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*Evidence About the Prevention
and Management of*

Constipation

*Implications
for Comfort*

Part
1



Constipation remains a challenging problem for patients and caregivers in home health. In Part 1 of this 2-part series, the scope, physiology, and evidence-based practice for nonpharmacological interventions for constipation are discussed. Part 2 will focus on pharmacological management of constipation, including medication cost, prevention of occurrence, and implications for palliative care.

Case Study Introduction

Mrs. P, at age 82 years, has lived with her widowed daughter in a private home for the past 5 years due to her steadily declining health. Mrs. P has never smoked; however, she was recently diagnosed with Stage II adenocarcinoma of the lung. Her daughter reports Mrs. P has increased fatigue and weakness, poor appetite, an increase in depression, and two episodes of fecal impaction over the past 3 weeks. Her problem list includes hypertension, non-insulin-dependent diabetes mellitus Type 2, atrial fibrillation, depression, chronic constipation, and adenocarcinoma of the lung.

Her current medications are

- verapamil IR 80 mg three times per day,
- glyburide 5 mg twice daily,
- warfarin 2.5 mg daily,
- amitriptyline 25 mg at bedtime,
- ferrous sulfate 325 mg three times daily,
- morphine sulfate ER 30 mg twice daily, and
- hydrocodone 5 mg/APAP 500 mg as needed for breakthrough pain.

Background

Constipation is the most common digestive complaint in the general population after gastroesophageal reflux disease, with more than 2.5 million physician visits per year (Higgins & Johanson, 2004). Estimates are that constipation affects 15% of the population with a cost of greater than \$200,000 per year for about 3 million prescriptions (Singh et al., 2007). In 2004, complaints of constipation as first-listed diagnoses for ambulatory care visits totaled 3.1 million visits, or, with all-listed diagnoses, 6.3 million visits (Table 1) (Everhart, 2008). It is a significant problem, and when poorly managed, may lead to psychological and physical complaints. In fact, persons with chronic constipation report significantly lower levels of health-related quality of life, higher loss of work productivity, and activity impairment (Box 1) (Sun et al., 2011).

Constipation may be the result of systemic disorders or drugs or may be idiopathic. There are two types of idiopathic constipation—

Table 1. Chronic Constipation: Number and Age-Adjusted Rates of Ambulatory Care Visits and Hospital Discharges With First-Listed and All-Listed Diagnoses by Age, Race, and Gender in the United States, 2004

Demographic Characteristics		AMBULATORY CARE VISITS				HOSPITAL DISCHARGES			
		First-Listed Diagnosis		All-Listed Diagnoses		First-Listed Diagnosis		All-Listed Diagnoses	
		Number (in Thousands)	Rate per 100,000	Number (in Thousands)	Rate per 100,000	Number (in Thousands)	Rate per 100,000	Number (in Thousands)	Rate per 100,000
Age (Years)	Under 15	1,175	1,933	2,127	3,497	5	8	32	53
	15-44	601	478	1,397	1,110	6	5	106	84
	45-64	492	696	1,112	1,572	8	11	164	231
	65+	880	2,423	1,671	4,599	18	50	399	1,097
Race	White	2,582	1,064	5,057	2,100	28	11	534	209
	Black	430	1,011	990	2,620	5	15	98	322
Gender	Female	1,955	1,267	4,050	2,655	23	14	434	260
	Male	1,194	866	2,256	1,657	14	11	266	206
Total		3,149	1,072	6,306	2,148	37	13	700	238

Source: National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS) (3-year average, 2003-2005), and Healthcare Cost and Utilization Project Nationwide Inpatient Sample (HCUP NIS).

Table 2. Medical Conditions and Medications Strongly Associated With Constipation

Medical Conditions	Medications
<ul style="list-style-type: none"> • Cerebral vascular disease • Depression • Diabetes mellitus • Hypothyroidism • Irritable bowel syndrome • Multiple sclerosis • Parkinson's disease • Spinal cord injury 	<ul style="list-style-type: none"> • Antacids (calcium, aluminum) • Anticholinergics • Tricyclic antidepressants • Antimuscarinics (oxybutynin) • Calcium Channel Blockers (verapamil, diltiazem) • Calcium Supplements • Memantine • Opiates • Parkinsonism agents • Iron

normal and slow transit chronic constipation and functional pelvic floor dysfunction. Causes may be psychological factors, physical medical problems, or medications (Table 2). Those considered at increased risk for constipation are more likely to be female (three times more likely than men); they have lower socioeconomic and education levels, and there is an increase in frequency after age 65, especially in those taking five or more medications (McCreary et al., 2009). Also, scores for depression and anxiety are significantly higher in patients with functional constipation (Zhou et al., 2010) but may be due to frequently prescribed medications for treatment.

Chronic constipation is considered a symptom with varying intensity and presence, and may be subjective in nature. The term constipation has varied meanings for different people because the regularity of bowel movements varies among individuals. Therefore, diagnosis of constipation should not be based solely on the perception of the patient. Common associated complaints are anorexia, nausea and vomiting, bloating, and abdominal pain. In addition, if left untreated, hemorrhoids, fissures, tears, and rectal prolapse may occur.

Pathophysiology

Although usually temporary, constipation is caused by the colon absorbing too much water as a result of decreased motility of the large intestine. This may be due to fatigue and weakness, or pain, which eventually causes the loss of abdominal wall muscle tone, and decreased intra-abdominal pressure necessary to defecate,

Box 1. Quality of Life and Constipation

Impact of chronic constipation on health-related quality of life, work productivity, and healthcare resource use: an analysis of the National Health and Wellness Survey (NHWS) (Sun et al., 2011).

Research problem: To assess the effect of chronic constipation on health outcomes and healthcare resource use.

Methods: Using the 2007 NHWS, 1,430 chronic constipation patients were matched to controls to compare health-related quality of life, work and activity impairment, and use of healthcare resources for a 6-month period.

Results: Patients with chronic constipation reported significantly lower levels of health-related quality of life, higher levels of loss of work, and activity impairment. In addition, these patients had significantly more provider and emergency room visits.

Implications for home health practice: alleviating constipation may have economic benefits.

SORT LEVEL: 2C

so relaxation of the external anal sphincter is necessary. Consistent voluntary suppression of the urge to empty the bowel is another cause of constipation (Leung et al., 2011).

Definition of Constipation

To define and standardize constipation, the Rome III Criteria was revised in 2006 by the American Gastroenterological Association (Longstreth et al., 2006). Although this is an established criterion, comparison with the history of the individual should be considered. For example, in some persons, a lifetime of less than 3 stools per week may be normal. In addition, assessment of stool type may be just as important as number of stools reported. A person is considered to be constipated if there are at least two of the following symptoms reported for at least 3 months with symptom onset at least 6 months prior to diagnosis:

- less than three stools per week,
- straining with at least 25% of stools,
- lumpy, hard stool at least 25% of the time,
- feeling of incomplete evacuation or sensation of blockage for at least 25% of stools,
- need to manually remove stool at least 25% of the time,
- loose stools are rarely present without the use of laxatives, or
- lack of sufficient criteria for irritable bowel syndrome.

Box 2. Fiber Versus Laxatives

Use of fiber instead of laxative treatment in a geriatric hospital to improve the well-being of seniors (Sturtzel et al., 2009).

Research problem: To determine whether use of oat-bran would reduce the use of laxatives.

Methods: In a controlled blind intervention trial, fifteen elderly patients received 7 to 8 g of oat-bran daily for 12 weeks compared to 15 elderly controls with usual diet.

Results: Laxatives were successfully discontinued in the oat-bran group and was safe as an alternative to laxatives.

Implications for home health practice: Although a small sample study, oat-bran may be preferable to chronic laxative use.

SORT LEVEL: 2C

Constipation with a weight loss of greater than 10 lb, family history of colon cancer, iron deficiency anemia, positive fecal occult blood testing, rectal bleeding, and acute onset in the elderly are considered “alarm symptoms” and may indicate a more serious condition, possibly cancer, and needs to be evaluated by the primary care provider (Gallefos-Orozco et al., 2012).

Detailed assessment includes in-depth questioning regarding: frequency, pain on defecation, straining, and stool characteristics. Difficulty in evacuating the rectum or feeling of bowel fullness and discomfort requires investigation and may indicate functional pelvic floor dysfunction. Also, lifestyle, diet, medication history, and assessment of laxative use are important (Leung et al., 2011).

Digital rectal exam may be necessary to assess for impaction and should be considered with caution in immunocompromised individuals due to increased risk of infection and bleeding. Diagnostic

Box 3. Prunes Versus Psyllium

Randomized clinical trial: Dried plums (prunes) versus psyllium for constipation (Attulauri et al., 2011).

Research problem: To assess and compare effects of prunes and psyllium in patients with chronic constipation.

Methods: Forty constipated patients participated in an 8-week, single-blind cross-over study. Each participant received either prunes or psyllium fiber for 3 weeks each, with a 1-week washout period. Daily symptom and stool diary were analyzed.

Results: Patients reported more complete and spontaneous bowel movements while assigned to prunes (mean 3.5 vs. 2.8 per week). Also reported with prunes was improved stool consistency. However, both treatments were well tolerated with no differences in straining and global constipation symptoms.

Implications for home health practice: Use of prunes should be considered first-line therapy for constipation.

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Box 4. Power Pudding

Blend together: 3 cups stewed prunes, 3 cups applesauce, 2.25 cups all-bran cereal, with 2.25 cups prune juice. Cover and refrigerate. Serve 2 tablespoons with each meal. Good for up to 1 week.



tests are not routinely recommended; however, labs for hypercalcemia, hypokalemia, and hypothyroidism may be considered, as these are risk factors for constipation (Jashed et al., 2011).

Prevention and Management

The aim of management of constipation should be comfortable passage of stool with a feeling of complete evacuation. Use of a daily stool diary may be helpful, as frequency of bowel movements is usually underestimated. An example of a stool diary is found at http://www.bowelcontrol.nih.gov/stool_diary_508.pdf. In addition to recording bowel movements, stool characteristics and associated abdominal discomfort may be helpful to determine the type of constipation and appropriate treatment options. An example of the Bristol Stool Form scale may be found at <http://www.bowelcontrol.nih.gov/Bristol.aspx>. Treatment should be customized for each individual.

Medication Review

An extremely effective method to prevent constipation is to eliminate medications that induce constipation. Careful assessment of the current medications the patient is taking need to be considered including over-the-counter, herbal, and other self-medicating regimens. It is thought that

more than 100 commonly prescribed medications cause constipation in more than 3% of the patients taking them.

Fiber and Dietary Considerations

Fiber may be helpful in patients with normal or slow transit constipation, in those patients found to have constipation caused by fiber deficiency (Leung et al., 2011). Foods high in fiber include cereal fiber, which works by resisting digestion and retaining water. Fiber in citrus fruits and legumes stimulate the growth of colonic bacteria, which increases stool mass. Wheat bran is one of the more effective fibers, but may increase bloating and abdominal pain, which may lead to poor compliance. Fiber at 20 to 35 g/day is recommended, unless the person is debilitated, it is difficult to maintain hydration, or if bowel obstruction is suspected (Box 2). Bran was found in two controlled trials to reduce use of laxatives in a geriatric population (Sturtzel & Elmadfa, 2008; Sturtzel et al., 2009). Prunes were found to be effective in one trial with improved stool consistency (Box 3) (Attulauri et al., 2011). One example that combines prunes with bran is “Power Pudding” (Box 4).

Box 5. Fluid Intake and Constipation

Do elderly persons need to be encouraged to drink more fluids (Lindeman et al., 2000)?

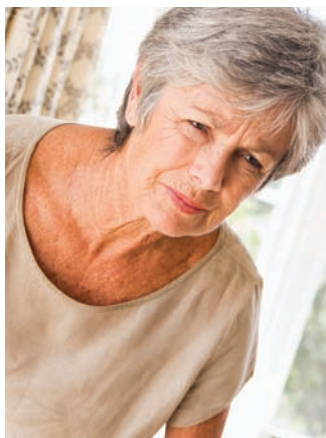
Research problem: Does encouraging persons over age 70 to drink eight glasses of fluid per day cause more harm than good?

Methods: 4-hour interviews with physical assessment of 883 volunteers with mean age 74.

Results: Those drinking less than three glasses, three to five glasses, and six or more glasses of fluid showed no significant association with the frequency of chronic constipation.

Implications for home health practice: Increasing fluid intake beyond the level comfortable for the individual may not serve any purpose.

SORT LEVEL: 2C



The term constipation has varied meanings for different people because the regularity of bowel movements varies among individuals. Therefore, diagnosis of constipation should not be based solely on the perception of the patient. Common associated complaints are anorexia, nausea and vomiting, bloating, and abdominal pain. In addition, if left untreated, hemorrhoids, fissures, tears, and rectal prolapse may occur.

Postmeal colonic motility is highest in the morning, so encourage patients to set aside time after the morning meal to defecate. Avoiding foods known to cause constipation may be helpful; these are ice cream, cheese, meat, and processed food.

Increasing Hydration

There is no evidence that constipation can successfully be treated solely by increasing fluid intake unless the person is dehydrated. The recommendation for increasing fluids,

especially in the elderly, has remained mostly out of tradition (Box 5). However, fluid combined with fiber has been demonstrated in at least one study, to improve constipation (Anti et al., 1998).

Exercise

Nursing practice is based on the opinion of experts regarding the need to encourage physical activity to avoid constipation (Box 6). However, this practice has not been demonstrated with consistent evidence-based practice. In fact, two randomized controlled trials found no benefit from exercise in institutionalized elderly patients to improve constipation (Chin et al., 2006; Simmons & Schnelle, 2004).

Fiber, Increasing Hydration, and Exercise

There are many strongly held beliefs about constipation that are not evidence-based regarding these three factors—fiber, hydration, and exercise. Although frequently recommended, increasing dietary fiber with the exception of bran, fluid intake, and daily exercise to avoid constipation has not been substantiated in research studies, with Level 2C evidence at best (Leung et al., 2011). This rating is based on the Strength of Recommendations Taxonomy (SORT) (Box 7) (Ebell et al., 2004).

Case Study Conclusion

One of the most common symptoms in advanced disease is constipation. Cancer in older adults present significant challenges in palliative care, and care needs to be taken to

Box 6. Exercise and Constipation

Effects of resistance and functional-skills training on habitual activity and constipation among older adults living in long-term care facilities: a randomized controlled trial (Chin et al., 2006).

Research problem: The effect of training protocols on physical activity and constipation of older adults.

Methods: Randomized control trial with 157 participants, age 64 to 94 years, assigned to resistance training, functional-skills training, both or educational control condition for a 6-month period.

Results: Six months of exercise did not impact constipation complaints.

Implications for home health practice: Increasing exercise may not improve constipation symptoms for older people.

SORT LEVEL: 2C

Box 7. Strength of Recommendation Taxonomy

Strength of Recommendation	Definition
Grade A	Recommendation based on consistent and good-quality patient-oriented evidence
Grade B	Recommendation based on inconsistent or limited-quality patient-oriented evidence
Grade C	Recommendation based on consensus, usual practice, opinion, disease-oriented Evidence or case series for studies for diagnosis, treatment, prevention and screening

Study Quality	Definition
Level 1	Good-quality patient level evidence
Level 2	Limited-quality patient level evidence
Level 3	Other evidence

Source: Reprinted with permission from Ebell et al. (2004).

find the right combination of medications that control pain, but minimize sedation, confusion, and constipation. The most frequent nonobstructive cause of constipation in older adults, especially at the end of life is medications (Rao & Go, 2010). In the case study presented, Mrs. P is taking several medications that can cause constipation including verapamil, amitriptyline, ferrous sulfate, and opioid pain medication. Following consultation with the team pharmacist, dietitian, and hospice physician, her verapamil was switched to a β -blocker for rate control of her atrial fibrillation; amitriptyline was changed to a selective serotonin reuptake inhibitor to help manage her depression, and ferrous sulfate was discontinued, as her lab values (H/H) were within normal limits. A bowel regimen was initiated as well for Mrs. P to prevent opioid-induced constipation with “power pudding” 2 tablespoons with each meal, and assistance to the restroom following breakfast and lunch meals. Fecal impactions were eliminated, and her fatigue and depression improved.

Nursing Implications for End-of-Life Care

Home healthcare nurses are in the best position to identify and alleviate constipation at the end

of life, which is typical for these patients, and a significant impediment to achieving the goal of providing comfort. It is essential to determine if the person is, in fact, constipated. Much of the current recommendations for nonpharmacologic interventions may be based primarily on myths handed down from one generation to the next. Fiber with the exception of bran, increased fluids, and exercise, has limited evidence-based research support. Using a team approach, prevention of constipation may require careful consideration of underlying causes and medication management, including pharmacological interventions with over-the-counter or prescription medications to be started sooner rather than later.

Further research is needed. Well-designed prospective randomized trials evaluating the risks and benefits of hydration, diet, exercise, and physical activity on constipation are recommended for future research, as there is minimal or conflicting evidence. ■

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The authors and planners have disclosed that they have no financial relationships related to this article.

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DOI:10.1097/NHH.0b013e31826a676f

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