19</sup> nor does aging alone seem to slow intestinal transit.<sup>18,20</sup>

Other factors likely contributing to the development of constipation in elderly persons include chronic disease, medications, decreased mobility, dietary habits, and altered patterns of intake of fluids. Hypothyroidism can cause hypomotility and slow transit, and congestive heart failure has been thought to cause bowel edema or to necessitate the use of constipating drugs, such as calcium channel blockers. The autonomic or sensory neuropathies associated with diabetes can predispose to the development of constipation.<sup>20,21</sup> Metabolic disturbances, such as hypercalcemia and hypokalemia, can also affect smooth muscle function.<sup>4</sup> Illnesses commonly associated with constipation are listed in Table 2.

Numerous prescription and nonprescription medications may cause constipation.<sup>13,22</sup> Medications with anticholinergic properties, opiate analgesics, and calcium channel blockers slow intestinal transit by their effects on the autonomic nervous system or smooth muscle.<sup>4,23,24</sup> Diuretics have been proposed to cause dehydration, resulting in increased absorption of water and decreased stool water content; however, clear evidence for this mechanism of action is

lacking.<sup>2,25</sup> Indeed, the benefit of increased intake of fluids in constipated elderly persons remains unproven.<sup>4</sup> Although dehydration has not been proved to cause constipation in elderly persons, it has been shown to be an important cause of fecal impaction.<sup>25</sup> Calcium- or aluminum-containing antacids, antihistamines, and nonsteroidal anti-inflammatory agents are commonly used over-the-counter medications that can be constipating.<sup>23</sup> Nonsteroidal anti-inflammatory drugs may induce constipation by inhibiting the normal production of prostaglandins<sup>24,26</sup> (Table 3).

The role of mobility in the development of constipation is difficult to assess. The few studies that have examined this relationship have yielded conflicting results.<sup>2,4,27-30</sup> Physical inactivity, decreased mobility, and constipation are often present in elderly nursing home residents but also in persons living in the community.<sup>28,31</sup>

Fiber has been shown to diminish the symptoms of constipation.<sup>32,33</sup> Increased intake of dietary fiber results in increased stool weight and frequency.<sup>34</sup> Although the amount

Table 2.—Common Conditions Associated With Constipation in the Elderly Population

<b>Drug effects</b>
See Table 3
<b>Mechanical obstruction</b>
Colon cancer
External compression from malignant lesion
Strictures: diverticular or postischemic
Rectocele (if large)
Postsurgical abnormalities
Megacolon
Anal fissure
<b>Metabolic conditions</b>
Diabetes mellitus
Hypothyroidism
Hypercalcemia
Hypokalemia
Hypomagnesemia
Uremia
Heavy metal poisoning
<b>Myopathies</b>
Amyloidosis
Scleroderma
<b>Neuropathies</b>
Parkinson's disease
Spinal cord injury or tumor
Cerebrovascular disease
Multiple sclerosis
<b>Other conditions</b>
Depression
Degenerative joint disease
Autonomic neuropathy
Cognitive impairment
Immobility
Cardiac disease

of dietary fiber is often low in the elderly population, no clear reason has been established for constipation in this age-group.<sup>4,13,27-29</sup> One study found that elderly constipated subjects consumed fewer meals and fewer calories than did control subjects without constipation.<sup>7</sup>

Certain psychological traits including somatization, obsessive-compulsiveness, depression, and anxiety have been reported to be associated with gastrointestinal disturbances in young adults; however, in all these studies, referral bias was present.<sup>7,35-37</sup> Although this association has not been well studied in the elderly population, depression and dementia have been shown to predispose to fecal impaction and incontinence.<sup>38,39</sup> This outcome may be due, in part, to a loss of awareness of the urge to defecate. The "terminal reservoir syndrome," in which elderly persons lose their responsiveness to the gastrocolic reflex and rectosigmoid response to food, may be important—particularly for those living in nursing homes who are dependent on others for assistance in toileting.

Some investigators have suggested that the increased use of laxatives by elderly persons is related to attitudes that were popular during the early part of this century, concerning the presumed benefits of regular purgation, rather than an actual bowel dysfunction.<sup>6,38</sup> The diagnosis of laxative abuse may be suggested by a prior history of regular laxative use, a tolerance of high dosages of stimulant cathartics, the presence of melanosis coli, and the loss of haustral markings on barium radiographic studies of the colon.<sup>4</sup>

**Evaluation.**—Onset of constipation in older persons warrants evaluation to exclude a specific medical illness or mechanical cause. The abdomen and rectum should be inspected for evidence of a mass. A complete blood cell count, fasting blood glucose level, serum chemistry panel, and thyroid-stimulating hormone (thyrotropin) level should be determined to exclude anemia, diabetes mellitus, hypercalcemia, hypokalemia, uremia, and hypothyroidism. If weight loss, anemia, rectal passage of blood, or a family history of colon cancer is present, referral to a gastroenterologist for colonoscopy is appropriate to exclude a malignant lesion. The indications for subspecialty consultation are listed in Table 4. Barium enema study is less sensitive than colonoscopy<sup>39</sup> and does not yield a tissue diagnosis; however, flexible sigmoidoscopy and barium enema are often used as an alternative.

For patients with chronic constipation who do not require referral, details of bowel function should be ascertained to distinguish functional constipation from rectosigmoid outlet delay. Dyschezia, a variant of rectosigmoid outlet delay, is due to rectoanal incoordination because of a flaccid or spastic dysfunction. Muscle weakness is more common in the aged than in younger patients and is characterized by reduced rectal tone, variable rectal dilatation, and impaired

**Table 3.—Medications Associated With Constipation**

Class	Examples
<i>Prescription drugs</i>	
Opiates	Morphine
Anticholinergic agents	Librax, belladonna
Tricyclic antidepressants	Amitriptyline > nortriptyline
Calcium channel blockers	Verapamil hydrochloride
Antiparkinsonian drugs	Amantadine hydrochloride
Sympathomimetics	Ephedrine, terbutaline
Antipsychotics	Chlorpromazine
Diuretics	Furosemide
Antihistamines	Diphenhydramine
<i>Nonprescription drugs</i>	
Antacids; especially calcium-containing antacids	Tums
Calcium supplements	...
Iron supplements	...
Antidiarrheal agents	Loperamide, attapulgite
Nonsteroidal anti-inflammatory agents	Ibuprofen

rectal sensory threshold necessitating a higher volume of rectal distention to induce defecation. Excessive straining (even with soft stools), long periods spent on the toilet (more than 15 minutes), and the need for digital disimpaction are common complaints. Spastic dyschezia ("anismus") due to an inability to relax the pelvic diaphragm and external anal sphincter is most often a disorder of young and middle-aged women.

A complete list of medications (including over-the-counter products) should be scrutinized to identify any potentially constipating drugs. Use of laxatives, dietary history, intake of fluids, other current medical problems, and a past history of operations and pregnancies may also be useful.

Among patients of all ages with chronic constipation, a physiologic cause is found in only 50% of those undergoing an exhaustive evaluation (including transit studies of the entire gut, colonoscopy, and rectal manometry).<sup>15</sup> The relationship of simple constipation with irritable bowel syndrome is unclear. Therefore, empiric therapy is often justified for chronic constipation.

**Nonpharmacologic Therapeutic Options.**—The initial management of constipation is conservative. Nonpharmacologic measures should be used first, even when laxatives are considered essential by the patient.<sup>4</sup> Ambulatory, alert patients should be informed about the wide variation in "normal" bowel habits. Ninety-five percent of subjects have as many as three bowel movements per day or as few as three bowel movements per week.<sup>7,11</sup> Patients should be educated about the gastrocolic reflex and, thus, encouraged to attempt defecation 30 minutes after consumption of a meal. When possible, medications that may be constipating should be

Table 4.—Indications for Gastroenterology Referral of Geriatric Patients With Constipation

1.	Recent-onset constipation associated with weight loss, anemia, abdominal pain, blood per rectum, heme-positive stool, or family history of colon cancer
2.	Chronic constipation in conjunction with a change in stool form or frequency, unintentional weight loss, anemia, or abdominal pain
3.	Failure to alleviate constipation despite compliance with high-fiber diet, exercise regimen, and bowel training program
4.	Chronic constipation necessitating use of high doses of any laxative
5.	Recent-onset fecal incontinence

discontinued or replaced by others. In the case of a terminally ill patient, narcotic analgesics should be continued at a dosage that controls pain; however, routine stimulant suppositories or enemas (or both) may be necessary three times a week to avoid impaction.

**Exercise.**—Although convincing data are lacking, an increased level of physical activity is recommended in patients with constipation. Usually, a daily walking program within 30 minutes after a meal is helpful. For those patients who are unable to walk, stationary exercises can be substituted. Abdominal and pelvic floor muscle strengthening exercises may provide the additional effort needed for defecation.

**Fiber.**—Dietary fiber is important for the successful long-term management of constipation. In a study of institutionalized elderly subjects, dietary supplementation with 6 to 15 g of bran per day resulted in an increase in the number of bowel movements.<sup>40</sup> Indigestible fiber has been shown to shorten the intestinal transit time, increase the stool volume, reduce the concentration of bile salts, and increase the gastrointestinal motility.<sup>23</sup> A diet high in fiber-containing foods, such as wheat bran, fruits (especially blackberries and raspberries), and vegetables (such as beans, lentils, peas, and squash), retains water,<sup>5</sup> thereby the stool is softened and fecal bulk is increased.<sup>23</sup> Of note, fiber supplementation without adequate intake of fluids may actually exacerbate symptoms. Furthermore, patients often complain of bloating, abdominal distention, and flatulence when beginning fiber supplements. These symptoms can be minimized by starting with a low dose of fiber and gradually (perhaps weekly) increasing the amount until symptomatic relief of constipation is achieved.<sup>41</sup>

In ambulatory persons, fiber supplementation begins at 10 g per day,<sup>15</sup> but the effective dose depends on several individual factors. Some patients require only one dose a day of supplemental fiber, whereas four to six doses may be necessary for others. Patients should understand that finding the right dose of fiber takes time. Fiber is not the usual "laxative"; thus, patients must persist and must become edu-

cated. Wheat bran is probably the best source of dietary fiber but is also the least well tolerated. Several over-the-counter fiber supplements are available. Those supplements composed of psyllium and other natural fiber sources are metabolized by colonic bacteria and release gas. Synthetic fiber products such as methylcellulose (Citrucel) and calcium polycarbophil (FiberCon tablets) are not digestible, produce less gas, and hence, may cause less discomfort for the patient. Some patients will find the daily preparation of powder-form fiber supplements cumbersome; they may prefer the ease of fiber in pill form. The recommended management of constipation in ambulatory elderly persons is summarized in Table 5.

If constipation persists despite compliance with a program of increased physical activity, intake of fiber and fluids, and elimination of constipating drugs, referral to a gastroenterologist for possible colonoscopy, colonic transit study, and other specialized studies should be considered (Table 4).

**Pharmacologic Options.**—For many persons, a regular regimen of laxatives may be necessary. Nevertheless, caution is advised. Laxatives are second only to analgesics in sales to elderly persons.<sup>42</sup> Long-term use of cathartics should be avoided in otherwise healthy and active elderly subjects because of the potential for adverse effects, including malabsorption, dehydration, electrolyte imbalances, and fecal incontinence. The possible negative consequences of commonly used over-the-counter products and prescription medications are listed in Table 6.

**Nonabsorbable Disaccharides.**—Because their side effects are minimal, nonabsorbable sorbitol and lactulose disaccharide or saline laxatives should be used initially. The sugars pass unchanged into the colon, where they are broken down to low-molecular-weight organic acids that draw fluid osmotically into the colonic lumen; they also decrease stool pH.<sup>43</sup> Sorbitol solution, 15 to 30 mL once or twice a day, can be safely administered three times a week. Sorbitol is as effective as lactulose for constipation but costs considerably less.<sup>44</sup>

**Saline Cathartics.**—Magnesium-containing products are the most common saline cathartics.<sup>45</sup> Magnesium salts draw fluid osmotically into the lumen of the small bowel and colon and thus induce wall contractions.<sup>45</sup> They also induce the release of cholecystokinin, which may accelerate transit in the small and large bowel.<sup>46</sup> They may, however, lead to dehydration and electrolyte disturbances,<sup>47</sup> and with long-term use, the risk of hypermagnesemia increases.<sup>48</sup> Magnesium- and aluminum-containing products should be used with caution in patients with renal failure.

**Lubricants.**—Mineral oil, taken orally, lubricates the stool; however, if aspirated, it can cause lipid pneumonia.<sup>49</sup> In addition, the long-term use of mineral oil is associated

with malabsorption of fat-soluble vitamins.<sup>15</sup> In some instances, mineral oil can leak from the anus and contribute to fecal incontinence.<sup>13</sup> In general, these agents should be avoided.

**Stool Softeners.**—Stool softeners are commonly prescribed; however, they have not been clearly shown to be effective.<sup>6,50</sup> In fact, they may exacerbate fecal incontinence in patients with rectosigmoid outlet delay.<sup>4</sup> Their most useful role is when excessive straining is hazardous—for example, in patients with unstable angina, syncope due to bradyarrhythmias, or postoperative states.

**Orally Administered Stimulants.**—Several stimulant laxatives are present in common over-the-counter preparations; these include anthraquinones, phenolphthalein, castor oil, and bisacodyl. All these agents act by altering electrolyte transport in the colon, increasing intraluminal fluids, and generating propulsive activity.<sup>51,52</sup> Senna directly stimulates the myenteric plexus and produces a prostaglandin E-like substance that stimulates colonic activity.<sup>52,53</sup> Because of delayed onset of action, bedtime administration is recommended to avoid nocturnal incontinence. Cramping and diarrhea are dose-dependent side effects.<sup>4</sup>

Both phenolphthalein and bisacodyl (Dulcolax) are structurally related to senna and have similar actions. Some clinicians suggest that neither phenolphthalein nor castor oil should be administered to elderly patients because of the potential side effects of malabsorption and dehydration.<sup>4,54,55</sup> Bisacodyl directly stimulates the myenteric plexus<sup>44,56,57</sup> and has been shown to produce electrolyte imbalances more often than does senna.<sup>51</sup> Suppository forms can cause local rectal irritation.<sup>58</sup> Fecal incontinence may occur in frail persons because of the potency of these agents.<sup>4</sup>

Excessive use of any stimulant laxative can cause malabsorption of fats, calcium, and potassium.<sup>55</sup> The pathophysiologic mechanism of "cathartic colon" is poorly understood; but it is thought to result from long-term use of stimulant laxatives, eventually leading to a dependence on medications for defecation.<sup>4</sup> Melanosis coli (hyperpigmentation of the colonic mucosa) is a common sequela of prolonged use of these laxatives. It has no clinical significance<sup>6</sup> other than being a signal of use of laxatives.

**Enemas.**—Enemas evacuate the rectal ampulla and sometimes the descending colon and sigmoid. Frail elderly persons should not perform enemas themselves because of the risk of rectal perforation. Soapsuds and phosphate enemas are best avoided because they injure the mucosa.<sup>4,6,23</sup> Rectal ischemia has been reported with long-term use.<sup>4,59,60</sup>

**Rectal Stimulants.**—Glycerin suppositories also stimulate the rectum locally and induce evacuation. They can be used to augment the gastrocolic reflex in programs of bowel retraining.

Table 5.—Management of Constipation in Ambulatory Elderly Patients\*

1. Exclude a specific cause  
CBC, TSH, fasting blood glucose level, serum electrolyte panel  
Palpate the abdomen and rectum for evidence of a mass
2. Exclude fecal impaction by digital rectal examination  
If hard stool in vault, proceed with digital disimpaction followed by tap water enemas or mineral oil retention enemas  
If abdominal distention diminishes and patient begins to have spontaneous bowel movements, give bisacodyl or polyethylene glycol by mouth to clear the colon in its entirety  
If abdominal distention is not alleviated, abdominal roentgenography should be performed to assess stool burden before cathartics are given orally  
If a hard stool mass is not present on digital rectal examination, proceed with abdominal roentgenography to assess stool burden, a proximal stool mass, or obstruction with dilated loops of bowel
3. If weight loss, anemia, heme-positive stool, abdominal distention or mass, or family history of colon cancer is present, refer for colonoscopy
4. Discontinue unnecessary medications, especially those thought to contribute to constipation; substitute less constipating medications
5. Educate patient about normal bowel habits
6. Encourage increased fiber intake (dietary or supplemental)
7. Encourage intake of fluids, especially with fiber supplementation
8. Encourage physical activity, the extent based on individual capabilities.

\*CBC = complete blood cell count; TSH = thyroid-stimulating hormone (thyrotropin).

**Topically Used Agents.**—Sitz baths and topical ointments such as pramoxine hydrochloride (Anusol) or Tucks pads may be beneficial by easing defecation. Therefore, the patient may not withhold stool to avoid pain.

**Prokinetic Agents.**—Prokinetic agents such as cisapride should not be offered without objective evidence of colonic dysmotility. These agents are expensive and have considerable potential for adverse effects in elderly patients.<sup>61</sup>

**Antidepressants.**—Some investigators suggest the occasional use of antidepressant therapy for patients with "hypochondriacal constipation," when education and reassurance are unsuccessful.<sup>15</sup> Caution is recommended, however, because many of these agents have anticholinergic properties and are mildly constipating.

**General Recommendations.**—For elderly persons with chronic constipation, we recommend therapeutic trials of laxatives, based on their mental capacity, type of constipation, and overall function, in the sequences listed in Table 7. A potentially more hazardous or expensive medication should be used only if those listed before it are ineffective or

Table 6.—Summary of Medications Commonly Used for Constipation\*

Type	Generic name	Trade name	Dosage	Side effects	Time to onset of action (h)	Cost per use†	Mechanism of action
Fiber	Bran	...	1 cup/day	Bloating, flatulence, iron and calcium malabsorption	...	...	Stool bulk ↑, colonic transit time ↓, GI motility ↑
	Psyllium	Metamucil Perdiem with fiber	1 tsp up to tid	Bloating, flatulence	...	\$0.10-\$0.30	
	Methylcellulose	Citrucel	1 tsp up to tid	Less bloating	...	\$0.50-\$1.43	
	Calcium polycarboxylate	FiberCon	2-4 tabs qd	Bloating, flatulence	...	\$0.44-\$0.88	
Stool softener	Docusate sodium	Colace	100 mg bid	Ineffective for constipation	12-72	\$0.14-\$0.80†	Cyclic AMP stimulated to secrete water, Na, and Cl into lumen
Hyperosmolar agents	Sorbitol	...	15-30 mL qd or bid	Sweet tasting, transient abdominal cramps, flatulence	24-48	\$0.12-\$0.48	Nonabsorbable disaccharides metabolized by colonic bacteria into acetic and other SCFA
	Lactulose	Chronulac	15-30 mL qd or bid	Same as sorbitol	24-48	\$1.14-\$4.56†	into acetic and other SCFA
	Polyethylene glycol	Golytely Colyte	See treatment of fecal impaction	Incontinence due to potency	0.5-1	\$20 per treatment	Osmotically ↑ intraluminal fluids
Suppository	Glycerin suppository	...	Up to daily	Rectal irritation	0.25-1	\$0.20	Evacuation induced by local rectal stimulation
Stimulants	Bisacodyl	Dulcolax	10-mg suppositories up to 3 times/wk	Incontinence, hypokalemia, abdominal cramps, rectal burning with daily use of suppository form	0.25-1	\$0.26-\$1.50†	Similar to senna (see anthraquinones)
	Anthraquinones (senna, cascara)	Senokot	2 tabs qd to 4 tabs bid	Degeneration of Meissner's and Auerbach's plexus, malabsorption, abdominal cramps, dehydration, melanosis coli	8-12	\$0.60-\$2.40	Electrolyte transport altered by ↑ intraluminal fluids; myenteric plexus stimulated; motility ↑
		Perdiem (plain)	1-2 tsp qd		8-12	\$0.40-\$0.80	
		Peri-Colace	1-2 tabs qd		8-12	\$0.07-\$0.14 \$0.57†-\$1.14†	
	Phenolphthalein	Ex-Lax	1-2 tabs qd	Rash, malabsorption, dehydration	6-8	\$0.22†-\$0.44†	Structurally similar to senna (see anthraquinones)
		Correctol	1-2 tabs qd		6-8	\$0.18†-\$0.36†	
Feen-A-Mint		1-3 tabs qd		6-8	\$0.20†-\$0.60†		
Saline laxative	Magnesium	Milk of magnesia	15-30 mL qd or bid	Magnesium toxicity, dehydration, abdominal cramps, incontinence	1-3	\$0.11-\$0.44	Fluid osmotically drawn into small bowel lumen; CCK stimulated; colon transit time ↓
		Haley's M-O (with mineral oil)	15-30 mL qd or bid		1-3	\$0.20-\$0.60	
Lubricant	Mineral oil	...	15-45 mL	Lipid pneumonia, malabsorption of fat-soluble vitamins, dehydration, incontinence	6-8	\$1.50	Stool lubricated

Table 6.—Continued\*

Type	Generic name	Trade name	Dosage	Side effects	Time to onset of action (h)	Cost per use†	Mechanism of action
Enemas	Mineral oil retention enema	...	100-250 mL qd per rectum	Incontinence, mechanical trauma	6-8	\$1.86	Stool softened and lubricated
	Tap water enema	...	500 mL per rectum	Mechanical trauma	5-15 min	Labor only	Evacuation induced by distended colon;
	Phosphate enema	Fleet	1 unit per rectum	Accumulated damage to rectal mucosa, hyperphosphatemia, mechanical trauma	5-15 min	\$1.30	mechanical lavage
	Soapsuds enema	...	1,500 mL per rectum	Accumulated damage to rectal mucosa, mechanical trauma	2-15 min	\$2.10	

\*AMP = adenosine monophosphate; bid = twice a day; CCK = cholecystokinin; GI = gastrointestinal; qd = every day; SCFA = short-chain fatty acids; tabs = tablets; tid = three times a day.

†All prices are for generic drugs, as found in Rochester, Minnesota, unless marked with a dagger, which signifies a brand name price.

poorly tolerated. As previously mentioned, fiber supplementation is important for the successful long-term management of constipation in those patients able to drink sufficient fluids, who do not have symptoms of obstruction or a history of megacolon, volvulus, or recurrent fecal impaction. Fiber supplementation is generally the cornerstone of prophylaxis against constipation.

For ambulatory, cognitively intact elderly patients with chronic functional constipation, we recommend therapeutic trials of laxatives in the order shown in Table 7, beginning with sorbitol. The medication should be initiated at the dosage listed in Table 6 and gradually increased to the maximal dose. If the response is inadequate after a 2- to 4-week trial, the medication should be discontinued, and treatment with the next medication on the list should be initiated. Chronic constipation has taken years to develop, and expecting normalcy in a brief period is unreasonable. Increasing the dose too quickly may lead to the development of fecal incontinence. The use of stimulant laxatives should be based on individual characteristics.

For those ambulatory, cognitively intact elderly persons with rectosigmoid outlet delay, tap water (and, occasionally, mineral oil) enemas, given daily or every other day 30 minutes after a meal, or glycerin suppositories (also on a regular schedule) are preferable.

For mentally impaired, bedridden patients, scheduled toileting, as described in the upcoming section on fecal impaction, is recommended. Caution must be exercised in using sorbitol or stimulant laxatives in these patients because of the increased risk of developing overflow fecal incontinence. Fecal incontinence may lead to subconscious avoidance of the patient by the support staff, an increased risk of

developing terminal reservoir syndrome, and subsequently increased incontinence.

**Management of Fecal Impaction.**—Fecal impaction is a common complication of constipation in frail, elderly patients. Paradoxically, fecal impaction often manifests as overflow diarrhea. If a patient has abdominal distention, fullness, or masses on palpation (especially in the left lower quadrant) and hard stools in the rectum, impaction should be suspected. Manual disimpaction of low-lying stool is the first step. If hard stools are beyond reach of the examining finger, repeated tap water enemas should be administered. If disimpaction is not achieved, the oral use of laxatives is hazardous and may result in colonic perforation. If the vault is empty but impaction is suspected, a plain abdominal roentgenogram may disclose the total stool load.<sup>4,25</sup> Barium studies are not recommended; identification of an intracolonic lesion is unlikely in the presence of stool, and retained barium will exacerbate constipation. After physical disimpaction of stool, oil retention or tap water enemas should be administered once or twice daily until clear. Cathartics can then be given for colonic cleansing. Bisacodyl (10 mg—two tablets by mouth, once or twice a day) and polyethylene glycol (Golytely or Colyte; up to 3.8 L [1 gal] during a 4-hour period) are both highly effective. When all stool has been cleared from the colon, patients who have had fecal impaction should undertake a daily bowel program to prevent constipation and recurrent impaction.

For prevention of constipation, daily use of bulk laxatives should be encouraged. Patients should drink 1 to 2 L of fluid daily.<sup>2,25</sup> If the intake of fluids is inadequate, fiber supplementation can actually exaggerate constipation.<sup>4</sup> If patients are unable to comply with or tolerate fiber supplementation,

Table 7.—Cathartics for Chronic Constipation  
in Elderly Patients\*

<i>Cognitively intact patients with functional constipation</i>	
1.	Fiber supplementation
2.	Physical activity 30 minutes after meals
3.	Sorbitol
4.	Glycerin suppositories
5.	Magnesium-containing products
6.	Tap water enemas
7.	Mineral oil enemas
8.	Stimulant laxatives
<i>Cognitively intact patients with rectal outlet delay</i>	
1.	Fiber supplementation
2.	Tap water enemas
3.	Mineral oil enemas
<i>Cognitively intact bedridden patients</i>	
1.	Fiber, if able to drink sufficient fluids
2.	Physical activity after meals
3.	Scheduled toileting; glycerin suppositories and tap water enemas alternating with mineral oil enemas as needed
<i>Cognitively impaired or bedridden patients, and patients with a history of megacolon or volvulus</i>	
1.	Avoid fiber
2.	Passive physical activity, ideally 30 minutes after morning meal
3.	Scheduled toileting

\*Use in the sequence listed. See text for further comments.

a regimen of laxatives, exercise, and possibly enemas should be implemented on a regular schedule. An important point to remember is that even for nonambulatory patients, physical activity (such as range-of-motion exercises) shortly after a meal may promote the successful passage of stool. Scheduled toileting—a plan in which the patient is moved to toileting facilities and a suppository is inserted 30 minutes after a meal—is recommended as a retraining program.<sup>15</sup>

Idiopathic megacolon, which predisposes patients to sigmoid volvulus, has been reported in institutionalized geriatric patients with chronic constipation. In such circumstances, dietary fiber should be restricted and enemas should be administered at least three times a week to avoid fecal impaction.<sup>6</sup>

## FECAL INCONTINENCE

**Definition and Epidemiology.**—Few symptoms incite as much distress and embarrassment as does fecal incontinence; indeed, because the presence of incontinence is rarely volunteered by patients, physicians need to inquire about this issue. Incontinence leads to social isolation and, for many, institutionalization.<sup>62</sup> Although the frequency of fecal incontinence among elderly persons living in the community is unknown, its prevalence among hospitalized elderly patients ranges from 17 to 66%.<sup>62,63</sup> Fifty percent of elderly residents of long-term-care facilities suffer from fecal inconti-

nence as well.<sup>64</sup> The high frequency of occurrence of fecal incontinence among hospitalized and institutionalized elderly patients is related to the high prevalence of delirium and dementia in those settings.<sup>65</sup>

For maintenance of fecal continence, the patient must be able to sense the need to defecate, to discriminate among solid, liquid, and gaseous contents, to defer defecation, and to reach a toilet in a timely manner.<sup>23,63,66</sup> *Minor incontinence* can be defined as partial soiling or incontinence of flatus or liquid stool. *Major incontinence* has been defined as “deficient control of stool of normal consistency.”<sup>67</sup> Evaluation and management vary with the severity of the problem and its frequency and duration.

**Minor Incontinence.**—*Partial soilage* of undergarments may be due to poor personal hygiene, prolapsing hemorrhoids, or other perianal conditions. Diarrhea, decreased mobility, dementia, and depression may all contribute to fecal soilage. Management is focused on the primary cause and does not necessitate extensive evaluation.

*Incontinence of gas* is a common symptom. As an isolated problem, it needs no evaluation. High-fiber foods and carbonated beverages should be avoided.

*Extreme urgency* differs from true incontinence in several respects and needs to be pinpointed historically. Patients with urgency sense stools (always liquid) in the rectum but are unable to maintain continence, against active colorectal contractions, until they reach toilet facilities. Severe urgency occurs in ulcerative proctocolitis, any severe diarrheal disease, and, commonly, irritable bowel syndrome. Proctosigmoidoscopy should be performed to exclude the presence of mucosal inflammation. If none is present, and no other treatable cause has been identified, management is directed toward keeping the stools as formed as possible.

In elderly patients, *true incontinence of liquid stool* is most commonly associated with fecal impaction, when liquid material seeps around a solid fecal mass.<sup>6,68,69</sup> Incontinence of liquid stools may also be due to disorders of pelvic floor-anal sphincter coordination, the most dramatic expression of which is incontinence of solid stools.

**Major Incontinence.**—*Incontinence of solid stools* usually reflects weakness of the puborectal muscle and loss of the normal anorectal angle, which is of major importance in the maintenance of continence. Uncontrolled loss of solid stool usually also involves dysfunction of the internal or external (or both) anal sphincters or the neural circuitry; this dysfunction may be at the local, spinal, or central level, or it may be primarily musculoskeletal (attributable to atrophy or fibrosis). Thus, numerous processes including local trauma (birth trauma, episiotomy, anorectal surgical procedure, or complete rectal prolapse), systemic diseases (such as diabetes mellitus), and neuronal disorders (pudendal nerve neuropathy and tumors of the cauda equina) may, with time,



lead to fecal incontinence. Fecal incontinence can be a result of progressive dementia, including Alzheimer's disease. Diseases associated with incontinence are listed in Table 8.

**Evaluation.**—In light of the severe embarrassment, profound effects on lifestyle, and excessive burden for caregivers, a thorough evaluation of fecal incontinence is imperative. The following are some pertinent questions: What material is passed? What are the duration, frequency, and circumstances? Potential precipitating events include medications, exaggerated gastrocolic reflex, previous anorectal operations, birth trauma, and neurologic disorders. Environmental issues, access to toilet facilities, the patient's ability to reach and use the toilet facilities, the degree of privacy, and the type of clothes fasteners may all affect bowel control.<sup>63</sup>

The abdomen should be inspected for distention, masses, and tenderness. The perineum should be carefully inspected for evidence of fissures, fistulas, and scars from previous trauma. Digital examination of the rectum to assess tone and perineal descent during straining should be performed. Fecal impaction, anal stricture, rectal prolapse, or rectal mass can also be detected on digital examination. In patients with a patulous anus, only a partial response to bulking agents can be expected. For gross determination of pudendal nerve function, the anal wink should be assessed in all four quadrants. For analysis of the degree of rectal prolapse, the patient should be asked to strain while sitting on a commode chair. In addition, the patient's ability—based on muscle strength, coordination, vision, and cognitive status—to manipulate bathroom facilities successfully should be ascertained. Once fecal impaction has been excluded, a blood specimen should be withdrawn for a complete blood cell count, thyrotropin level, and fasting blood glucose level. Stools should be analyzed for leukocytes, ova and parasites, bacteria (by culture), and, in cases of recent antibiotic use, *Clostridium difficile* toxin, in patients with new-onset fecal incontinence. Once the process has been deemed chronic and past infection and antibiotic use have been excluded, stool studies need not be repeated. Proctosigmoidoscopy should also be done to exclude the presence of an inflammatory process.

**Management.**—For patients with incontinence of liquid stool associated with fecal impaction, treatment is directed at disimpaction and prevention of recurrence, as previously described. For patients who are incontinent of liquid stool, with or without occasional solid stool, the first step in management is to solidify the stool. This result can be achieved with low-dose bulking agents (bran or fiber supplements), antidiarrheal opiate derivatives (such as loperamide hydrochloride), or cholestyramine, a bile acid-binding resin that may be preferable in patients with severe hypercholesterol-

Table 8.—Causes of Fecal Incontinence in Elderly Patients

<i>Minor incontinence</i>	
Normal sphincters and pelvic floor	
Diarrhea— <i>infectious, inflammatory, bowel disease, intestinal resection; metabolic (diabetes)</i>	
Surgical procedure— <i>fistula, colostomy</i>	
Abnormal sphincter or pelvic floor function	
Fecal impaction	
Perianal surgical procedure	
Rectal prolapse	
Third-degree hemorrhoids	
Generalized neurologic disorders	
<i>Major incontinence</i>	
Trauma	
Postoperative	
Obstetric	
Fractures of the pelvis	
Impalement	
Drugs— <i>antibiotics, laxatives, intoxication</i>	
Complete rectal prolapse	
Rectal carcinoma	
Idiopathic (primary neurogenic fecal incontinence)	
Neurologic	
Central	
Cerebral	
Multiple strokes	
Dementia	
Spinal	
Multiple sclerosis	
Metastatic lesions and other tumors	
Tabes dorsalis	
Degenerative diseases (for example, vitamin B <sub>12</sub> deficiency)	
Peripheral	
Cauda equina (tumor or trauma)	
Peripheral neuropathy (diabetes)	
Musculoskeletal	
Myotonic dystrophy	
Polymyositis	
Collagen vascular disease	
Scleroderma	
Amyloidosis	

Data from Mandelstam and associates.<sup>67</sup>

emia. Cholestyramine must be used with caution in elderly patients because of its ability to bind to other medications (including warfarin and propranolol); its long-term use may be associated with an increased bleeding tendency due to hypotherbinemia and vitamin K deficiency. Bran and fiber supplements are preferable because of their low cost and easy accessibility; however, if the patient is unresponsive, cholestyramine can increase stool girth. Loperamide, one to eight tablets per day, may be given prophylactically, 30 to 45 minutes before meals; it may also be used at times of anticipated stress (such as before traveling by automobile). Use of medications known to produce loose stools should be discontinued.

Table 9.—Treatment of Fecal Incontinence in Elderly Patients

1. Solidify stools
  - Low-dose bulking agents
  - Antidiarrheal agents
    - Prophylaxis: 30-45 min before meals or before stressful events
    - Therapeutic: up to 8 tablets daily
2. Avoid large meals
3. Use tap water enemas
4. For solid stools: implement scheduled toileting
  - Glycerin suppositories daily or every other day, 30 min postprandially
  - Attempt defecation, regardless of urge, at the same time daily
5. Offer biofeedback therapy\*
6. If no response to these measures, proceed with gastroenterology referral

\*In selected patients—see text.

Patients with incontinence of solid stool benefit from scheduled toileting. Insert a glycerin suppository daily at a scheduled time after a meal and encourage ambulation (or, for immobile patients, move them in close proximity to toilet facilities). Discourage dependence on the sense of "urge" to initiate a bowel movement. Avoid orally administered mineral oil products. If conservative measures do not provide appreciable benefit, or if weight loss, blood per rectum, or anemia is present, referral for colonoscopy is advised. Once mechanical obstruction has been excluded in elderly immobile patients or those with dementia, no further evaluation is necessary. Treatment strategies for fecal incontinence in elderly patients are summarized in Table 9.

Biofeedback therapy can be offered to those motivated patients who have the ability to comprehend directions without memory loss and who have some degree of intact rectal sensation. In these selected patients, success rates of up to 70% have been reported.<sup>6,70,71</sup> Biofeedback is therapist dependent, often not covered by medical insurance, and impractical in cognitively impaired patients.

Common diagnostic tests for assessment of pelvic floor and anal sphincter function and the information they provide are outlined in Table 10. Proctologic examination or evacuation proctography may reveal the presence of a rectocele, intussusception, or rectal prolapse. These abnormalities, however, can also be present in asymptomatic persons, and the severity of the anatomic defect does not correlate well with symptoms.<sup>72</sup> Surgical treatment is not recommended in most cases of fecal incontinence unless a specific cause has been identified. Surgical intervention is warranted for fecal incontinence when it is associated with recurrent, full-thickness rectal prolapse—but only after nonsurgical therapies have failed.<sup>6,73</sup> Beck<sup>63</sup> reported that use of basic management

steps will achieve some level of improvement in bowel control in approximately 60% of patients.

## CONCLUSION

Constipation and fecal incontinence are common and sometimes debilitating symptoms. Although deemed benign, both processes may have a devastating effect on the quality of life of elderly patients. Management of constipation and fecal incontinence in elderly patients is highly individualized; it must be based on cause and the patient's overall medical condition. Fecal impaction should be excluded before proceeding with use of laxatives, especially in patients who have abdominal distention or who are frail or immobile. Referral to a gastroenterologist is recommended if the onset of incontinence or constipation is acute or if weight loss, blood per rectum, or anemia is present. Physicians should aim to educate their patients about the wide range of normal bowel habits, the benefits of fiber, and the possibly deleterious effects of prolonged use of cathartics. Conservative management involves education, fiber, exercise, and adequate intake of fluids. Medical and surgical options exist, but their benefits must be weighed against their risks.

Table 10.—Evaluation of Fecal Incontinence in Elderly Patients

Procedure	Information obtained
Proctosigmoidoscopy	Inflammation Melanosis coli (previous laxative abuse) Tumors Strictures
Proctography	Rectal capacity or diameter Anorectal angle (puborectal function) Perineal descent (pelvic floor function)
Anorectal manometry	Anal sphincter pressures Rectal sensation Rectal compliance External sphincter responses (cough, distention, voluntary) Can generate a three-dimensional pressure profile to demonstrate focal sphincter defects
Balloon expulsion	Pelvic floor and anal sphincter function
Electromyography	Pelvic neuropathy A glove-mounted electrode in the anal canal can identify pudendal nerve latency
Anal ultrasonography	Assess anatomic sphincter integrity Exclude infiltrative extraluminal rectal carcinoma
Cinedefecography	With straining, can identify rectoceles, intussusception, enteroceles, poor relaxation of the puborectal muscle, and perineal descent

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