

Evaluating and Managing Constipation in the Elderly

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Constipation encompasses many defecatory disorders and means different things to health care providers and patients. Causes of constipation include colon disease, metabolic disturbances, neurologic disorders, pharmacotherapy, and inappropriate diet and fluid intake. The multiplicity of causes explains why constipation is common and why many patients may not respond to initial treatment. Constipation can be mild to severe and acute or chronic. Its impact varies, but constipation tends to be most troublesome and costly in the elderly. Older people often have

Constipation is common in the elderly because of age-related physiologic changes and polypharmacy. Secondary constipation is treated by correcting underlying pathology or reducing predisposing factors. Primary constipation is amenable to dietary adjustments, education and behavioral training, and laxatives when necessary.

a number of diseases or take medications that can exacerbate constipation and make it difficult to treat; this can lead to potentially serious medical complications. However, regardless of age, constipation adversely affects health-related quality of life (HRQL) (Glia & Lindberg, 1997).

Although constipation is not a urologic disorder, many elderly patients with such disorders take medications that increase the risk of constipation. They may also voluntarily restrict fluid intake in hopes of decreasing urologic symptoms, an approach that may increase the risk of constipation and worsen urologic symptoms because of anatomic obstruction from constipated stool in the lower colon or rectum. Thus, an understanding of the causes of constipation and its treatment is valuable in managing older patients with urologic disorders.

Definitions

Constipation can be described

in several ways (see Table 1). It is often arbitrarily defined according to a patient's perception of abnormal bowel function. Patients tend to be less concerned about frequency of defecation than about abdominal discomfort, straining at stool, passage of hard stools, inability to defecate when desired, and a feeling of incomplete evacuation (Talley, 2004). Health care providers use more objective criteria for defining constipation. These guidelines, called the Rome criteria because they were developed at a meeting in Rome, Italy, describe the features of chronic functional constipation in clinical terms to aid diagnosis (see Table 2) (Thompson et al., 1999). These criteria are <3 bowel movements per week and five subjective criteria, two of which must be met to validate the diagnosis (Talley, 2004; Thompson et al., 1999). The Rome criteria for functional constipation were developed to avoid "diagnosis by exclusion" (making a diagnosis by ruling out other conditions) and

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Table 1.
Definitions of Constipation

Description	Definition
<i>Severity</i> Mild Severe	>1 bowel movement per week <1 bowel movement per week
<i>Duration</i> Acute Chronic	Constipation lasting <3 months Constipation lasting >3 months
<i>Types</i> Primary (idiopathic or functional) Secondary	Resulting from colon dysfunction Resulting from causes other than colon dysfunction (e.g., physical obstruction of gastrointestinal tract, drug adverse effects, fluid restriction)
<i>Causes</i> Slow transit Pelvic floor hypertonicity	Constipation resulting from dysfunction of local intrinsic reflex mechanisms in the colon Constipation resulting from hypertonicity of the anal sphincter and muscles used for stool evacuation

Table 2.
Rome II Diagnostic Criteria for Chronic Constipation*

At least 12 weeks, which need not be consecutive, in the preceding 12 months if ≥ 2 of the following symptoms in an adult:

- <3 bowel movements per week
- Straining during >25% of defecations
- Lumpy or hard stools in >25% of defecations
- Sensation of incomplete evacuation in >25% of defecations
- Sensation of anorectal obstruction or blockade in >25% of defecations
- Manual maneuvers to facilitate >25% of defecations
- Loose stools are not present, and there are insufficient criteria for irritable bowel syndrome

Source: Adapted from Thompson et al., 1999.

* These criteria were developed to assist in the diagnosis of functional constipation.

provide clinicians with an objective means of identifying functional constipation. However, these criteria should not be used to diagnose constipation caused by underlying organic disease.

Epidemiology

Although prevalence estimates vary, constipation affects about 15% (range, 2%-27%) of

the population in North America (Higgins & Johanson, 2004). Prevalence increases exponentially in persons aged ≥ 65 years, with women affected more frequently than men (LeClere, Moss, Everhart, & Roth, 1992). Constipation has traditionally been considered an inconvenience and not important clini-

cally, which may explain why most people with constipation self-medicate with over-the-counter products. Only about one-third of affected individuals see a physician, because constipation is perceived as transient, not severe, or readily amenable to nonprescription treatment (Pare, Ferrazzi, Thompson, Irvine, & Rance, 2001). Consequently, the number of patients with constipation may be higher than clinicians believe.

Women aged ≥ 65 years and men aged ≥ 50 years are most likely to see a physician because of constipation; women are more than twice as likely as men to consult a physician for treatment (Pare et al., 2001). Constipation is of concern to 45% of elderly living at home and a considerable health problem in 11% (Wolfsen, Barker, & Mitteness, 1993). Among people aged ≥ 65 years, 30% reported being constipated during the previous month (Whitehead, Drinkwater, Cheskin, Heller, & Schuster, 1989). Constipation affects 60% to 80% of patients in geriatric hospitals or nursing homes, compared with 25% to 40% of those residing in day hospitals or living at home. Constipation is more common in those with poor mobility (Kinunen, 1991). Chronic, severe constipation diminishes HRQL and can lead to potentially life-threatening complications, particularly in older people and nursing home residents (Robson, Kiely, & Lembo, 2000).

Costs

Chronic constipation poses considerable psychological (O'Keefe, Talley, Zinsmeister, & Jacobsen, 1995) and economic burdens (Dennison et al., 2005). It can compromise overall psychological well-being, with symptom severity inversely related to perceived HRQL (Glia & Lindberg, 1997). Societal costs have been illustrated in a small study showing that women with idiopathic constipation (n=47)

have significantly increased anxiety, depression, and social dysfunction compared with healthy women (n=28) (Mason, Serrano-Ikkos, & Kamm, 2000). Chronically constipated patients referred for anorectal manometry testing reported appreciably compromised HRQL, the extent of which correlated with symptom intensity (Damon, Dumas, & Mion, 2004). Another study reported that severely constipated patients scored considerably lower on the Gastrointestinal Quality of Life Index questionnaire compared with age-matched healthy volunteers (Sailer, Bussen, Debus, Fuchs, & Thiede, 1998).

Current economic costs of constipation are unavailable because no such studies have been reported in the past 20 years. A national survey in England and Wales reported that the rate of physician visits for constipation increased two-fold among people aged 65 to 74 years and more than five-fold in those aged ≥ 75 years (Johanson, Sonnenberg, & Koch, 1989). In the United States 1.2 million (Sonnenberg, Everhart, & Brown, 1994) to 2.5 million people (Sonnenberg & Koch, 1989) undergo clinical evaluation for constipation annually, at an average cost of \$2,700 per patient (Rantis, Vernava, Daniel, & Longo, 1997); about 85% of these patients are given prescriptions for laxatives or cathartics (Locke, Pemberton, & Phillips, 2000a) at an average annual cost of \$22 million (Sonnenberg et al., 1994).

About 90,000 people are hospitalized for constipation annually (Sonnenberg et al., 1994). Constipation can also contribute to an increased length of stay among patients hospitalized for other reasons (Mostafa, Bhandari, Ritchie, Gratton, & Wenstone, 2003). In the United States in 1994, the total annual direct and indirect costs attributed to constipation, not counting medications, exceeded \$350 million (Sonnenberg et al., 1994). Sales of

over-the-counter laxatives total \$660 million annually in the United States (Levy, 2004). These data, based in part on 20-year-old information, suggest that the inclusive economic cost of constipation is about \$1 billion annually in the United States, without factoring in inflationary trends.

Pathophysiology

Constipation has a number of potential causes, and it is important to distinguish between constipation caused by primary functional causes and constipation secondary to other disorders or medications.

Primary constipation. Slow-transit constipation and pelvic floor hypertonicity are the two principal categories of primary, or idiopathic, constipation. Slow-transit constipation, or colonic inertia, results from dysfunctional local intrinsic reflex mechanisms within the colon, leading to slowed intestinal transit and impaired colonic contractions. Symptoms include infrequent bowel movements without pain or strain. Slowed gastrointestinal transit is not generally a part of normal aging (Harari, Gurwitz, & Minaker, 1993). In a study of patients aged 65 to 104 years, only rectosigmoid transit, not right colon or left colon transit, was delayed significantly in patients with functional constipation compared with control patients and those with irritable bowel syndrome (IBS) (Evans et al., 1998). This suggests that outlet obstruction might be a common contributing factor to constipation in the elderly.

Appropriate testing with radiopaque Sitzmark[®] capsules or scintigraphic techniques are diagnostic for slow-transit constipation after ruling out other more common secondary causes. In the absence of concurrent pelvic floor dysfunction (Nyam, Pemberton, Ilstrup, & Rath, 1997) or a generalized intestinal motility disorder (Redmond et al., 1995), surgery alone with abdominal colectomy

and ileorectal anastomosis is curative. Care must be taken with the elderly in proposing this therapy, because fecal incontinence can ensue due to more liquid stool delivered to the rectum. Short-segment Hirschsprung's disease may be diagnosed in adulthood but uncommonly late in life. An intact rectoanal inhibitory reflex elicited during anorectal physiologic testing rules out this diagnosis.

Pelvic floor hypertonicity, or dyssynergia, is characterized by failure of anorectal coordination (Rao, 2001) and paradoxical hypertonicity of the anal sphincter and muscles used for evacuation. It results in prolonged storage time of stool in the rectum, with symptoms of anal blockage, severe straining, slow evacuation, and a sense of incomplete rectal emptying. Affected patients may need to self-disimpact. This condition, affecting up to 50% of patients with chronic constipation (Crowell, 2004), is common in the elderly (Cheskin, Kamal, Crowell, Schuster, & Whitehead, 1995) and often associated with decreased rectal tone and impaired rectal sensation (Harari et al., 1993). Whether child-bearing plays a role in development of this condition in women is not known.

Diagnosis can be made by history and physical examination, where the puborectalis may not relax with attempts at straining. The levator ani complex may be tender. Physiologic confirmation is obtained by failure to expel a balloon. Pelvic floor hypertonicity can be aggravated by age-related deterioration of anorectal sensation and somatomotor nerve defects associated with fecal incontinence (Schiller, 2001). This condition generally responds poorly to increased fiber intake (Cheskin et al., 1995). Therapy should include judicious use of laxatives, exercise to enhance pelvic muscle tone, and behavioral bowel retraining (Lembo & Camilleri, 2003; Locke, Pemberton, & Phillips, 2000b).

Table 3.
Medications that Promote Constipation

Central Nervous System Drugs				
<i>Antidepressants</i> Amitriptyline Desipramine Diphenhydramine Doxepin Nortriptyline Paroxetine Phenelzine Reboxetine	<i>Antipsychotics</i> Clozapine Olanzapine Thioridazine Zotepine	<i>Anxiolytics</i> Alprazolam Chlordiazepoxide Diazepam Oxazepam	<i>Opiate Analgesics</i> Cocaine Fentanyl Morphine Oxycodone	<i>Miscellaneous</i> Atropine (anticholinergic) Flurazepam (sedative) Phenobarbital (anticonvulsant) Pseudoephedrine (antitussive)
Cardiovascular/Musculoskeletal Drugs				
<i>Antihypertensives</i> Clonidine Diltiazem Hydralazine Methyldopa Nifedipine Triamterene Verapamil	<i>Diuretics</i> Chlorthalidone Furosemide Hydrochlorothiazide	<i>Cardiotonics</i> Digoxin Isosorbide nitrate	<i>Hematologics</i> Dipyridamole Warfarin	<i>Muscle Relaxants</i> Pancuronium Orphenadrine
Other Classes				
<i>Antacids</i> Aluminum products Calcium products Cimetidine Ranitidine	<i>Anticholinergics</i> Darifenacin Dicyclomine Hyoscyamine Oxybutynin Solifenacin Tolterodine Tropium	<i>Antibiotics</i> Aminoglycosides Aminopenicillins Cephalosporins Macrolides	<i>Antihistamines</i> Diphenhydramine Hydroxyzine	<i>Miscellaneous</i> Corticosteroids Immunosuppressants Methylxanthines Nonsteroidal anti-inflammatory drugs

Source: Adapted from Locke et al., 2000; Feinberg, 1993; Tune, 2001.

Secondary constipation. A number of factors can contribute to symptomatic constipation, most of which disproportionately affect the elderly. These include mechanical obstructions, medical co-morbidities, medications, and lifestyle issues. For example, persons unable to reach a bathroom unassisted because of limited mobility may try to “hold it in,” which promotes constipation.

Physical obstruction of the gastrointestinal tract can result from intrinsic neoplastic lesions, benign strictures secondary to previous episodes of diverticulitis or other inflammatory conditions, or extrinsic compression. Although postsurgical adhesions usually obstruct the small intestine, the colon can also be affect-

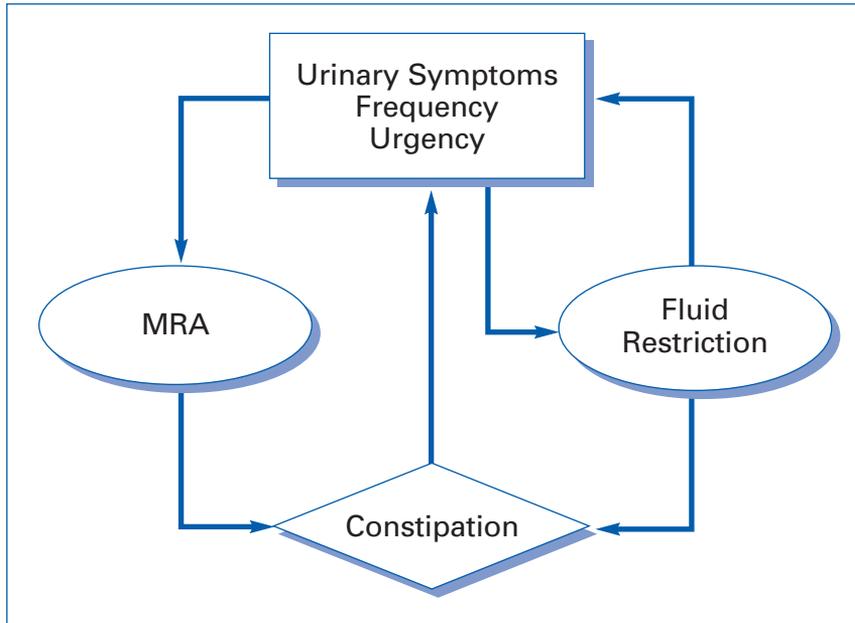
ed. Volvulus can occur in the cecum or sigmoid colon but usually presents as an acute obstruction. Pelvic floor outlet problems can occur beyond pelvic floor hypertonicity, with endopelvic fascial defects such as a rectocele causing obstructed defecation syndrome or other posterolateral levator ani complex hernias. Benign or malignant anal strictures can also present with constipation (Borum, 2001; Johanson et al., 1989; Locke et al., 2000a).

Constipation is common in the long-term care setting because of limitations on patient mobility (Kinnunen, 1991) and food and fluid consumption (Folden, 2002). Constipation can be an indication of functional dehydration, an issue for elderly patients whose food and fluid consumption tend

to be limited (Folden, 2002) and for those who limit fluid intake to control urinary incontinence (Hall, Karstens, Rakel, Swanson, & Davidson, 1995). Constipation is common in patients with certain neurologic conditions, such as Parkinson’s disease (Jost, 1997) and stroke (Ullman & Reding, 1996). Endocrine disorders, including diabetes mellitus and hypothyroidism (Sharma, Longo, Baniadam, & Vernava, 1995), also can cause constipation.

Constipation is an adverse effect associated with many medications (see Table 3). In an unpublished random search of medications in the *Physicians’ Desk Reference*, Phillips (personal communication, May 2005) found that 60% of drugs, including laxatives, listed constipation

Figure 1.
Interrelationships among Constipation, Urinary Symptoms, Fluid Restriction, and Muscarinic Receptor Antagonists (MRAs)



as an adverse effect. Most drugs that cause constipation directly or indirectly interfere with the physiologic regulation of intestinal and colonic transit. A preclinical study showed that intestinal and colonic contractile responses are normally mediated by muscarinic- M_3 receptor activation that induces contraction by activating voltage-gated calcium channels (Sawyer & Ehlert, 1998). These systems and associated anorectal motor function tend to become compromised in the elderly (Feinberg, 1993; Muller-Lissner, 2002; Schiller, 2001). Medications with anticholinergic properties, drugs that modulate calcium influx, and opiate analgesics can promote constipation by delaying colonic transit and relaxing intestinal smooth muscle. Antimuscarinics are commonly used in the elderly for urinary symptoms related to overactive bladder. Because of the interrelationship of lower colon and lower urinary tract function, con-

sideration should be given to the constipation rates associated with medications used to treat urinary symptoms (see Figure 1).

Older people residing at home take an average of 5.7 prescription and nonprescription medications daily (Flaherty, Perry, Lynchard, & Morley, 2000). Thus, polypharmacy poses the risk of an accruing anticholinergic toxicity (Tune, 2001). Clinicians should monitor drug use, including over-the-counter medications, and consider anticholinergic burden when prescribing medications for elderly patients. Drug classes that can cause constipation include anticholinergics, antidepressants, anxiolytics, antipsychotics, opiate analgesics, and antihypertensives. More specifically, ranitidine, warfarin, theophylline, digoxin, and prednisolone are among the drugs commonly prescribed for elderly patients that have a considerable anticholinergic burden (Tune, Carr, Hoag, & Cooper, 1992).

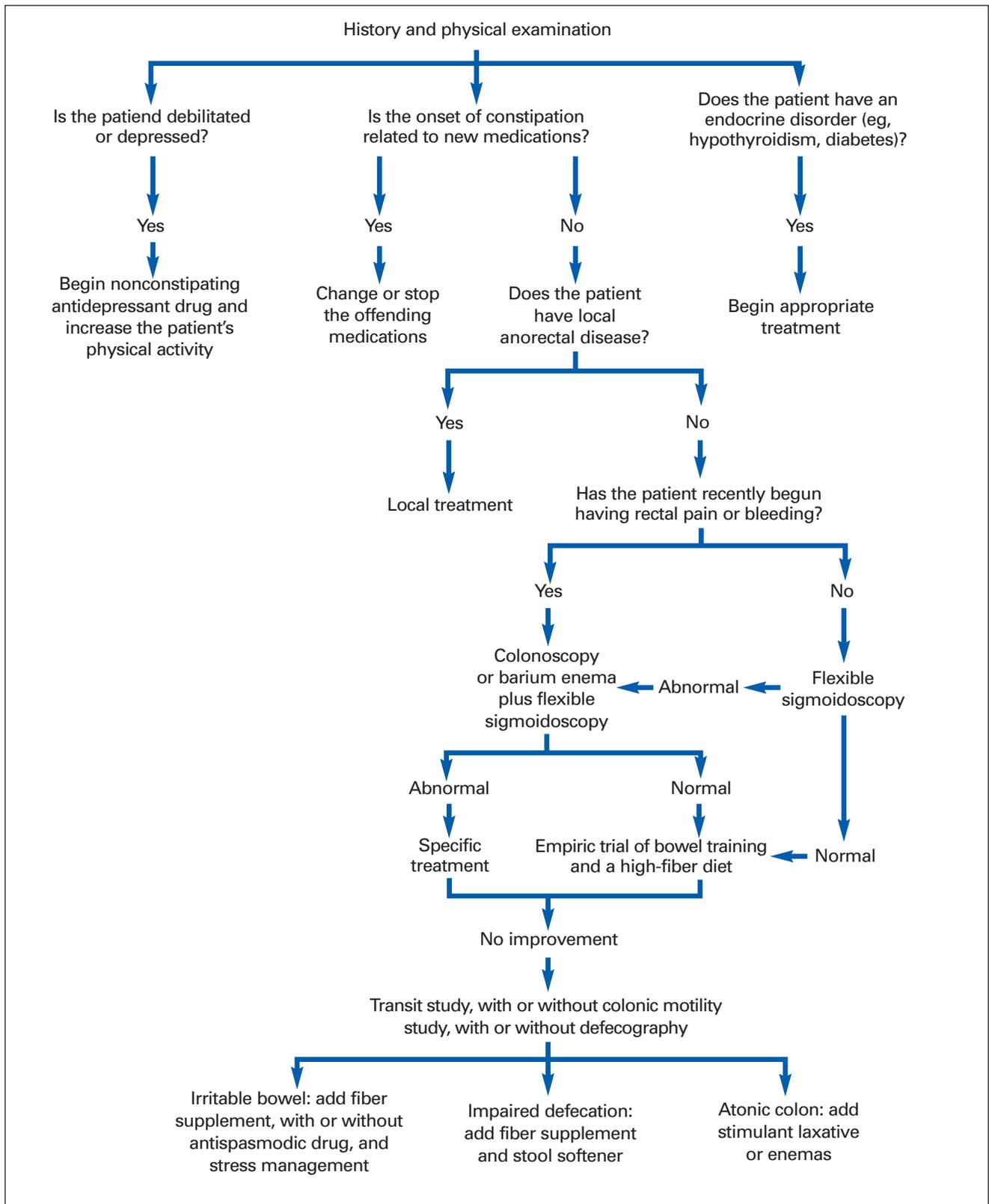
Diagnosis

Because of its multiple causes and contributing factors, determining the etiology of constipation can be challenging. Initial assessment begins with a history and physical examination (see Figure 2) (Schaefer & Cheskin, 1998). Comprehensive questioning of patients to elucidate symptom history is essential to distinguish between uncomplicated constipation and other disorders. Such questioning also provides insight as to whether symptoms reflect slow-transit constipation, pelvic floor hypertonicity, rectal outlet obstruction, or IBS. A distinguishing feature of IBS, whether constipation-predominant or diarrhea-predominant, is abdominal discomfort or pain, which is not characteristic of functional constipation (Talley, 2005). Overflow fecal incontinence (leakage of stool around obstructing feces) (Beers & Berkow, 2000) is indicative of stool impaction.

Constipation can result from a serious co-morbid condition, an adverse effect of medication, or both (Locke et al., 2000a); reviewing all medications a patient is taking is essential to rule out drug-related constipation (Schiller, 2001). The cause of constipation may be uncovered during physical examination in cases of lower rectal tumors or strictures; pelvic floor hernias, including rectocele; nonrelaxing puborectalis; and anal strictures. Blood tests to exclude organic causes include complete blood count, erythrocyte sedimentation rate, serum electrolytes, thyroid-stimulating hormone, serum glucose, creatinine, and electrolyte levels (Locke et al., 2000a, 2000b). Endoscopic or radiologic evaluations can rule out tumors, strictures, and other potential structural abnormalities, such as extrinsic compression of the colon (Lembo & Camilleri, 2003; Locke et al., 2000a).

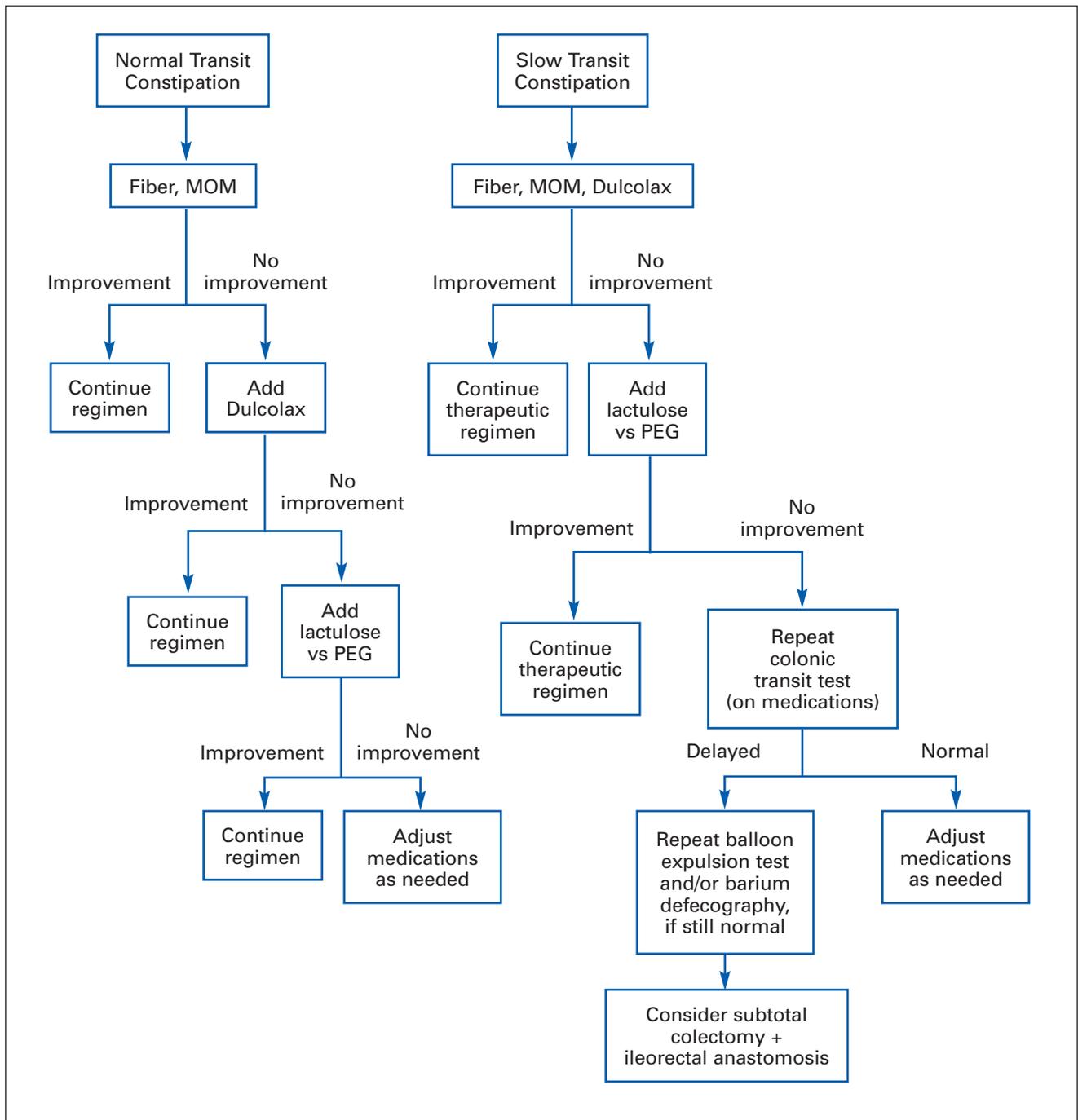
Patients with acute constipation usually do not require an

Figure 2.
Algorithm for Evaluating Constipation in the Elderly



Source: Reprinted with permission from Schaefer and Cheskin, 1998.

Figure 3.
Algorithm for Treatment of Normal-Transit and Slow-Transit Constipation



Source: Reprinted with permission from American Gastroenterological Association, 2000.
 MOM = milk of magnesia; PEG = polyethylene glycol.

evaluation beyond history taking and physical examination to formulate a treatment plan, because adjustments to medication, correction of metabolic abnormalities, and treatment of reversible medical problems may be sufficient to alleviate the constipation (Schiller, 2001). Most chronically constipated patients also do not require an extensive diagnostic evaluation (Borum, 2001). However, if needed, further tests to evaluate physiologic function of the colon, rectum, anal sphincter, and pelvic floor include:

- *Balloon expulsion test.* Useful for determining major evacuation dysfunctions and as a functional marker for biofeedback training.
- *Anorectal manometry.* Provides comprehensive assessment of rectal sensation, anorectal reflexes, rectal compliance, and anal sphincter pressures; can also provide confirmation of pelvic floor dysfunction.
- *Defecography.* Used to reveal anatomic or functional deficits involving anorectal angle and pelvic floor descent and may detect internal rectal prolapse; contrast ingested into the small bowel and instilled into the bladder and vagina in women may define an obstructing enterocele or large compressing cystocele.
- *Dynamic pelvic magnetic resonance imaging.* May identify occult pelvic floor defects that entrap the rectum and obstruct defecation.
- *Colonic transit tests.* Uses radiopaque markers or radio-nuclide scintigraphy to assess colonic transit rate.
- *Lactulose breath test.* Can detect the presence of bacterial overgrowth in the intestines, which may respond to antibiotic treatment.

Management

Older patients who are constipated tend toward self-management of the problem, relying pri-

marily on laxatives for treatment (Annells & Koch, 2002). When patients seek help from health care providers, the management plan for constipation, as well as constipation-predominant IBS (Talley, 2005), should be conservative and sequential, beginning with a gradual increase of dietary fiber and fluid (see Figure 3) (American Gastroenterological Association, 2000). This should be coupled with education about bowel training to exploit the postprandial gastrocolic reflex (Romero, Evans, Fleming, & Phillips, 1996) and perhaps neuromuscular retraining and biofeedback (Stessman, 2003). Most cases of constipation in elderly patients respond to non-pharmacologic measures (Baum, 2000). In a small study of hospitalized older men with chronic constipation (n=12), for example, bowel medication use decreased by about 80% in those who received bran daily compared with control patients who did not receive increased fiber as part of their daily diet (Howard, West, & Ossip-Klein, 2000). However, slow-transit constipation and constipation caused by a defecation disorder may not respond to increased fiber intake (Voderholzer et al., 1997) and other treatment measures may be needed. In such cases, referral to a gastroenterologist may be indicated.

Based on the authors' clinical experience, patients should be counseled that they need to have a bowel movement at least every 3 days; if not, they should take an escalating course of laxatives to achieve it. Patients can begin with a bulk laxative, such as psyllium, methylcellulose, or a special bran recipe consisting of a mixture of unprocessed wheat bran, applesauce, and prune juice. Another helpful bulk laxative is ground flaxseed, which contains soluble and insoluble fiber and is rich in Omega-3 fatty acids. If they do not have a bowel movement on the 2nd day, an osmotic laxative,

such as magnesium hydroxide, or an anthraquinone should be tried. If there still is no response, bisacodyl or an enema is appropriate. Oral sodium phosphate or polyethylene glycol and electrolytes would be the next step. The prokinetic medications cisapride and tegaserod are reserved for patients with unremitting constipation (Lembo & Camilleri, 2003).

From a nursing perspective, managing constipation may be somewhat easier when caring for patients living in long-term care facilities, where diet, fluid intake, and activity level can be better controlled (Edwards & Bentley, 2001). For house-bound elderly patients with constipation, treatment would be similar to that for a nursing home resident, but its implementation may be more challenging. Ensuring adequate fiber and fluid intake may be difficult for some elderly persons, unless a caregiver is available to assist (Edwards & Bentley, 2001). A patient's level of mobility can also be an issue, as bowel training may be difficult if a patient is unable to reach a toilet without assistance (Edwards & Bentley, 2001).

In secondary constipation resulting from opiate analgesics, clinicians should keep in mind that opiate receptors in the aging gut are more sensitive than those in younger adults. Although elderly patients may become tolerant to the sedating effects of opiate analgesics, they do not develop tolerance to the effects on transit time. Patients who become constipated when taking opiate analgesics should take a stimulant laxative with each opiate dose to prevent constipation.

Constipation in the elderly can be associated with lower urinary tract symptoms, such as urinary frequency, urgency, poor force of stream, and incomplete bladder emptying, suggesting that dysfunction in either the gastrointestinal tract or the urinary tract can affect the other (Charach,

Greenstein, Rabinovich, Groskopf, & Weintraub, 2001). Alleviating constipation alone, without therapy directed at the lower urinary tract, can improve urinary symptoms, as well as the patient's mood and HRQL (Charach et al., 2001).

Although treating constipation may resolve some urinary symptoms, fluid restriction and the antimuscarinics used to treat urinary symptoms can be constipating (see Figure 1). Patients treated for urgency, frequency, urinary incontinence, or other urinary symptoms should be asked about bowel function, and recommendations for fluid intake given, as well as use of antimuscarinics with low rates of constipation as appropriate (see Table 4). For women, reducing pelvic organ prolapse, such as cystocele and rectocele, with a pessary can also be helpful in reducing constipation. Referral to a gastroenterologist may be necessary if constipation becomes difficult to manage.

Excessive use of stimulant laxatives can lead to cessation of colon movement. The need for such treatments must be tempered with judicious prescribing to limit use of drugs with anticholinergic effects. Stimulant laxatives can negatively affect HRQL with adverse effects of abdominal cramping and diarrhea (Petticrew, Rodgers, & Booth, 2001) and impose regimented scheduling of days and timings of bowel movements.

Surgery is generally not indicated in elderly patients, except in those whose constipation is caused by a physical obstruction or recurrent volvulus (Locke et al., 2000b; Schaefer & Cheskin, 1998). However, some patients with slow-transit constipation may benefit from surgical consultation and intervention.

Overall, management of constipation has not been well studied in clinical trials, leaving clinicians with little guidance on whether some treatments are more effective than others. In one

Table 4.
Constipation Rates
Associated with
Anticholinergics*

Drug, Dose	Patients with Constipation (%)
Darifenacin 7.5 mg 15 mg	14.8 21.3
Oxybutynin 5-30 mg 10 mg	13.0 7.0
Solifenacin 5 mg 10 mg	5.4 13.4
Tolterodine ER 4 mg	6.0
Tropium 20 mg bid	9.6

* Data are from prescribing information for each drug. ER = extended release.

survey, laxative use increased with age (Talley et al., 1996) suggesting that patients found these products beneficial. However, focused studies are needed so that appropriate research questions can be posed.

Conclusion

Constipation is common in the elderly, in whom the condition can be particularly difficult to treat. The elderly are especially susceptible to chronic physiologic and pathologic changes that can predispose them to constipation, and they typically take multiple medications that can cause or contribute to constipation. Older people also are at high risk for potentially serious constipation-related complications. Constipation can compromise HRQL and impose a financial burden from medication and health care costs. Identifying the underlying causes of constipation is important so appropriate treatment can be initiated. Secondary causes of constipation can be best managed by correcting the underlying causes and predisposing factors. Primary constipation is usu-

ally resolvable with sequential adjustments of diet, patient education and training, and laxative use only as necessary. Some refractory cases may warrant surgery. 

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