

CHAPTER Nursing Care 26 of Clients with Bowel Disorders

LEARNING OUTCOMES

- Compare and contrast the causes, pathophysiology, manifestations, interdisciplinary care and nursing care of clients with diarrhea, constipation, irritable bowel syndrome, and fecal incontinence.
- Explain the pathophysiology, manifestations, complications, interdisciplinary care, and nursing care of clients with acute inflammatory and infectious bowel disorders, chronic inflammatory bowel disorders, malabsorption syndromes, neoplastic disorders, structural and obstructive bowel disorders, and anorectal disorders.
- Discuss the purposes, nursing implications, and health education for the client and family of medications used to treat bowel disorders.
- Explain the rationale for using selected diets, including those for diarrhea and constipation and low-residue, gluten-free, and high-fiber diets.
- Describe the surgical procedures of the bowel, including colectomy, colostomy, ileostomy, and perianal surgery.

CLINICAL COMPETENCIES

- Assess the functional status of clients with bowel disorders, and monitor, document, and report abnormal manifestations.
- Use evidence-based research to prevent aspiration in critically ill clients with enteral feedings, and to make accurate assessments of fecal incontinence in older adults.
- Determine priority nursing diagnoses, based on assessed data, to select and implement individualized nursing interventions for clients with bowel disorders.
- Administer medications used to treat bowel disorders knowledgeably and safely.
- Provide skilled care to clients having an ileostomy, colostomy, or perianal surgery.
- Integrate interdisciplinary care into care of clients with bowel disorders.
- Provide appropriate teaching to promote nutrition, prevent infectious and helminthic infestations, encourage preventive screening for colon cancer, and facilitate community-based care for healthcare needs resulting from bowel disorders.
- Revise plan of care as needed to provide effective interventions to promote, maintain, or restore functional health status to clients with bowel disorders.

MEDIA LINK



Resources for this chapter can be found on the Prentice Hall Nursing MediaLink DVD-ROM accompanying this textbook, and on the Companion Website at <http://www.prenhall.com/lemone>



KEY TERMS

appendicitis, 766
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Disorders of intestinal absorption and bowel elimination can affect not only functional elimination status, but also other functional health patterns including but not limited to health perception-health management, nutritional-metabolic, activity-exercise, self-perception-self-concept, and sexuality-reproductive. Bowel function can be affected by inflammations, infections, tumors, obstructions, or changes in structure.

Clients with intestinal disorders often face extensive diagnostic testing, surgery, and permanent changes in physical appearance and lifestyle. Nursing care is directed toward meeting the client's physiologic needs, providing emotional support, and educating the client to adapt to changes in lifestyle.

DISORDERS OF INTESTINAL MOTILITY

Few body functions respond as readily to internal and external influences as the process of defecation. Factors affecting the gastrointestinal (GI) tract directly, such as food intake and bacterial population, affect the number and consistency of stools. Indirect factors, such as psychologic stress or voluntary postponement of defecation, also affect elimination.

In modern society, “normal” bowel elimination patterns vary widely. For some clients, two to three stools per day is the usual pattern. Others may normally have as few as three stools per week. It is important to evaluate each client's bowel elimination against his or her own normal pattern.

THE CLIENT WITH DIARRHEA

Diarrhea is an increase in the frequency, volume, and fluid content of the stool. In diarrhea, the water content of feces is increased, usually due to either malabsorption or water secretion in the bowel. It is a manifestation rather than a primary disorder.

Diarrhea may be acute or chronic. Acute diarrhea, which lasts less than a week, is usually due to an infectious agent. Chronic diarrhea (diarrhea that persists longer than 3 to 4 weeks) may be caused by inflammatory bowel disorders, malabsorption, or endocrine disorders.

Pathophysiology

About 1500 mL of digested material enters the large intestine daily. Normally, most of the water and some of the solutes are reabsorbed in the bowel, leaving only about 200 mL of feces to be eliminated.

Large-volume diarrhea, characterized by both increased numbers and volume of stools, is caused by increased water content of the stool. This increased water content may result from either osmotic or secretory processes. Water may be pulled into the bowel lumen by osmosis when the feces contain osmotically active molecules. Some stool softeners and laxatives work on this principle.


When the lactose in milk is not broken down and absorbed, the lactose molecules exert an osmotic pull, causing diarrhea. The diarrhea associated with cholera and *Escherichia coli* infection is caused by increased water secretion in the small and large intestines. Unabsorbed dietary fat, some cathartics and other drugs, and other factors can cause secretory diarrhea.

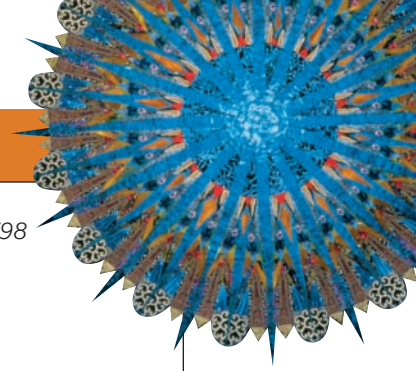
Small-volume diarrhea, characterized by frequent small stools, is usually caused by inflammation or disease of the colon. Diseases that affect the intestinal mucosa, such as inflammatory bowel disease, cause an exudative diarrhea. The mucosal inflammation causes plasma, serum proteins, blood, and mucus to accumulate in the bowel, increasing fecal bulk and fluidity. An increased rate of propulsion within the bowel can also decrease the amount of water normally absorbed from the chyme, leading to diarrhea. For this reason, laxatives that increase bowel motility and bowel resection or bypass can lead to diarrhea.

Manifestations

The manifestations of diarrhea depend on its cause, duration, and severity, as well as the area of bowel affected and the client's general health. Diarrhea can present as several large, watery stools daily, or very frequent small stools that contain blood, mucus, or exudate.

Complications

Diarrhea can have devastating effects. Water and electrolytes are lost in diarrheal stool. This can lead to dehydration, particularly in the very young, the older adult, or the debilitated client unable to respond to thirst. With severe diarrhea, vascular collapse and hypovolemic shock may occur. Potassium and magnesium are lost, potentially leading to hypokalemia and hypomagnesemia. The loss of bicarbonate in the stool can lead to metabolic acidosis. See Chapter 10  for further discussion of the effects of these imbalances.




INTERDISCIPLINARY CARE



Management of diarrhea focuses on identifying and treating the underlying cause. In addition, the diarrhea itself may need to be treated to promote comfort and to prevent complications. The history (including the onset and associated circumstances of the diarrhea) and physical examination often provide enough information to identify its cause.

Diagnosis

Diagnostic tests that may be ordered to help identify the cause of diarrhea include a stool specimen analysis and culture. A sigmoidoscopy may be conducted to directly visualize the bowel mucosa. (See Chapter 25  for further information on diagnostic tests.) Tissue biopsy may be performed to identify chronic inflammatory processes, infection, and other causes of diarrhea. In addition, laboratory tests of serum electrolytes, serum osmolality, and arterial blood gases (ABGs) may be ordered to assess for adverse effects of diarrhea. Increased serum osmolality indicates water loss and dehydration.

Medications


Antidiarrheal medications are used sparingly or not at all until the cause of diarrhea has been identified. In diarrhea associated with botulism or bacillary dysentery, giving an antidiarrheal agent can worsen or prolong the disease by slowing elimination of the toxin from the bowel. Once the underlying cause for diarrhea has been established, specific medications may be ordered to treat the underlying cause. Antibiotics are used with caution because they alter the normal bacterial population of the bowel and may actually worsen diarrhea. A balanced electrolyte solution may be required to replace fluid losses. Intravenous or oral potassium preparations may also be prescribed.

Opium and some of its derivatives, anticholinergics, absorbants, and demulcents are commonly used as antidiarrheal preparations. Specific preparations, their method of action, and the nursing implications for these medications are outlined in the Medication Administration box on page 756.

Nutrition

Fluid replacement is of primary importance in managing the client with diarrhea. If the client is able to tolerate oral fluids (i.e., if the client is not experiencing nausea and vomiting), an oral glucose/balanced electrolyte solution provides the best fluid replacement. Commercial preparations such as Gatorade and other sports drinks are available, as are pediatric solutions (e.g., Pedialyte), which can be used for adults as well as children. A solution of 5 mL (1 teaspoon) each of table salt and baking soda and 4 teaspoons (20 mL) of granulated sugar added with desired flavoring (such as lemon extract or juice) to 1 quart (1 L) of water can be made at home to replace water and electrolytes.

Solid food is withheld in the first 24 hours of acute diarrhea to rest the bowel. After that time, frequent, small, soft feedings can be added. Milk and milk products are added last, because the lactose they contain frequently aggravates the diarrhea. Raw fruits and vegetables, fried foods, bran, whole-grain cereals, condiments, spices, coffee, and alcoholic beverages are avoided during the recovery period.

Clients with chronic diarrhea may benefit by eliminating specific foods from the diet. Foods and nonfood substances that may aggravate diarrhea are outlined in Table 26–1. The diet should be high in calories and nutritional value. Vitamin supplements may be necessary, particularly the fat-soluble vitamins (A, D, E, and K). Clients with severe chronic diarrhea may require parenteral nutrition (see Chapter 21 .

Complementary and Alternative Therapies

Herbal or homeopathic therapies may be used to help relieve diarrhea. Clients who are lactose intolerant (discussed later in the chapter) should take 1 to 2 lactase enzymes with each meal (Balch & Stengler, 2004). Herbal treatments may include a strong tea of black pepper, chamomile, coriander, rosemary, sandalwood, or thyme. Ginger in the form of tea or capsules can be helpful in reducing intestinal inflammation and lessens the effects of food poisoning. Homeopathic practitioners may use podophyllum tablets when there is a rumbling, gurgling, and cramping in the abdomen, followed by diarrhea (Balch & Stengler, 2004). Refer the client to a qualified practitioner for more information about using complementary and alternative therapies to treat diarrhea.



NURSING CARE

Health Promotion

Teach all clients about the importance of hand washing as a measure to prevent the spread of infectious diseases, including those that cause diarrhea. Teach safe food handling techniques to prevent bacterial contamination, and discuss measures to ensure safe drinking water. For clients planning to travel outside

TABLE 26–1 Foods That May Aggravate Chronic Diarrhea

FOODS	REASON
Milk, ice cream, yogurt, soft cheeses, cottage cheese	Contain lactose; not tolerated by clients with lactase deficiency who cannot digest lactose.
Apple juice, pear juice, grapes, honey, dates, nuts, figs, fruit-flavored soft drinks	Contain fructose; when consumed in large quantities, fructose may not be totally absorbed, causing an osmotic pull of fluid into the bowel.
Table sugar	Contains sucrose; not tolerated by clients with sucrase deficiency.
Apple juice, pear juice, sugarless gums and mints	May contain sorbitol or mannitol, sugars that are not absorbed and can cause osmotic draw.
Antacids	Magnesium-containing antacids decrease bowel transit time and contain poorly absorbed salts that can exert an osmotic draw.
Coffee, tea, cola drinks, over-the-counter analgesics	Contain caffeine, which can decrease bowel transit time.



MEDICATION ADMINISTRATION Antidiarrheal Preparations

ABSORBANTS AND PROTECTANTS

Kaolin and pectin (Kaopectate, Donnagel-MB)

Bismuth subsalicylate (Pepto-Bismol)

Absorbant preparations act locally in the intestines to bind substances that can cause diarrhea. Absorbants are safe and are generally available over the counter. Their efficacy has not been proved, although bismuth subsalicylate has been shown to be somewhat effective in preventing and managing traveler's diarrhea, usually related to contaminated water supplies. Bismuth salts also have a protective and antimicrobial effect.

Nursing Responsibilities

- Assess for contraindications to antidiarrheal therapy, such as some infections or chronic inflammatory bowel disease, including ulcerative colitis.
- If fever is present, check with physician before giving the medication.
- Administer these medications at least 1 hour before or 2 hours after other oral medications; they may interfere with the absorption of other drugs.
- Observe the client's response to the medication. Constipation is a potential problem.

Health Education for the Client and Family

- Take the recommended dosage at the onset of diarrhea and after each loose stool.
- Do not take any of these preparations for more than 48 hours. If diarrhea persists, notify the physician.
- Do not give antidiarrheal medications to debilitated older clients without physician supervision.
- Chew bismuth subsalicylate tablets, rather than swallowing them whole, for maximal effectiveness. This medication may cause harmless darkening of the tongue and stool.
- If you are allergic to aspirin, use bismuth subsalicylate with caution; as a general rule, avoid taking aspirin while taking bismuth subsalicylate.

OPIUM AND OPIUM DERIVATIVES

Camphorated tincture of opium (Paregoric)

Tincture of opium (laudanum, opium tincture)

Difenoxin (Motofen)

Diphenoxylate (Lomotil, Lotrol, others)

Loperamide hydrochloride (Imodium)

Opium and its derivatives act on the central nervous system (CNS) to decrease the motility of the ileum and colon, slowing transit time and promoting more water absorption. They also decrease the sensation of a full rectum and increase anal sphincter tone. Paregoric and tincture of opium have a greater potential for abuse and are prescription drugs subject to controls under the

federal Controlled Substance Act of 1970. Difenoxin, diphenoxylate, and loperamide are derivatives of opium with few analgesic, euphoric, or abuse-promoting effects and are in more common use today.

Nursing Responsibilities

- Assess for contraindications to antidiarrheal or narcotic medications prior to giving these drugs.
- Administer paregoric undiluted with water.
- Do not administer difenoxin and diphenoxylate to clients receiving monoamine oxidase inhibitors (MAOIs); hypertensive crises may occur.
- Observe closely for increased effects of other CNS depressants, such as alcohol, narcotic analgesics, or barbiturate sedatives.
- Observe for abdominal distention; toxic megacolon may occur if these drugs are given to the client with ulcerative colitis.

Health Education for the Client and Family

- Take the medication as recommended at the onset of diarrhea and after each loose stool.
- These drugs may be habit forming; use for no more than 48 hours.
- Avoid using alcohol and over-the-counter cold preparations while taking these drugs.
- These preparations may cause drowsiness, avoid driving or operating machinery while taking them.

ANTICHOLINERGICS

Atropine

Belladonna alkaloids (Donnagel, Donnatal)

Anticholinergic medications reduce bowel spasticity and acid secretion in the stomach. They are used to treat diarrhea that is associated with peptic ulcer disease and irritable bowel syndrome. These are nonspecific drugs; their systemic effects are their major drawback.

Nursing Responsibilities

- Assess for contraindications to atropine and other anticholinergic medications: glaucoma, prostatic hypertrophy, and gastrointestinal or genitourinary obstruction.
- Observe for side effects, such as eye pain, impaired urination, or constipation.

Health Education for the Client and Family

- Take only as directed, stop the drug and notify the physician if you develop eye pain, impaired urination, constipation.
- Do not operate machinery while taking this medication; drowsiness may occur.
- Hard candies help relieve oral dryness associated with these preparations.

the United States or to wilderness areas, teach measures to purify water for drinking and cooking.

Assessment

The nursing assessment can help identify the cause of the client's diarrhea, as well as early signs of complications. Collect the following assessment data:

- **Health history:** Duration and extent of diarrhea; associated manifestations; dietary intake; recent travel out of the country or to wilderness areas; previous history of diarrhea; chronic diseases; prescription and nonprescription medications.
- **Physical examination:** Vital signs (including orthostatic blood pressure); peripheral pulses; skin temperature, moisture, turgor; color and moisture of mucous membranes; abdominal

contour and girth; bowel sounds; stool for obvious or occult blood, pus, mucus, or **steatorrhea** (bulky, foul-smelling stool).

Nursing Diagnoses and Interventions

Nursing care of the client with diarrhea focuses on identifying the cause, relieving the manifestations, preventing complications, and preventing the potential spread of infection to others.

Diarrhea

Nursing interventions for diarrhea are provided to help the client recover a normal elimination pattern without adverse consequences.

- Monitor and record the frequency and characteristics of bowel movements *to provide a measure of the effectiveness of treatment.*
- Measure abdominal girth and auscultate bowel sounds every 8 hours as indicated. Loud, rushing bowel sounds (**borborygmi**) indicate increased peristalsis, and may be heard in clients with acute diarrhea. *Diminished or absent bowel sounds may indicate a complication of treatment, such as constipation or toxic megacolon.*
- Use standard precautions, including gloves and hand washing. *Standard precautions help prevent the spread of infection to others.*
- Provide ready access to bathroom, commode, or bedpan. *The client may have little warning of the need to defecate. Easily accessed toileting facilities reduce the risk for soiling or injury.*
- Administer antidiarrheal medications as prescribed *to promote comfort and prevent excess fluid loss.*
- Limit food intake if the diarrhea is acute, reintroducing solid foods slowly, in small amounts, *to allow the bowel to rest and mucosa to heal in acute diarrhea states.*

Risk for Deficient Fluid Volume

The increased water content of diarrheal stool places the client at risk for fluid deficit.

- Record intake and output; weigh daily; assess skin turgor, mucous membranes, and urine specific gravity every 8 hours. *These assessments are used to monitor fluid volume status.*

PRACTICE ALERT

Assess skin turgor over the sternum in the older adult. Loss of subcutaneous fat associated with aging makes skin turgor assessment on the arms or hands less reliable.

- Monitor vital signs, including orthostatic blood pressures. *Orthostatic hypotension is identified by a drop in BP of more than 10 mmHg and pulse increase of 10 beats per minute (bpm) when changing from a lying to a sitting position or from a sitting to a standing position. It is an indicator of fluid volume deficit.*

PRACTICE ALERT

Institute safety precautions such as providing assistance when ambulating the client with orthostatic hypotension. The fall in blood pressure with position changes can cause light-headedness and syncope.

- Provide fluid and electrolyte replacement solutions as indicated. Ensure ready access to fluids; assist the debilitated client with fluid intake. Notify the care provider if the client is unable to tolerate oral fluids. *Oral fluids are encouraged as tolerated to prevent dehydration. Intravenous fluids are necessary if oral fluids are not tolerated. An intake of 3000 mL/day or more is often needed to replace fluid losses.*

Risk for Impaired Skin Integrity

Decreased extracellular fluid volume and the irritating effects of diarrheal stool increase the risk for skin breakdown.

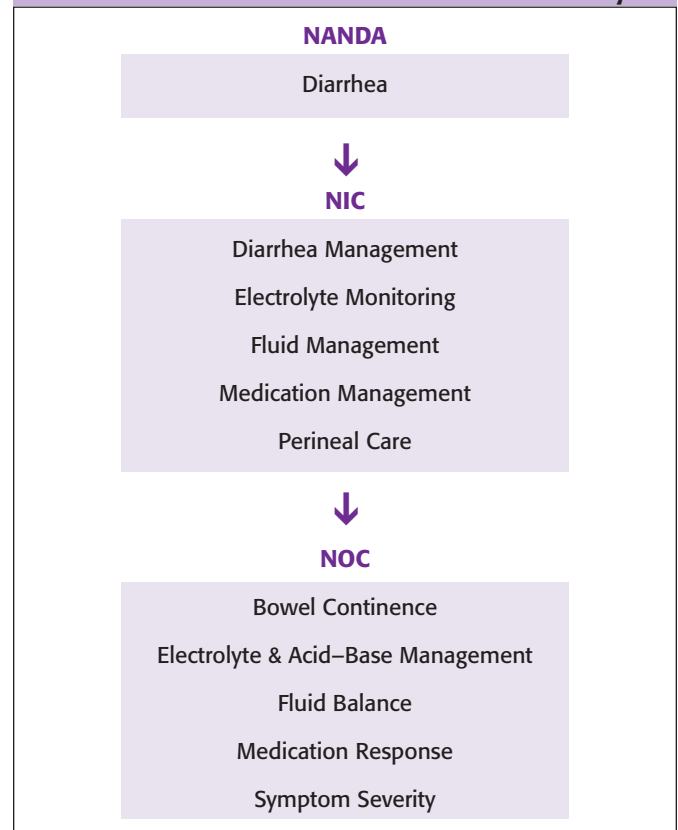
- Assist with cleaning the perianal area as needed. Use warm water, a gentle cleanser, and soft cloths. *Cleansing removes irritating substances in the stool. Gentle cleansing helps maintain integrity of dehydrated skin.*
- Apply protective ointment to the perianal area. *Moisture-barrier ointments or creams protect the skin from excoriation and help prevent tissue breakdown.*

Using NANDA, NIC, and NOC

Chart 26–1 shows links between NANDA nursing diagnoses, NIC, and NOC for the client with diarrhea.

NANDA, NIC, AND NOC LINKAGES

CHART 26–1 The Client with Altered Bowel Motility



Data from NANDA's *Nursing Diagnoses: Definitions & Classification 2005–2006* by NANDA International (2005), Philadelphia; *Nursing Interventions Classification (NIC)* (4th ed.) by J. M. Dochterman & G. M. Bulechek (2004), St. Louis, MO: Mosby; and *Nursing Outcomes Classification (NOC)* (3rd ed.) by S. Moorhead, M. Johnson, and M. Maas (2004), St. Louis, MO: Mosby.

Community-Based Care

Acute and chronic diarrhea generally are managed by the client in the home. Teach the client and family members about the following subjects:

- Causes of diarrhea (as directed by the diagnosis)
- Importance of hand washing and hygiene measures
- Importance of maintaining adequate fluid intake to replace lost water and electrolytes
- Use of a balanced electrolyte solution such as Gatorade or a similar product (purchased or home prepared) for fluid replacement
- Recommendations to limit food intake during acute diarrhea, and resume gradually with small feedings of foods that have a constipating effect: applesauce, bananas, crackers, rice, potatoes
- To avoid foods high in fiber, milk products, and caffeine
- Ways to maintain nutrition if chronic diarrhea is a problem: frequent small meals, nutritional supplements, vitamin supplements
- Precautions and limitations of antidiarrheal preparations
- Importance of seeking medical intervention if diarrhea continues or recurs.

THE CLIENT WITH CONSTIPATION

Constipation is defined as the infrequent (two or fewer bowel movements weekly) or difficult passage of stools. Constipation affects older adults more frequently than younger people. Recent studies indicate that approximately 20% to 35% of people over age 65 report recurrent constipation and laxative use. Although fecal transit in the large intestine slows with aging, the increased incidence of constipation is thought to relate more to impaired general health status, increased medication use, and decreased physical activity in the older adult.

Pathophysiology

Constipation may be a primary problem or a manifestation of another disease or condition. Acute constipation, a definite change in the bowel elimination pattern, often is caused by an organic process. A change in bowel patterns that persists or becomes more frequent or severe may be due to a tumor or other partial bowel obstruction. With chronic constipation, functional causes that impair storage, transport, and evacuation mechanisms impede the normal passage of stools. Common causes of constipation are listed in Table 26–2.

Psychogenic factors are the most frequent causes of chronic constipation. These factors include postponing defecation when the urge is felt, and the perception of satisfaction with defecation. Clients often use laxatives and enemas to stimulate a bowel movement when constipation is perceived. Overuse of these measures can lead to real intestinal problems that worsen the condition. For example, *cathartic colon* (impaired colonic motility and changes in bowel structure) mimics ulcerative colitis in that the normal pouchlike or saccular appearance of the colon is lost. *Melanosis coli* is a brownish-black discoloration of the colon mucosa. Both conditions may be caused by long-term laxative use.

TABLE 26–2 Selected Causes of Constipation

FACTOR	RELATED CAUSE
Activity	Lack of exercise; bed rest
Dietary	Highly refined, low-fiber foods; inadequate fluid intake
Drugs	Antacids containing aluminum or calcium salts; narcotic analgesics; anticholinergics; many antidepressants, tranquilizers, and sedatives; antihypertensives, such as ganglionic blockers, calcium-channel blockers, beta-adrenergic blockers, and diuretics; iron salts
Large bowel	Diverticular disease, inflammatory disease, tumor, obstruction; changes in rectal or anal structure or function
Psychogenic	Voluntary suppression of urge; perceived need to defecate on schedule; depression
Systemic	Advanced age; pregnancy; neurologic conditions (trauma, multiple sclerosis, tumors, cerebrovascular accident, Parkinsonism); endocrine and metabolic disorders (hypothyroidism, hypercalcemia, uremia, porphyria)
Other	Chronic laxative or enema use

Manifestations

The manifestations of constipation include having bowel movements less often than the usual pattern, frequent flatus, abdominal discomfort, anorexia, straining to have a bowel movement, and the passage of hard, dry stools.

With significant constipation or long-term dependence on laxatives or enemas, **fecal impaction** may develop. Impaction may also occur following barium administration for radiologic exam. The impaction is felt as a rock-hard or putty-like mass of feces in the rectum. Abdominal cramping and a full sensation in the rectal area may be manifestations of impaction. Watery mucus or foul-smelling liquid stool may be passed around the impaction, causing the client to complain of diarrhea.

INTERDISCIPLINARY CARE



Initial evaluation of constipation is based on the history and physical examination. The abdomen may appear somewhat distended, and bowel sounds may be reduced. If an impaction is present, digital examination of the rectum reveals a palpable, hard or putty-like fecal mass.

Simple or chronic constipation is treated with education (a daily bowel movement is not necessary for health), and modification of diet and exercise routines. If the problem is acute or does not resolve, further diagnostic examination may be ordered.

Diagnosis

A barium enema may be ordered to identify bowel structure, tumors, or diverticula. If the problem is acute, a sigmoidoscopy or colonoscopy may be used for evaluation and biopsy. (See Chapter 25 ∞ for nursing implications of these tests.)

Medications

Laxative and cathartic preparations are used to promote stool evacuation. Milder preparations are generally known as laxatives; cathartics have a stronger effect. Most laxatives are appropriate only for short-term use. Cathartics and enemas interfere with normal bowel reflexes and should not be used for simple constipation. Laxatives should never be given if a client has an undiagnosed intestinal obstruction, abdominal pain, fecal impaction, rectal fissures, ulcerated hemorrhoids, Crohn's disease, ulcerative colitis, or chronic inflammatory bowel disease (Peate, 2003). When the bowel is obstructed, laxatives or cathartics may cause serious mechanical damage and perforate the bowel.

The only laxatives that are appropriate and safe for long-term use are bulking agents, such as psyllium seed, calcium polycarbophil, and methylcellulose. These agents act by increasing the bulk of the feces and drawing water into the bowel to soften it. Commonly prescribed laxatives and cathartics are discussed in the Medication Administration box on this page.

Nutrition

Foods that have a high fiber content are recommended. Vegetable fiber is largely indigestible and unabsorbable, so it increases stool bulk. Fiber also helps draw water into the fecal mass, softening the stool and making defecation easier. Raw fruits and vegetables are good sources of dietary fiber, as is cereal bran. Use 2 to 3 teaspoons of unprocessed bran with meals (sprinkled on fruit or cereal) or up to 1/4 cup daily to supply adequate fiber.

Fluids are also important to maintain bowel motility and soft stools. The client should drink 6 to 8 glasses of fluid per day. It is important to advise the client to increase fluid intake when dietary fiber is initially increased to decrease flatus and help maintain softer stools.

In older adults, constipation may be due to inadequate food intake. Carefully evaluate diet history and usual daily intake.

Enemas

Significant or chronic constipation or a fecal impaction may require the administration of an enema. As a general rule, enemas should be used only in acute situations and only on a short-term basis. They may also be ordered to prepare the bowel for diagnostic testing or examination. The following types of enemas may be prescribed:

- A *saline enema* using 500 to 2000 mL of warmed physiologic saline solution is the least irritating to the bowel.
- *Tap-water enemas* use 500 to 1000 mL of water to soften feces and irritate the bowel mucosa, stimulating peristalsis and evacuation.
- *Soap-suds enemas* consist of a tap-water solution to which soap is added as a further irritant.
- *Phosphate enemas* (e.g., Fleet) use a hypertonic saline solution to draw fluid into the bowel and irritate the mucosa, leading to evacuation.
- *Oil retention enemas* instill mineral or vegetable oil into the bowel to soften the fecal mass. The instilled oil is retained overnight or for several hours before evacuation.

The repeated use of enemas can lead not only to impaired bowel function, but also to fluid and electrolyte imbalances. Tap-water and phosphate enemas are particularly likely to cause these problems. In acute conditions with risk of bowel obstruction, perforation, ulceration, or other problem, enemas should not be administered until their safe use can be established.

Complementary and Alternative Therapies

Herbal or homeopathic therapies may be used to help relieve constipation. Flaxseed oil lubricates the colon for easier passage of stool. Clients are instructed to take 1 to 2 tablespoons daily. Flax seeds are a lesser known but a highly concentrated source of fiber, and 1 to 2 tablespoons of ground flaxseeds can be sprinkled on cereals or salads daily, followed by 10 ounces of water. Acupressure, massage, reflexology, aromatherapy, and stress management therapies can also be very beneficial in relieving constipation (Balch & Stengler, 2004). Other recommendations include exercise to stimulate intestinal contractions.



NURSING CARE

Health Promotion

Education can prevent constipation. Teach clients the importance of maintaining a diet high in natural fiber. Foods such as fresh fruits, vegetables, whole-grain products, and bran provide natural fiber. Encourage reducing consumption of meats and refined foods, which are low in fiber and can be constipating. Emphasize the need to maintain a high fluid intake every day, particularly during hot weather and exercise. Discuss the relationship between exercise and bowel regularity. Encourage clients to engage in some form of exercise, such as walking daily.

Discuss normal bowel habits, and explain that a daily bowel movement is not the norm for all people. Encourage clients to respond to the urge to defecate when it occurs. Suggest setting aside a time, usually following a meal, for elimination.

Assessment

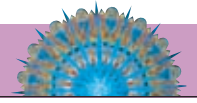
To assess the client with real or perceived constipation, collect the following data:

- *Health history:* Usual and current pattern of defecation, including time of day, amount, and stool consistency; usual diet, fluid intake, and activity pattern; possible contributing factors such as narcotic analgesics, activity limitations, painful hemorrhoids, perianal surgery; chronic diseases such as endocrine or neurologic disorders; prescribed and nonprescription medications.
- *Physical examination:* Abdominal girth and shape, bowel sounds, tenderness, and percussion tone; digital exam of the rectum if impaction is suspected.

For discussion of constipation in the older adult see Meeting Individualized Needs on page 761.

Nursing Diagnoses and Interventions

Nursing interventions for the client with constipation focus chiefly on education.



MEDICATION ADMINISTRATION Laxatives and Cathartics

BULK-FORMING AGENTS

Bran

Calcium polycarbophil (Fibercon)

Methylcellulose (Citrucel)

Psyllium hydrophilic mucilloid (Metamucil, Effer-Syllium)

Bulk-forming agents are the only safe laxatives for long-term use. They contain vegetable fiber, which is not digested or absorbed in the gut. This natural fiber creates bulk and draws water into the intestine, softening the stool mass.

Nursing Responsibilities

- Mix the agent with a full glass of cool liquid just prior to administering.
- Do not administer to clients with possible stool impaction or bowel obstruction.

Health Education for the Client and Family

- Drink at least 6 to 8 full glasses of nonalcoholic fluid per day. Adequate hydration is necessary to produce the drug's laxative effect.
- These agents may be mixed with water, milk, or fruit juice.
- Take the drug in the morning or with meals. To reduce the risk of impaction, do not take at bedtime.
- Because of the increased risk of impaction, check with the physician before increasing dietary fiber while you are taking these agents.

WETTING AGENTS

Docusate (Colace, Surfak, Doxidan, others)

Wetting agents reduce stool surface tension and form an emulsion of fat and water, softening the stool. They are used primarily to prevent straining and reduce the discomfort of expelling hard stools.

Nursing Responsibilities

- Administer with ample fluids to promote softening effect.
- Wetting agents may alter the absorption of other drugs. Do not administer within 1 hour of other oral medications.
- Do not attempt to crush or open caplets; a liquid form is available for clients who cannot swallow pills or capsules.

Health Education for the Client and Family

- Do not use for more than 1 week or less unless specifically recommended by the physician.
- Take the medication in the morning or evening, but avoid taking it with other medications.
- Adequate fluid is necessary to obtain the beneficial effect of the drug. Drink 6 to 8 glasses of nonalcoholic fluid per day.

OSMOTIC AND SALINE LAXATIVES/CATHARTICS

Lactulose (Rhodialose)

Sorbitol

Magnesium hydroxide (Milk of Magnesia)

Magnesium citrate

Polyethylene glycol (Klean-Prep)

Laxatives in this group contain poorly absorbed salts or carbohydrates that remain in the bowel, increasing osmotic pressure and drawing water into the intestine. Stool volume increases, consistency decreases, and peristalsis is stimulated. Many of these agents also have an irritant effect on the bowel, further stimulating peristalsis. They are used to stimulate rapid or complete bowel

evacuation to relieve constipation and to prepare the bowel for diagnostic and surgical procedures. They should be limited to acute, short-term use; chronic use may suppress normal bowel reflexes.

Nursing Responsibilities

- Assess for possible contraindications to osmotic or saline laxatives, including bowel ulceration or obstruction, dehydration, electrolyte imbalances, heart failure (which may be aggravated by the sodium content), or renal failure.
- Administer with a full glass of liquid, preferably in the morning to avoid sleep disturbance.
- Monitor fluid and electrolyte status: skin turgor, mucous membranes, intake and output; daily weight, and laboratory studies, such as hemoglobin and hematocrit levels, serum osmolality and electrolytes, and urine specific gravity.

Health Education for the Client and Family

- Do not use these agents on a routine basis to treat or prevent constipation.
- Chill the solution to increase its palatability.
- Expect some abdominal cramping.
- Use only as directed. Increase fluid intake to at least 6 to 8 glasses of nonalcoholic fluid.
- Notify the physician if adverse effects occur, including abdominal pain, bloody stool, excessive skin or mucous membrane dryness, rapid weight loss, dizziness, or other unusual symptoms.
- These agents work in 3 to 6 hours; take them in the morning or early evening to avoid sleep disturbance.

IRRITANT OR STIMULANT LAXATIVES

Bisacodyl (Dulcolax, Bisco-Lax, Carter's Liver Pills, Codylax, others)

Phenolphthalein (Evac-U-Gen, Evac-U-Lax, Feen-A-Mint, Phenolax, others)

Cascara sagrada

Senna (Senna laxative, Fletcher's Castoria)

Castor oil

Stimulant laxatives work by stimulating the motility and secretion of intestinal mucosa. Their use results in watery stool, often accompanied by abdominal cramping and pain. They are used to relieve constipation, although they should not be used as the initial treatment. Stimulant laxatives are also used for preparing the bowel for diagnostic testing.

Nursing Responsibilities

- Assess for potential contraindications to these laxatives, including abdominal pain and cramping, nausea and vomiting, anal or rectal fissures.
- Administer on an empty stomach to minimize the effects of food on its dissolution and absorption.
- Do not crush enteric-coated bisacodyl tablets or administer with alkaline products. This may hasten their dissolution in the stomach, leading to gastric distress.

Health Education for the Client and Family

- Discourage the use of this type of laxative, even in over-the-counter preparations, for the initial or continuing relief of constipation.
- Do not use the laxative for more than 1 week; chronic use can be habit forming and may suppress normal bowel reflexes.
- These laxatives are excreted in breast milk and should not be used by lactating women.

(continued)


MEDICATION ADMINISTRATION Laxatives and Cathartics (continued)

- Phenolphthalein-containing products may discolor the urine pink or red. Report possible hypersensitivity manifestations, such as difficulty breathing, dizziness or light-headedness, or skin rashes, to the primary care provider, and stop taking the medication.

LUBRICANTS**Mineral oil**

Mineral oil is the only lubricant laxative available. It acts by forming an oily coat on the fecal mass, preventing the reabsorption of water, and resulting in softer stool. Problems associated with the use of mineral oil as a laxative include reduced absorption of the fat-soluble vitamins A, D, E, and K; possible damage to the liver and spleen due to systemic absorption; and potential pneumonitis from aspiration of oil droplets into the lungs.

Nursing Responsibilities

- Assess for possible contraindications to use of mineral oil, including advanced age, preexisting lung disease, and hemorrhoids or other rectal lesions.

- Do not give mineral oil concurrently with wetting agents or stool softeners, because these increase the potential for systemic absorption and increase the effects of the mineral oil.
- Administer mineral oil in the evening before bedtime to reduce the effect on the absorption of fat-soluble vitamins and minimize the risk of aspiration.
- Assess for manifestations of vitamin deficiency. Monitor the client taking oral anticoagulants for evidence of increased bleeding, such as bleeding gums, easy bruising, or melena.

Health Education for the Client and Family

- Long-term use of mineral oil is not recommended because of its risks and adverse effects.
- Do not use mineral oil if hemorrhoids or rectal lesions are present; leakage of the oil through the anal sphincter may cause itching and interfere with healing.
- Suck on a lemon or orange slice after taking oral mineral oil to reduce the oily aftertaste.

Constipation

Whether real or perceived, constipation is disruptive to the client's activities of daily living (ADLs) and life satisfaction.

- Monitor pattern of defecation and stool consistency. *This information helps establish the client's usual pattern of defecation and differentiate between actual and perceived constipation.*
- Provide additional fluids to maintain an intake of at least 2500 mL per day. *A generous fluid intake helps maintain soft stool consistency and promote intestinal motility.*
- Encourage drinking a glass of warm water before breakfast. Provide time and privacy following breakfast for bowel elimination. *This helps develop a pattern of natural elimination; the warm water provides mild stimulation of bowel peristalsis.*

- Consult with the dietitian to provide a diet high in natural fiber unless contraindicated. Provide foods such as natural bran, prunes, or prune juice. *Natural fiber adds bulk to the stool and has a mild stimulant effect.*
- Encourage activities such as ambulation or chair exercises (e.g., range of motion, stretching, wheelchair lifts) as tolerated. *Activity stimulates peristalsis and strengthens abdominal muscles, facilitating elimination.*
- If indicated, consult with primary care provider about the use of bulk laxatives, stool softeners, or other laxatives as needed. *Laxatives may be necessary to relieve acute constipation. Clients with long-term activity or diet restrictions or impaired abdominal muscle strength may need a bulk-forming laxative to maintain normal elimination patterns and prevent constipation.*


MEETING INDIVIDUALIZED NEEDS
Constipation and the Older Adult

Constipation and perceived constipation are common problems in older adults. Although constipation is not a normal consequence of aging, factors such as slowed peristalsis, lowered activity levels, reduced food and fluid intake, and decreased sensory perception contribute to the higher incidence of constipation seen in the elderly. Chronic diseases such as diabetes, mobility problems, and medications also increase the risk of constipation in older adults.

Cultural influences and advertising lead many older adults to believe that a daily bowel movement is important for health. This belief contributes to an increased incidence of perceived constipation in the elderly. Because of this perception, the older adult may come to rely on laxatives, suppositories, or enemas to facilitate regular bowel movements. These external aids to defecation can further impair the ability to maintain "normal" bowel habits: a movement of soft stool every 2 to 3 days.

Community-Based Care

Include the following topics when teaching self-care measures to prevent and treat constipation:

- Increasing dietary fiber intake by including fresh fruits and vegetables, whole grains, high-fiber breakfast cereals, and unprocessed bran in the diet (Bran can be sprinkled on cereals, mixed into bread or muffin recipes, or mixed with fruit juice to increase its palatability.)
- Maintaining fluid intake of 6 to 8 glasses of water per day (unless contraindicated)
- Suggestions for remaining physically active to promote bowel function and maintain muscle tone
- Responding to the urge to defecate when perceived
- Appropriate use of laxatives:
 - Do not use laxatives, suppositories, or enemas on a regular basis.
 - Bulk-forming agents provide insoluble fiber, and are safe for long-term use; it is important to drink at least 6 to 8 glasses of water daily when using these (or any) laxatives.

- Other laxatives such as milk of magnesia, docusate (Colace, DSS), bisacodyl (Dulcolax), cascara, or castor oil should be used only occasionally to relieve constipation.
- Reporting any change in bowel habits such as new or persistent constipation or diarrhea, abdominal pain, black or bloody stools, nausea or anorexia, weakness, or unexplained weight loss to the primary care provider.

THE CLIENT WITH IRRITABLE BOWEL SYNDROME

Irritable bowel syndrome (IBS), also known as spastic bowel or functional colitis, is a motility disorder of the lower GI tract. It is a functional disorder with no identifiable organic cause. IBS is often characterized by abdominal pain with constipation, diarrhea, or both.

Irritable bowel syndrome is common, affecting up to 20% of people in Western civilization. It usually affects young people, although it may also occur in older adults. Reduced pain perception is offered as one explanation for lower diagnosis in older adults (Ehrenpreis, 2005). There is a higher prevalence of IBS in women than in men (Hungin et al., 2005).

Pathophysiology

In IBS, it appears that CNS regulation of the motor and sensory functions of the bowel is altered. Clients with IBS often experience increased motor reactivity of the small bowel and colon in response to stimuli such as food intake, hormonal influences, and physiologic or psychologic stress. IBS is characterized by visceral hypersensitivity and hyperactivity of the GI tract. Hypersecretion of colonic mucus is a common feature of the syndrome.

A lower visceral pain threshold is often found in clients with IBS. Clients may complain of pain, bloating, and distention when intestinal gas levels are normal.

Psychologic factors such as depression or anxiety have been linked to IBS; however, they have not been identified as causes of the disorder. Clients may respond to counseling or stress management techniques; however, it is important to emphasize that these methods are designed to cope with a chronic uncomfortable condition and do not suggest a psychiatric illness (Kupecz & Beradinelli, 2003). Recent research does indicate a correlation between emotional, physical, and sexual abuse and IBS.

Manifestations

Irritable bowel syndrome is characterized by abdominal pain that often is relieved by defecation and a change in bowel habits (see the Manifestations box on this page). The pain may be either colicky, occurring in spasms, or dull and continuous. Altered patterns of defecation may include:

- A change in frequency
- Abnormal stool form (hard or lumpy, loose or watery)
- Altered stool passage (straining, urgency, or a sensation of incomplete evacuation)
- Passage of mucous.

The client may also complain of abdominal bloating and excess gas. Other manifestations include nausea, vomiting, and anorexia;



MANIFESTATIONS of Irritable Bowel Syndrome

- Abdominal pain
 - May be relieved by defecation
 - May be intermittent and colicky or dull and continuous
- Altered bowel elimination
 - Constipation
 - Diarrhea
 - Mucous stools
- Abdominal bloating and flatulence
- Abdominal tenderness, especially over sigmoid colon
- Possible nausea, vomiting

fatigue, headache, depression, or anxiety. The abdomen is often tender to palpation, particularly over the sigmoid colon.

INTERDISCIPLINARY CARE



Irritable bowel syndrome is diagnosed based on the presence of abdominal pain or discomfort that has two of the following three characteristics: (1) relieved by defecation; (2) associated with a change in frequency of elimination; (3) associated with a change in stool form (Tierney et al., 2005). Management is directed toward relieving manifestations and reducing or eliminating precipitating factors. Stress reduction measures, exercises, or dietary education may benefit the client.

Diagnosis

The primary purpose of diagnostic testing is to rule out other causes of abdominal pain and altered fecal elimination. The stools may be examined for occult blood, ova and parasites, and WBCs. A sigmoidoscopy, colonoscopy, and/or a small-bowel series (upper GI series with small-bowel follow-through) and barium enema may be performed to visually examine the bowel mucosa, measure intraluminal pressures, and biopsy suspicious lesions. Nursing care for these procedures is outlined in Chapter 25 . Laboratory tests include a complete blood count (CBC) with differential and erythrocyte sedimentation rate to evaluate for anemia from bleeding or a possible tumor. Increased WBCs indicate a bacterial infection.

Medications

Although not curative, medications may be prescribed to manage the manifestations of IBS. Bulk-forming laxatives (such as bran, methylcellulose, or psyllium) may help reduce bowel spasm and normalize the number and form of bowel movements. An anticholinergic drug such as dicyclomine (Antispas, Bentyl) or hyoscyamine (Anaspaz) may be ordered to inhibit bowel motility by interfering with parasympathetic stimulation of the gastrointestinal tract. It relieves postprandial abdominal pain when given 30 to 60 minutes before meals. In clients with diarrhea, loperamide (Imodium) or diphenoxylate (Lomotil) may be used prophylactically to prevent diarrhea in selected situations. Tegaserod mesylate (Zelnorm) is a 5-HT₄-receptor agonist that is used for short-term treatment of IBS when the primary manifestation is constipation. It increases the number of bowel movements and facilitates stool formation.

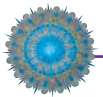
Antidepressant drugs, including tricyclics and selective serotonin reuptake inhibitors (SSRIs), may help relieve abdominal pain associated with IBS. Although the anticholinergic side effects of the tricyclics (such as desipramine [Norpramin] and imipramine [Tofranil]) may help decrease diarrhea, they have more adverse effects than SSRIs such as sertraline (Zoloft) and fluoxetine (Prozac).

Nutrition

Many clients with IBS benefit from additional dietary fiber. Adding bran to meals provides added bulk and water content to the stool, reducing the incidence of both loose diarrheal stools and hard, constipated stools. Other dietary changes are specific to individual triggers for IBS manifestations. Some clients may benefit from limiting lactose, fructose, or sorbitol intake (see Table 26–1). When excess gas and flatulence are problems, reducing the intake of gas-forming foods, such as beans, cabbage, apple and grape juices, nuts, and raisins, may be helpful. Caffeinated drinks, such as coffee, tea, and soft drinks, act as gastrointestinal stimulants; limiting intake of these fluids may also prove beneficial.

Complementary and Alternative Therapies

Herbal preparations may provide some benefit for clients with IBS. Herbs with an antispasmodic effect, such as anise, chamomile, peppermint, and sage, may be used to reduce the manifestations of IBS. Ginger root can also be consumed as a tea or capsule to assist with reduction of gas, bloating, and diarrhea and to improve the functioning of the stomach (Balch & Stengler, 2004).



NURSING CARE

Clients with irritable bowel syndrome rarely require acute care for IBS as a primary problem. However, nurses frequently interact with these clients in clinics and other community settings.

Assessment

Careful assessment is important to help identify the effects of IBS on the client. Collect the following assessment data:

- **Health history:** Current manifestations, their onset and duration; current treatment measures; effect of manifestations on lifestyle; careful exploration of history of emotional, physical, or sexual abuse.
- **Physical examination:** Apparent general state of health; abdominal shape and contour, bowel sounds, tenderness.

Nursing Diagnoses and Interventions

The primary nursing responsibility is education; providing referrals and counseling are additional nursing responsibilities to clients who have irritable bowel syndrome. See the previous sections on diarrhea and constipation for selected nursing interventions.

Community-Based Care

Include the following topics in teaching for the client with irritable bowel syndrome:

- The nature of the disorder and the reality of the client's manifestations
- The relationship between IBS and stress, anxiety, and depression
- Stress and anxiety reduction techniques, such as meditation, visualization, exercise, “time-out,” and progressive relaxation
- Dietary influences that may contribute to IBS and suggested dietary changes, such as additional fiber and water intake
- The use and role of prescribed medications, their adverse effects, and when to contact the physician
- The importance of routine follow-up appointments and of notifying the primary care provider if manifestations change (such as blood in the stool, significant constipation or diarrhea, increasing abdominal pain, or weight loss).

If needed, refer the client to a counselor or other mental health professional for assistance in dealing with psychological factors.

THE CLIENT WITH FECAL INCONTINENCE

Fecal incontinence, the loss of voluntary control of defecation, occurs less frequently than urinary incontinence but is no less distressing to the client. Multiple factors contribute to fecal incontinence, including both physiologic and psychologic conditions (Box 26–1). Bowel incontinence is usually considered a manifestation of a disorder rather than a disorder unto itself. Clients often do not reveal fecal incontinence in discussing health concerns. Little information is available about its incidence and prevalence. Because many of the etiologic factors

BOX 26–1 Selected Causes of Fecal Incontinence

Neurologic Causes

- Spinal cord injury or disease
- Head injury, stroke, or brain tumor
- Degenerative neurologic disease, such as multiple sclerosis, amyotrophic lateral sclerosis (ALS), dementia
- Diabetic neuropathy

Local Trauma

- Obstetric tears
- Anorectal injury
- Anorectal surgery with sphincter damage

Inflammatory Processes

- Infection
- Radiation

Other Physiologic Causes

- Diarrhea
- Stool impaction
- Pelvic floor relaxation or loss of sphincter tone
- Tumors

Psychologic Causes

- Depression
- Confusion and disorientation

are more prevalent in the older adult, older clients are more often affected (see the Nursing Research box below).

Pathophysiology

To understand the pathophysiology of fecal incontinence, it is necessary to understand the normal mechanisms of defecation. The rectum is normally empty. When it is distended by feces entering from the sigmoid colon, the defecation reflex is stimulated. This reflex causes involuntary relaxation of the internal sphincter and stimulates the urge to defecate. When the external sphincter, which is under both somatic (voluntary) and autonomic (involuntary) control, relaxes, defecation occurs. Adults normally can override the defecation reflex by voluntary contraction of the external sphincter and pelvic floor muscles. The wall of the rectum gradually relaxes, and the urge to defecate subsides.

The most common causes of fecal incontinence are those that interfere with either sensory or motor control of the rectum and anal sphincters. If the external sphincter is paralyzed as a result of spinal cord injury or disease, defecation occurs automatically when the internal sphincter relaxes with the defecation reflex. If sphincter muscles have been damaged or excessive pelvic floor relaxation has occurred, it may not be possible to override the defecation reflex with voluntary control.


Age-related changes in anal sphincter tone and response to rectal distention increase the risk for fecal incontinence in older adults. Resting and maximal anal sphincter pressures are

decreased, particularly in older women. In addition, less rectal distention is needed to produce sustained relaxation of the anal sphincter in older females.

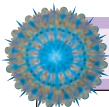
INTERDISCIPLINARY CARE



The diagnosis of fecal incontinence is based on the client's history. Physical examination of the pelvic floor and anus is performed to evaluate muscle tone and rule out a fecal impaction. Impaired sphincter muscle may be palpable on digital exam. Anorectal manometry or a rectal motility test may be used to evaluate the functional ability of the sphincter muscles. In this test, a small, flexible balloon catheter is introduced into the rectum, and pressures are measured in the rectum and internal and external sphincters. Normally, rectal dilation causes the internal sphincter to relax and the external sphincter to contract. Sigmoidoscopy also may be used to examine the rectum and anal canal.

Management of fecal incontinence is directed toward the identified cause. Medications to relieve diarrhea or constipation may be prescribed. A high-fiber diet, ample fluids, and regular exercise are helpful for many clients. Exercises to improve sphincter and pelvic floor muscle tone (Kegel exercises) may be of long-term benefit. See Chapter 28  for more information about Kegel exercises.

Clients also may benefit from using loperamide before meals and prophylactically before running errands or leaving the house (Tierney et al., 2005). Biofeedback therapy may be used for



NURSING RESEARCH Evidence-Based Practice: Fecal Incontinence

When fecal incontinence occurs at any age, it is highly distressing to the individual. Little is known about how older adults living in the community manage this problem in their daily lives. This study was conducted to survey older men and women about self-care practices and factors that affected both the number of self-care practices and the reporting of fecal incontinence to healthcare providers (Bliss et al., 2005).

Of the 1352 subjects, 18% had fecal incontinence several times a year or more. These men and women used one or more self-care practices. The practices most commonly used were changing diet (such as avoiding certain foods); wearing a sanitary panty liner, pad, or brief; and reducing activity or exercise. The type of practice used depended on the severity of the incontinence. For example, those who soiled their outer clothing were more likely to change their diet than those who soiled only their undergarments. Women were more likely to use self-care methods than were men, and less than half of the subjects reported the problem to their healthcare provider.

IMPLICATIONS FOR NURSING

The major implication of the findings from this study is that nurses who care for older adults living in the community need to include questions about the occurrence of fecal incontinence when conducting a health history and physical assessment. In most in-

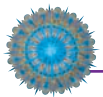
stances, the older adult will not voluntarily report this problem because it is considered embarrassing. If fecal incontinence is identified, further questions should be asked about self-care measures, including sanitary pads or briefs, diet and exercise, and use of antidiarrheal medications. Education should be carried out to assure older adults that incontinence of any type (urinary or fecal) is not an inevitable part of aging, but may rather be an indication of some other health problem. In addition, evaluation of the older adult's ability to carry out self-care measures if indicated is an important component of nursing care.

CRITICAL THINKING IN CLIENT CARE

1. Although you observe evidence of fecal incontinence when providing home care to an elderly man, he denies this problem when you ask about it. What would you do next?
2. Fecal incontinence often results in skin irritation and discomfort around the rectum. What would you recommend if a client asks you how to relieve this problem?
3. One of your home care clients is an 85-year-old woman, living on a small and limited income. She has fecal incontinence, and says to you, "I don't know what to do about this. I am so embarrassed. I guess I just need to go to a nursing home and let them keep me clean." How would you respond? What type of referrals might you make?

mentally alert clients with intact sphincter muscles but low muscle tone. With motivation and reinforcement, clients achieve improved sphincter control in response to a stimulus. The goal of biofeedback is to improve sensation, coordination, and strength of the sphincter muscle (Halverson, 2005).

When damage to the sphincter or rectal prolapse (protrusion of rectal mucous membrane through the anus) is the cause of fecal incontinence, surgical repair is the treatment of choice. Surgery may also be indicated when conservative measures have not been effective. Permanent colostomy, the creation of an opening from the large bowel on the abdominal wall, is a last choice option for some clients, but it can control fecal output when other measures fail.



NURSING CARE

Health Promotion

A bowel training program to establish a regular pattern of elimination often is effective in relieving fecal incontinence. Teach the client to establish a regular time of day for elimination, usually 15 to 30 minutes after breakfast. A stimulant, such as a cup of coffee, a rectal suppository, or even a phosphate enema, may be given to prompt defecation. Clients with neurologic incontinence may learn to stimulate the anal canal digitally to initiate defecation.

Dietary changes may be useful in managing fecal incontinence. If incontinence occurs only with mild loose or liquid stools, increasing dietary fiber or using a bulking agent to increase stool bulk and solidity may be effective. The majority of the fiber should come from a fiber-rich diet because fiber supplements provide only a limited amount of additional fiber (Halverson, 2005). When incontinence of solid stool occurs, a low-residue diet of foods that are easily digested and absorbed may be prescribed to reduce the frequency of defecation.

Assessment

- **Health history:** Extent, onset, and duration of incontinence; identified contributing factors; history of spinal cord or anorectal injury or surgery; chronic diseases such as diabetes, multiple sclerosis, or other neurologic disorders.
- **Physical examination:** Mental status; general health; examination of perianal tissues; digital rectal examination.

Nursing Diagnoses and Interventions

Bowel Incontinence

Nurses are often responsible for instituting bowel training programs and other measures to manage fecal incontinence.

- Teach caregivers to place the client on a toilet or commode and provide for privacy at a certain time of day. *Placing the client in a normal position to defecate at a consistent time of day stimulates the defecation reflex and helps reestablish a pattern of stool evacuation.*
- If necessary, insert a glycerin or bisacodyl (Dulcolax) suppository 15 to 20 minutes before positioning on the toilet or commode. *This helps to stimulate evacuation. Once a regular elimination pattern is established, it may be possible to discontinue suppository use.*

- Maintain a caring, nonjudgmental manner in providing care. *This promotes a feeling of acceptance when the client may feel unacceptable.*

PRACTICE ALERT

Provide room odor control with deodorizer tablets, sprays, or other devices. Controlling odor is important to preserve the client's self-esteem.

Risk for Impaired Skin Integrity

Good skin care is vital for the client with fecal incontinence. Stool contains enzymes and other irritating substances that promote skin breakdown when they are not promptly removed. This can lead to pressure ulcers, particularly when a neurologic disorder (such as spinal cord injury, dementia, or stroke) impairs mobility.

- Clean the skin thoroughly with mild soap and water after each bowel movement. *Toilet tissue may be more irritating to the skin and less effective in removing fecal material.*
- Apply a skin barrier cream or ointment after each bowel movement. *These help protect the skin from irritating substances in the feces.*
- If incontinence pads or briefs are used, check frequently for soiling and change when feces is noted. *Although these help protect bedding and clothing from soiling, they can contribute to skin breakdown if they are not checked and changed frequently.*

Community-Based Care

Managing fecal incontinence is a challenging problem for the client and family caregivers. For the client with intact cognition, it can be psychologically devastating. The client may become socially isolated from fear of odor or soiling clothing. Self-esteem may suffer from a sense of lost control over body functions and the inability to provide self-care. It is important to stress that incontinence is never normal (i.e., aging alone is not a cause of incontinence) and often is treatable. Encourage the client to seek medical evaluation of the problem.

Topics of client and family education include:

- Recommended dietary measures such as consuming a high-fiber diet and ample fluids to maintain soft, formed stool, or a low-residue diet to reduce the number of stools.
- Suggestions for regular exercise to stimulate bowel peristalsis and regular evacuation.
- Use of bulk-forming laxatives, such as psyllium seed (Metamucil), to provide stool bulk and reduce the number of small, liquid stools.
- Prescribed medications (such as loperamide to reduce the number of stools), their appropriate use, and management of adverse effects (such as constipation).
- Bowel training program instructions, including techniques for digital anal stimulation, inserting suppositories, or administering enemas as recommended. For digital anal stimulation, teach to insert a lubricated gloved finger through the anal sphincter into the rectum 1.5 to 2 inches while seated on the toilet or

- commode, then use a circular side-to-side movement to gently stretch the rectal wall until the internal sphincter relaxes.
- The importance of good skin care, particularly if neurologic impairment is present.

- The potential benefits and associated risks of biofeedback and surgical treatment, if recommended.
- Provide referrals for home care or community health services as indicated.

ACUTE INFLAMMATORY AND INFECTIOUS BOWEL DISORDERS

The GI tract is particularly vulnerable to inflammation and infection because of its continual exposure to the external environment. Although most pathogens affecting the GI tract are ingested in food or water, infection also may be spread by direct contact, possibly by the respiratory route. Pathogens may also be transmitted sexually through anal intercourse.

Acute disease of the GI tract may be caused by the pathogen itself or by a bacterial or other toxin. Acute inflammatory disorders such as appendicitis and peritonitis result from contamination of damaged or normally sterile tissue by the client's own endogenous or resident bacteria.

THE CLIENT WITH APPENDICITIS

Appendicitis, inflammation of the vermiform appendix, is a common cause of acute abdominal pain. It is the most common reason for emergency abdominal surgery, affecting 10% of the population (Tierney et al., 2005). Appendicitis can occur at any age, but is more common in adolescents and young adults and slightly more common in males than females.

Pathophysiology

The appendix is a tubelike pouch attached to the cecum just below the ileocecal valve. It is usually located in the right iliac region, at an area designated as McBurney's point (Figure 26-1A ■). The function of the appendix is not fully understood, although it regularly fills with and empties digested food.

Obstruction of the proximal lumen of the appendix is apparent in most acutely inflamed appendices. The obstruction is often caused by a *fecalith*, or hard mass of feces. Other obstructive causes include a calculus or stone, a foreign body, inflammation, a tumor, parasites (e.g., pinworms), or edema of lymphoid tissue. Following obstruction, the appendix becomes distended with fluid secreted by its mucosa. Pressure within the lumen of the appendix increases, impairing its blood supply and leading to inflammation, edema, ulceration, and infection. Purulent exudate forms, further distending the appendix. Within 24 to 36 hours, tissue necrosis and gangrene result, leading to perforation if treatment is not initiated. Perforation results in bacterial peritonitis.

Appendicitis can be classified as simple, gangrenous, or perforated, depending on the stage of the process. In *simple appendicitis*, the appendix is inflamed but intact. When areas of tissue necrosis and microscopic perforations are present in the appendix, the disorder is called gangrenous appendicitis. A perforated appendix shows evidence of gross perforation and contamination of the peritoneal cavity.

Manifestations

Continuous mild generalized or upper abdominal pain is the initial characteristic manifestation of acute appendicitis. Over

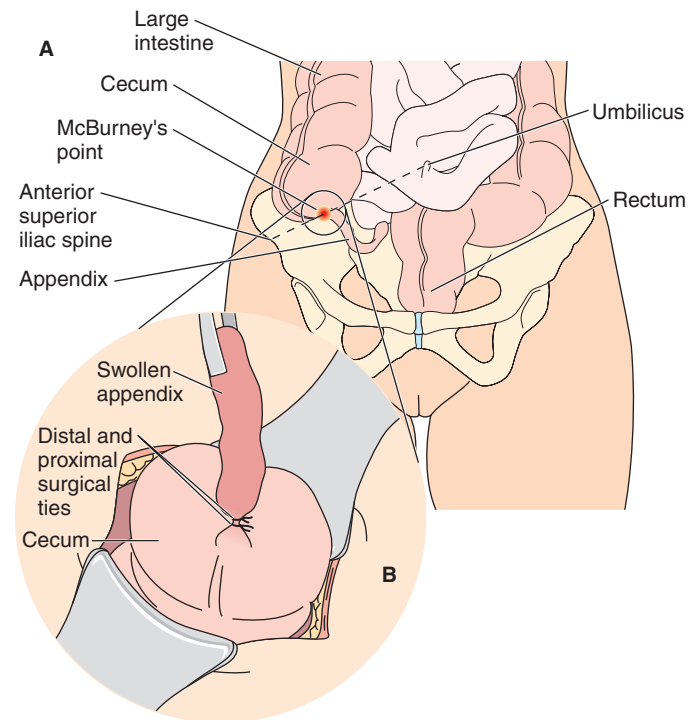


Figure 26-1 ■ *A*, McBurney's point, located midway between the umbilicus and the anterior iliac crest in the right lower quadrant. It is the usual site for localized pain and rebound tenderness due to appendicitis. *B*, In an appendectomy, the appendix and cecum are brought through the incision to the surface of the abdomen. The base of the appendix is clamped and ligated; the appendix is then removed.

the next 4 hours, the pain intensifies and localizes in the right lower quadrant of the abdomen. It is aggravated by moving, walking, or coughing. On palpation, localized and rebound tenderness are noted at McBurney's point. Rebound tenderness is demonstrated by relief of pain with direct palpation of McBurney's point followed by pain on release of pressure. Extension or internal rotation of the right hip increases the pain. In addition to pain, a low-grade temperature, anorexia, nausea, and vomiting are often present.

Pain and local tenderness may be less acute in older adults, delaying the diagnosis, and leading to a 15% mortality of perforated appendicitis in the older adult (Tierney et al., 2005). This can present a significant problem; the course of acute appendicitis in older adults is more virulent and complications develop sooner. Pregnant women may develop right lower quadrant, periumbilical, or right subcostal (under the rib cage) pain due to possible displacement of the appendix by the distended uterus.

Complications

Perforation, peritonitis, and abscess are possible complications of acute appendicitis. Perforation is manifested by increased pain and a high fever. It can lead to a small, localized abscess, local peritonitis, or significant generalized peritonitis. (Peritonitis is discussed in the next section of this chapter.)

A less common disorder is chronic appendicitis, characterized by chronic abdominal pain and recurrent acute attacks at intervals of several months or more. Other conditions, such as inflammatory bowel disease and renal disorders, often cause manifestations attributed to chronic appendicitis.

INTERDISCIPLINARY CARE

The acutely inflamed appendix can perforate within 24 hours, so rapid diagnosis and treatment are important. Because of this urgency and the low incidence of surgical complications, diagnostic testing and preoperative treatment are limited. The client is admitted to the hospital, and intravenous fluids are initiated. Oral food and fluids are withheld until a diagnosis is confirmed. Once the diagnosis is established, an appendectomy is performed.

Diagnosis

Diagnostic and laboratory tests are used to help confirm the diagnosis and rule out other possible causes for the manifestations. Abdominal ultrasound is the most effective test for diagnosing acute appendicitis. Ultrasound examination has reduced the incidence of exploratory surgery and is particularly useful with clients with atypical symptoms, such as older adults. Other diagnostic tests used to accurately diagnose appendicitis include abdominal x-rays, an intravenous pyelogram, a urinalysis, and a pelvic examination. In addition, a WBC count with differential is obtained. With appendicitis, the total white count is elevated (10,000 to 20,000/mm³), with an increased number of immature WBC (bands).

Medications

Prior to surgery, intravenous fluids are given to restore or maintain vascular volume and prevent electrolyte imbalance. Antibiotic therapy with a third-generation cephalosporin effective against many gram-negative bacteria, such as cefoperazone (Cefobid), cefotaxime (Claforan), ceftazidime (Fortaz), or ceftriaxone (Rocephin), is initiated prior to surgery. The antibiotic is repeated during surgery and continued for at least 48 hours postoperatively. (The nursing implications for cephalosporin antibiotics are discussed in Chapter 12.) Pain medications are administered as prescribed.

Surgery

The treatment of choice for acute appendicitis is an *appendectomy*, surgical removal of the appendix. Either a laparoscopic approach (insertion of an endoscope to view abdominal contents) or laparotomy (surgical opening of the abdomen) may be used for appendectomy. Laparoscopic appendectomy requires a very small incision through which the laparoscope is inserted. This procedure has several advantages: (1) Direct visualization of the appendix allows definitive diag-

nosis without laparotomy; (2) postoperative hospitalization is short; (3) postoperative complications are infrequent; and (4) recovery and resumption of normal activities is rapid.

An open appendectomy is performed by laparotomy. A small transverse incision is made at McBurney's point (Figure 26-1A); the appendix is isolated and ligated (tied off) to prevent contamination of the site with bowel contents, and then removed (Figure 26-1B). Laparotomy generally is used when the appendix has ruptured. It allows removal of contaminants from the peritoneal cavity by irrigation with sterile normal saline. Occasionally the wound may be left unsutured for periodic irrigation. Recovery is generally uneventful. Refer to Chapter 4 for discussion of preoperative and postoperative nursing care.

NURSING CARE

A Nursing Care Plan for a client with appendicitis is included on page 768.

Assessment

Because appendicitis can rapidly progress from inflammation to perforation, prompt assessment is vital. Obtain the following assessment data:

- *Health history:* Current manifestations, including onset, duration, progression, and aggravating or relieving factors; most recent food or fluid intake; known medication or other allergies; current medications; history of chronic diseases.
- *Physical examination:* Vital signs including temperature; apparent general health; abdominal shape and contour, bowel sounds, tenderness to light palpation.

Nursing Diagnoses and Interventions

Preoperative nursing care is directed toward preparing the client physically and psychologically for emergency surgery. Limited time is available for preoperative teaching.

PRACTICE ALERT

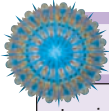
Keep the client with suspected appendicitis NPO, and do not administer laxatives or enemas, which may cause perforation of the appendix. No heat should be applied to the abdomen; this may increase circulation to the appendix and also cause perforation.

Risk for Infection

Preventing complications during the preoperative and postoperative periods is a primary nursing care goal. Perforation and peritonitis are the most likely preoperative complications; postoperative complications include wound infection, abscess, and possible peritonitis.

PRACTICE ALERT

Assess abdominal status frequently, including distention, bowel sounds, and tenderness. Increasing generalized pain, a rigid, boardlike abdomen, and abdominal distention may indicate developing peritonitis.



NURSING CARE PLAN A Client with Acute Appendicitis

Jamie Lynn is a 19-year-old college student majoring in physical therapy. Ms. Lynn arrives at the emergency department at 1:00 A.M. complaining of general lower abdominal pain that had started the previous evening. By midnight, the pain was more localized over the right lower quadrant. She also reports nausea and vomiting.

ASSESSMENT

Sue Grady, RN, completes the admission assessment in the emergency department. Ms. Lynn is complaining of nausea and severe abdominal pain, stating, "Walking makes my stomach hurt worse." Physical assessment findings include T 100.2°F (37.8°C), P 84, R 16, and BP 110/70; skin warm to touch; abdomen flat and guarded, with marked tenderness in right lower quadrant. Ms. Lynn's CBC shows WBC 14,000/mm³; neutrophils 81.1%; lymphocytes 12.5%. The diagnosis of acute appendicitis is made, and Ms. Lynn is transferred to surgery for a laparoscopic appendectomy.

DIAGNOSES

- *Impaired Skin Integrity* related to surgical incision
- *Acute Pain* related to surgical intervention
- *Anxiety* related to situational crisis

EXPECTED OUTCOMES

- Incision will heal without infection or complications.
- Will verbalize adequate pain relief.
- Will verbalize decreased anxiety.
- Will return to preoperative activities.

PLANNING AND IMPLEMENTATION

- Assess pain using a pain scale; provide analgesics as needed.
- Teach pain management following discharge.
- Teach abdominal splinting during coughing, turning, or ambulating as needed.
- Teach home care of incision.
- Discuss activity limitations as ordered.
- Instruct to report fever or warmth, redness, or drainage from the incision.

EVALUATION

On discharge the following evening, Ms. Lynn is fully ambulatory. Her appetite has returned, and she is tolerating food and fluids well. Her temperature is normal. The nurse provides Ms. Lynn with written and verbal information on postoperative care following an appendectomy.

CRITICAL THINKING IN THE NURSING PROCESS

1. What is the pathophysiologic basis for Ms. Lynn's elevated WBC?
2. How would Ms. Lynn's postoperative care and teaching differ if she had undergone a laparotomy instead of a laparoscopic appendectomy?
3. Outline a teaching plan to give to clients for home care following an appendectomy.
4. Develop a care plan for Ms. Lynn for the nursing diagnosis, *Anxiety* related to a situational crisis.

See Evaluating Your Response in Appendix C.

- Monitor vital signs, including temperature. *Tachycardia and rapid shallow respirations may indicate perforation of the appendix with resulting peritonitis. Fever may develop as well, and the blood pressure may fall if sepsis is present.*
- Maintain intravenous infusion until oral intake is adequate. *Intravenous fluids are given to maintain vascular volume and to provide a route for antibiotic administration.*
- Assess wound, abdominal girth, and postoperative pain. *Swelling of the wound, increased abdominal girth, or an increase in pain may indicate infection or peritonitis.*

Acute Pain

The client with appendicitis experiences pain before and after surgery. Analgesia is limited until the diagnosis is established. Postoperative pain is controlled by narcotic or nonnarcotic analgesics.

- Assess pain, including its character, location, severity, and duration. Report any unexpected changes in the nature of pain. *Both preoperatively and postoperatively, the client's pain provides important clues about the diagnosis and possible complications such as rupture of the appendix or peritonitis.*

PRACTICE ALERT

Sudden relief of preoperative pain may signal rupture of the distended and edematous appendix.

- Administer analgesics as ordered. *Preoperatively, pain medication can be given after a diagnosis is established. Postoperatively, provide analgesics to maintain comfort and enhance mobility.*
- Assess effectiveness of medication 30 minutes after administration. Report unrelieved pain. *Pain unrelieved by prescribed analgesic may indicate a complication or the need for further assessment. For example, continued abdominal discomfort and distention may indicate excess intestinal gas that may be better relieved by ambulation.*

Using NANDA, NIC, and NOC

Chart 26–2 shows links between NANDA nursing diagnoses, NIC, and NOC for the client with appendicitis.

Community-Based Care

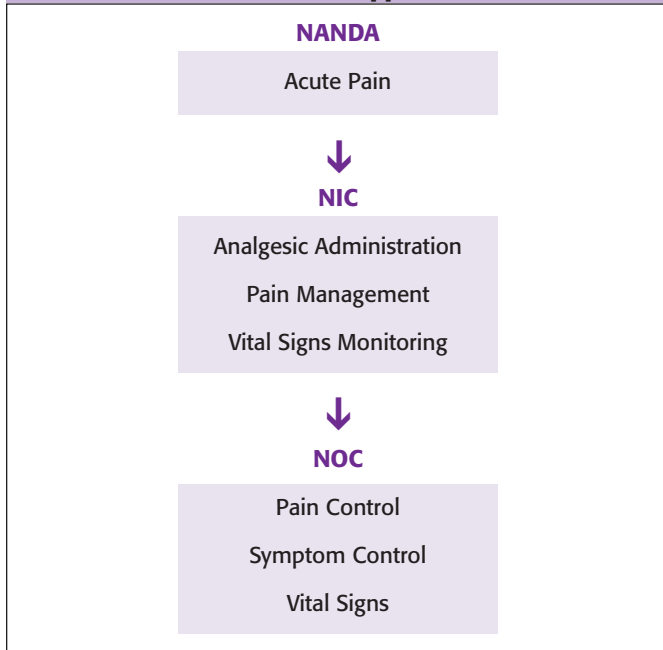
Preoperative teaching may be limited by pain and the emergent nature of surgery. Explain why food and fluids are not permitted during this time. If time allows, teach postoperative turning, coughing, deep breathing, and pain management.

With uncomplicated appendectomy, the client often is discharged either the day of surgery or the day following surgery. Postoperative teaching includes:

- Wound or incision care, including hand washing and dressing change procedures as indicated

NANDA, NIC, AND NOC LINKAGES

CHART 26–2 The Client with Appendicitis or Peritonitis



Data from *NANDA's Nursing Diagnoses: Definitions & Classification 2005–2006* by NANDA International (2005), Philadelphia; *Nursing Interventions Classification (NIC)* (4th ed.) by J. M. Dochterman & G. M. Bulechek (2004), St. Louis, MO: Mosby; and *Nursing Outcomes Classification (NOC)* (3rd ed.) by S. Moorhead, M. Johnson, and M. Maas (2004), St. Louis, MO: Mosby.

- Instructions to report fever, increased abdominal pain, swelling, redness, drainage, bleeding, or warmth of the operative site to the physician
- Activity limitations (e.g., lifting, driving), if any
- Returning to work if appropriate.

THE CLIENT WITH PERITONITIS

Peritonitis, inflammation of the peritoneum, is a serious complication of many acute abdominal disorders. It is usually caused by enteric bacteria entering the peritoneal cavity through a perforated ulcer, ruptured appendix, perforated diverticulum (discussed later in this chapter), necrotic bowel, or during abdominal surgery. Pelvic inflammatory disease, gallbladder rupture, abdominal trauma, or peritoneal dialysis can also lead to peritonitis.

Pathophysiology

The peritoneum is a double-layered serous membrane lining the walls (parietal peritoneum) and organs (visceral peritoneum) of the abdominal cavity. There is a potential space between the parietal and visceral layers of the peritoneum that contains a small amount of serous fluid. This space, the peritoneal cavity, normally is sterile.

Peritonitis results from contamination of the normally sterile peritoneal cavity by infection or a chemical irritant. Chemical peritonitis often precedes bacterial peritonitis. Perforation of a peptic ulcer or rupture of the gallbladder releases gastric

juices (hydrochloric acid and pepsin) or bile into the peritoneal cavity, causing an acute inflammatory response.

Bacterial peritonitis usually is caused by infection by *Escherichia coli*, *Klebsiella*, *Proteus*, or *Pseudomonas* bacteria, which normally inhabit the bowel. Inflammatory and immune defense mechanisms are activated when bacteria enter the peritoneal space. These defenses can effectively eliminate small numbers of bacteria, but may be overwhelmed by massive or continued contamination. When this occurs, mast cells release histamine and other vasoactive substances, causing local vasodilation and increased capillary permeability. Polymorphonuclear leukocytes (a type of WBC) infiltrate the peritoneum to phagocytize bacteria and foreign matter. Fibrinogen-rich plasma exudate promotes bacterial destruction and forms fibrin clots to seal off and segregate the bacteria. This process helps limit and localize the infection, allowing host defenses to eradicate it. Continued contamination, however, leads to generalized inflammation of the peritoneal cavity. The inflammatory process causes fluid to shift into the peritoneal space (third spacing). Circulating blood volume is depleted, leading to hypovolemia. *Septicemia*, a systemic disease caused by pathogens or their toxins in the blood, may follow.

Manifestations

Manifestations of peritonitis depend on the severity and extent of the infection, as well as the age and general health of the client. Both local and systemic manifestations are present (see the box below). The client often presents with evidence of an *acute abdomen*, an abrupt onset of diffuse, severe abdominal pain. The pain may localize and intensify near the area of infection. Movement may intensify the pain. The entire abdomen is tender, with guarding or rigidity of abdominal muscles. The acute abdomen is often described as boardlike. Rebound tenderness may be present over the area of inflammation. Peritoneal inflammation inhibits peristalsis, resulting in a paralytic ileus. (Paralytic ileus is discussed in a later section of this chapter.) Bowel sounds are



MANIFESTATIONS of Peritonitis

Abdominal/Gastrointestinal Manifestations

- Diffuse or localized pain
- Tenderness with rebound
- Boardlike rigidity
- Diminished or absent bowel sounds
- Distention
- Anorexia, nausea, and vomiting

Systemic Manifestations


- Fever
- Malaise
- Tachycardia
- Tachypnea
- Restlessness
- Confusion or disorientation
- Oliguria

markedly diminished or absent, and progressive abdominal distention is noted. Pooling of GI secretions may cause nausea and vomiting. Systemic manifestations of peritonitis include fever, malaise, tachycardia and tachypnea, restlessness, and possible disorientation. The client may be oliguric (having little urine output) and show signs of dehydration and shock.

The older, chronically debilitated, or immunosuppressed client may present with few of the classic signs of peritonitis. Increased confusion and restlessness, decreased urinary output, and vague abdominal complaints may be the only manifestations present. These clients are at increased risk for delayed diagnosis, contributing to a higher mortality rate.

Complications

Complications of peritonitis may be life threatening. Abscess formation is common. The very defense mechanisms designed to isolate and localize the infection can protect it from immune responses and systemic antibiotics. Fibrous adhesions in the abdominal cavity are a late complication and may lead to subsequent obstruction.

Without prompt and effective treatment, septicemia and septic shock can develop. Fluid loss into the abdominal cavity may also lead to hypovolemic shock. These potentially lethal complications require immediate, aggressive intervention to prevent multiple organ failure and death. Shock and its management are discussed in Chapter 11 .

FAST FACTS

Mortality from Peritonitis

- The overall mortality rate associated with peritonitis is about 40%.
- Clients with other medical conditions, older clients, and those with greater bacterial contamination have a higher risk of dying.
- Young people with perforated ulcers or appendicitis, those with less extensive bacterial contamination, and those who receive early surgical intervention have mortality rates of less than 10%.

INTERDISCIPLINARY CARE




Care of the client with peritonitis focuses on establishing the diagnosis and identifying and treating its cause as well as the peritonitis. Preventing complications is an important aspect of care.

Diagnosis

Diagnostic tests are performed to establish the diagnosis of peritonitis, rule out other disorders, and help identify the cause. The tests that may be ordered include a WBC count (elevated to approximately 20,000/mm³ in peritonitis), blood cultures, abdominal x-rays, liver and renal function studies, serum electrolytes, and a paracentesis (in peritonitis, peritoneal fluid will contain increased protein and WBCs). Increased numbers of immature blood cells are present as the bone marrow releases them in response to the infection.

Medications

Until the infecting organism has been identified, a broad-spectrum antibiotic effective against organisms commonly im-

plicated in peritonitis is prescribed. Once culture results have been obtained, antibiotic therapy is modified to the specific organism(s) responsible. Cephalosporin antibiotics are often prescribed if gram-negative enteric bacteria are suspected. Other antibiotics that may be ordered include ampicillin (e.g., Omnipen, Polycillin), metronidazole (Flagyl), clindamycin (Cleocin), or an aminoglycoside antibiotic such as gentamicin (Garamycin) or amikacin (Amikin). Nursing implications for antibiotic therapy are discussed in Chapter 12 . Analgesics are prescribed to promote comfort.

Surgery

If the cause of peritonitis is a perforation, gangrenous bowel, or inflamed appendix, a laparotomy is done to close the perforation or remove the damaged and inflamed tissue. If an abscess is present, it also may be surgically drained or removed.

Peritoneal lavage, washing of the peritoneal cavity with copious amounts of warm isotonic fluid, may be done during surgery. This procedure dilutes residual bacteria and removes gross contaminants, blood, and fibrin clots. In rare instances, peritoneal lavage may be continued for several days following surgery. The solution is infused into the upper portion of the peritoneal cavity and removed via drains in the pelvic cul-de-sac. Careful attention to fluid and electrolyte status and strict aseptic technique are necessary.

Clients who have had laparotomy for peritonitis often return from surgery with either Penrose or closed drain systems such as a Jackson-Pratt drain. In some cases, the incision may be left unsutured. With severe and long-standing peritonitis, the abdomen may be closed temporarily with polypropylene mesh containing a nylon zipper or Velcro to allow repeated exploration of the abdomen and drainage of infectious sites.

Nutrition

Intravenous fluids and electrolyte replacements are administered to maintain vascular volume and fluid and electrolyte balance. Parenteral nutrition is given until adequate oral intake resumes.

OTHER TREATMENTS The client is placed on bed rest in Fowler's position to help localize the infection and promote lung ventilation. Oxygen is often ordered to facilitate cellular metabolism and healing.

INTESTINAL DECOMPRESSION The inflammatory process of peritonitis often draws large amounts of fluid into the abdominal cavity and the bowel. In addition, peristaltic activity of the bowel is slowed or halted by the inflammation, causing **paralytic ileus** (or *ileus*), impaired propulsion or forward movement of bowel contents. Intestinal decompression is used to relieve abdominal distention, facilitate closure, and minimize postoperative respiratory problems. A nasogastric or long intestinal tube is inserted and connected to continuous drainage (Figure 26–2 ■). If prolonged intestinal decompression is anticipated, a jejunostomy may be performed for comfort. Suction is maintained until peristalsis resumes, bowel sounds are present, and the client is passing flatus. Food and fluids are withheld until intestinal motility has returned and suction is discontinued.

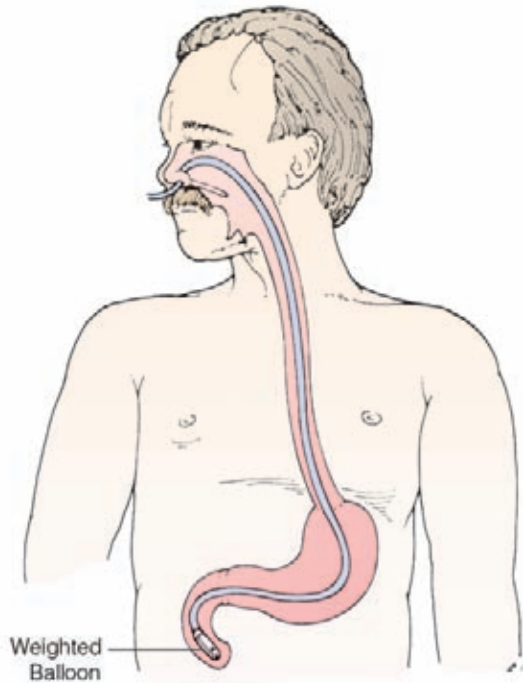
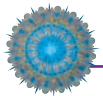


Figure 26–2 ■ The weighted tip or inflated balloon at the end of an intestinal tube is drawn into the intestine by gravity and peristalsis.



NURSING CARE

Peritonitis is a serious illness. Early recognition and treatment are important to minimize the risk of complications.

Assessment

- **Health history:** Pain, its onset, character, severity, location, aggravating and relieving factors; associated symptoms such as anorexia, nausea, vomiting; current and previous history of peptic ulcer disease, gallbladder disease, chronic diseases; current medications.
- **Physical examination:** Vital signs including temperature; level of consciousness; skin color, temperature, warmth, capillary refill and turgor; abdominal shape, contour, bowel sounds, tenderness, tympany, and guarding.

Nursing Diagnoses and Interventions

Clients with peritonitis require intensive nursing and medical care to prevent complications and recover fully. Nursing care priorities include interventions to manage pain; altered fluid balance; altered protection due to infection; and anxiety.

Acute Pain

Abdominal distention and acute inflammation contribute to the pain associated with peritonitis. Surgery further disrupts abdominal muscles and other tissues, causing pain. Effective pain management promotes immune function, healing, mobility, and recovery.

- Assess pain, including its location, severity (using a standard pain scale), and type. Monitor analgesic effectiveness. Report changes to the primary care provider.

PRACTICE ALERT

Unrelieved pain or a change in the location, severity, or type of pain may indicate spread of infection, abscess formation, or other complications of peritonitis.

- Place in Fowler's or semi-Fowler's position with the knees and feet elevated. *This position reduces stress on abdominal structures and facilitates respirations, promoting comfort.*
- Administer analgesics as ordered on a routine basis or using patient-controlled analgesia (PCA). *Routine analgesic administration maintains a therapeutic blood level and helps maintain comfort, facilitating healing and movement.*
- Teach and assist with adjunctive pain management techniques such as meditation, visualization, massage, and progressive relaxation. *Adjunctive measures augment analgesics and help promote a sense of control over pain.*

Deficient Fluid Volume

In peritonitis, significant amounts of fluid are drawn into the abdominal cavity and bowel, reducing vascular volume and cardiac output. This fluid also may be lost from the body by intestinal suction or through drains placed in the abdomen during surgery. An unsutured incision causes additional significant fluid loss.

- Maintain accurate intake and output records. Measure urine output every 1 to 2 hours; report output of less than 30 mL/h. Measure gastrointestinal output at least every 4 hours. *Intake and output records provide valuable information about fluid volume status.*

PRACTICE ALERT

Urine output of less than 30 mL/hr may indicate hypovolemia, decreased cardiac output, and impaired tissue perfusion.

- Monitor vital signs and hemodynamic parameters such as central venous pressure, cardiac output, and pulmonary artery pressures every hour or as indicated. *These measurements provide important information about fluid and vascular volumes as well as cardiovascular status.*
- Weigh daily. *Weight is an accurate indicator of fluid status. Rapid weight gains or losses reflect changes in fluid volume.*
- Assess skin turgor, color, temperature, and mucous membranes at least every 8 hours. *Warm, dry skin with poor turgor and dry, shiny mucous membranes indicate dehydration.*
- Measure or estimate fluid losses through abdominal drains and on dressings. *Significant amounts of exudative fluid may be lost.*
- Monitor laboratory values, including hemoglobin and hematocrit, urine specific gravity, serum osmolality and electrolytes, and ABGs. Report changes to the physician. *Laboratory results provide information about fluid and electrolyte status and acid–base balance.*
- Administer intravenous fluids and electrolytes as ordered. Gastrointestinal drainage may be replaced milliliter for milliliter with a balanced electrolyte solution. *Intravenous fluids are necessary to meet daily fluid intake needs, as well as replace continuing losses of water and electrolytes.*

- Provide good skin care and frequent oral hygiene. *Fluid deficit increases the risk of skin breakdown and ulceration of mucous membranes.*

Ineffective Protection

Repeated surgeries, an unsutured incision, and the presence of drains interrupt skin integrity and the body's first line of defense against microorganisms. In addition, immune defenses are stressed by the infection and potential malnutrition. As a result, the risk for impaired healing and further infection is increased.

- Monitor temperature, pulse rate, and for localized signs of infection such as redness and swelling around incisions and drain sites, increased or purulent drainage, and cloudy or malodorous urine. *Impaired defenses increase the risk for extension of the infection or unrelated infections.*
- Obtain cultures of purulent drainage from any site. *Early identification of any additional infection allows timely intervention.*
- Monitor WBC and differential, serum protein, and albumin. *An increased WBC with a higher percentage of immature cells present in the blood is an indicator of infection and normal immune response. Serum albumin and protein levels are indicators of nutritional status as well as immune function.*
- Practice meticulous hand washing and use standard precautions at all times. *Hand washing reduces transient bacteria on the skin and remains the most important method of controlling infection. Standard precautions reduce the risk of spreading infection to or from the client.*

- Use strict aseptic technique for dressing changes, wound care, and irrigations. *Disruption of the protective barrier of the skin increases the risk of contamination and further infection.*
- Maintain fluid balance and nutritional status through enteral or parenteral feedings, as indicated. See the research box below for evidence-based recommendations for care of enterally fed clients. *Adequate nutrition and fluid balance are necessary for optimal immune system function.*

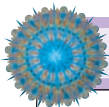
PRACTICE ALERT

An acute infection such as peritonitis causes a stress response with excess energy expenditure and loss of body proteins and cell mass. Glycogen stores are rapidly depleted, and body proteins are used to meet energy needs. Withholding food further complicates this process, leading to rapid development of protein-calorie malnutrition (PCM). PCM impairs the immune response and slows healing.

Anxiety

The severity and potential threat to life associated with peritonitis present a situational crisis for the client and family. Anxiety is a common response.

- Assess the client's and family's anxiety level and present coping skills. *Interventions need to be tailored to the needs and strengths of the client and family.*
- Present a calm, reassuring manner. Encourage expression of concerns; listen carefully, and acknowledge their validity. *This helps establish trust.*



NURSING RESEARCH Evidence-Based Practice: Enterally Fed, Critically Ill Client

A vital component of the treatment and care of critically ill clients (such as those with peritonitis) is providing nutritional support, primarily through enteral feedings. Although this remains the method of choice for this population, and has many advantages, enteral feeding also comes with the risk of bronchopulmonary aspiration as a complication. Aspiration occurs in as many as 40% of clients and up to 50% to 75% of clients who have an endotracheal tube in place. Several methods are currently used to detect aspiration, but not as much information has been published about how to prevent aspiration in enterally fed clients. This study (Sanko, 2004) was conducted to review and synthesize current research in order to make recommendations to improve the quality and safety of administering enteral nutrition to critically ill clients. Recommended prevention techniques included the following:

- Preventing aspiration with feeding tube placement by verifying placement with an x-ray. After verifying the placement, the tube should be securely taped and the external tube length should be measured, noted, and marked on the tube as a reference point for further tube placement checks. If the position of the tube is questioned, the x-ray should be repeated.
- Maintaining the head of the bed at an angle of at least 30 degrees, with 45% being ideal, and stopping feedings 30 to 60 minutes before placing the client in the supine position.
- Maintaining cuff pressure in clients with artificial airways at 20 to 30 cm H₂O.

Based on publishing findings, there is not sufficient evidence to support placement of feeding tubes beyond the pylorus or using small-bore tubes to prevent aspiration.

IMPLICATIONS FOR NURSING

Based on this review of the relevant research, it is obvious that more research is needed in this area of care. However, daily assessments of the client and the feeding tube with multiple methods (including X-ray, external length marking, pH testing, aspirate characteristics, or trypsin/pepsin levels) should be conducted by caregivers who have the knowledge to accurately interpret the results.

CRITICAL THINKING IN CLIENT CARE

1. Aspiration is defined as the inhalation of oropharyngeal or gastric contents into the larynx and lower respiratory tract. The result is usually aspiration pneumonitis or aspiration pneumonia. What assessments would you conduct and monitor to identify these complications?
2. You are on a committee that is evaluating the practice of adding blue dye to feeding solutions in order to better detect aspiration. The literature does not support this method. How and what would you do to convince the committee that this practice should not be continued?
3. What principle supports elevating the head of the bed to prevent aspiration? (Consider gravity and the placement of internal organs with the client in this position.)

- Maintain consistent caregiver assignments. *Consistency of nursing care and care providers helps reduce anxiety. Complex wound care and irrigation procedures are best performed by people who are very familiar with prescribed techniques.*
- Explain all treatments, procedures, tests, and examinations. *An increased understanding of what is being done can reduce anxiety.*
- Reinforce and clarify information as needed. *This improves understanding and promotes acceptance.*
- Teach and assist with relaxation techniques such as meditation, visualization, and progressive relaxation. *These measures promote positive coping skills and reduce physical manifestations of anxiety.*

Using NANDA, NIC, and NOC

Linkages between NANDA nursing diagnoses, NIC, and NOC for the client with peritonitis are illustrated in Chart 26–2 in the preceding section.

Community-Based Care

Teaching for home care includes the following topics:

- Wound care procedures, including dressing changes or irrigations. Provide verbal and written instructions on how to change dressings or do irrigations as well as where to obtain supplies, and allow opportunities to practice and demonstrate the procedure prior to discharge.
- Prescribed medications, including name and purpose of the drug, potential adverse effects, and their management.
- Manifestations of further infection (redness, heat, swelling, purulent drainage, chills, and fever) and potential complications to be reported to the care provider.
- Prescribed activity restrictions.
- Instructions for a high-calorie, high-protein diet for healing and optimal immune function.

Provide a referral to home health services for assessment, wound care, and further teaching, as needed.

THE CLIENT WITH GASTROENTERITIS

Gastroenteritis, or *enteritis*, is an inflammation of the stomach and small intestine. Enteritis may be caused by bacteria, viruses, parasites, or toxins. Upper GI manifestations such as anorexia, nausea, and vomiting are common. Diarrhea of varying intensity and abdominal discomfort are nearly universal features of gastroenteritis.

The infectious organism usually enters the body in contaminated water or food. For this reason, gastroenteritis often is called “food poisoning.” Viruses commonly cause acute diarrheal illness. Diarrhea due to rotaviruses or the Norwalk virus occurs year-round in both adults and children. These illnesses are generally mild and self-limited, but can have severe consequences in the very young, the very old, or in people with impaired immune function.

Pathophysiology

Bacterial or viral infection of the GI tract produces inflammation, tissue damage, and manifestations by two primary mechanisms:

- *The production of exotoxins.* A number of bacteria produce and excrete an exotoxin that enters the surrounding environment (intestinal lumen), causing damage and inflammation. Exotoxins in the GI tract are often referred to as *enterotoxins*. They impair intestinal absorption and can cause secretion of significant amounts of electrolytes and water into the bowel, resulting in diarrhea and fluid loss. Common bacterial enterotoxins include those produced by *Staphylococcus*, *Clostridium perfringens*, *Clostridium botulinum*, some strains of *Escherichia coli*, *Vibrio cholera*, and *C. difficile*.
- *Invasion and ulceration of the mucosa.* Other bacteria, including some *Shigella*, *Salmonella*, and *E. coli* species, damage tissue more directly. They invade the intestinal mucosa of the small bowel or colon, producing microscopic ulceration, bleeding, fluid exudate, and water and electrolyte secretion.

In some cases, the mechanism of injury is unclear. It may be a combination of direct and toxic damage. For example, the Norwalk virus damages the mucosa of the jejunum, with fluid and electrolyte secretion.

Manifestations

Although the manifestations of bacterial and viral enteritis vary according to the organism involved, several features are common (see the Manifestations box below). Anorexia, nausea, and vomiting are caused by distention of the upper GI tract by unabsorbed chyme and excess water. Bowel distention, along with irritation of the bowel mucosa and gas production due to fermentation of undigested food, lead to abdominal pain and cramping. Borborygmi, excessively loud and hyperactive bowel sounds, are another result. The abdomen is often distended and tender.

Diarrhea is usually predominant with enteritis. Fluid is secreted into the bowel lumen, and the unabsorbed chyme and electrolytes create an osmotic pull of fluid into the bowel. Motility is stimulated, and stools become watery and frequent. Loss of fluids and electrolytes through diarrhea can lead to the most serious manifestations of enteritis. Fluid volume can be rapidly depleted, leading to dehydration and hypovolemia. Orthostatic hypotension and fever may be noted initially. If fluid loss continues, hypovolemic shock may develop.



MANIFESTATIONS of Gastroenteritis

Gastrointestinal Effects

- Anorexia, nausea, and vomiting
- Abdominal pain and cramping
- Borborygmi
- Diarrhea

General Effects

- Malaise, weakness, and muscle aches
- Headache
- Dry skin and mucous membranes
- Poor skin turgor
- Orthostatic hypotension, tachycardia
- Fever

Complications

Electrolyte and acid–base imbalances may result from gastroenteritis. Extensive vomiting can lead to metabolic alkalosis due to the loss of hydrochloric acid from the stomach. When diarrhea predominates, metabolic acidosis is more likely. Potassium is lost in either case, leading to hypokalemia. Hyponatremia may develop if fluids are replaced with pure water. Headache, cardiac irregularities, changes in respiratory rate and pattern, malaise and weakness,

muscle aching, and signs of neuromuscular irritability are the possible manifestations of these disturbances in homeostasis.

Specific Types of Gastrointestinal Infections

Several gastrointestinal infections produce specific effects that are discussed below and summarized in Table 26–3.

TRAVELER'S DIARRHEA People traveling to another country frequently develop diarrhea within 2 to 10 days, particularly

TABLE 26–3 Selected Bacterial Infections of the Bowel

DISEASE AND ORGANISM	INCUBATION	PATHOGENESIS	MANIFESTATIONS	MANAGEMENT
Traveler's diarrhea: <i>Escherichia coli</i>	24 to 72 hours	Enterotoxin causes hypersecretion of the small intestine.	Abrupt onset of diarrhea; vomiting rare	Prophylactic bismuth subsalicylate; antidiarrheals such as loperamide or diphenoxylate; 3- to 5-day course of norfloxacin, ciprofloxacin, or trimethoprim-sulfamethoxazole
Staphylococcal food poisoning	2 to 8 hours	Enterotoxin impairs intestinal absorption and affects vomiting centers in the brain.	Severe nausea and vomiting; abdominal cramping and diarrhea; headache and fever	Fluid and electrolyte replacement as needed
Cholera: <i>Vibrio cholerae</i>	1 to 3 days	Enterotoxin affects entire small intestine, causing secretion of water and electrolytes into bowel lumen.	Severe diarrhea with "rice water stool," gray, cloudy, odorless, with no blood or pus; vomiting; thirst, oliguria, muscle cramps, weakness; dehydration and vascular collapse	Oral or intravenous rehydration; possible antimicrobial therapy with ampicillin, tetracycline, trimethoprim-sulfamethoxazole, others
Hemorrhagic colitis: <i>E. coli</i>	1 to 3 days	Enterotoxin causes direct mucosal damage in large intestine; also toxic to vascular endothelial cells.	Severe abdominal cramping, watery diarrhea that becomes grossly bloody; fever; possible complications: hemolytic uremic syndrome and thrombotic thrombocytopenic purpura	Supportive care with fluid replacement and bland diet; may require dialysis or plasmapheresis for complications
Salmonellosis: <i>Salmonella</i>	8 to 48 hours	Superficial infection of the GI tract without invasion or production of toxins.	Diarrhea with abdominal cramping, nausea, and vomiting; low-grade fever, chills, weakness	Treatment of symptoms; trimethoprim-sulfamethoxazole, ampicillin, or ciprofloxacin for severe illness
Shigellosis (bacillary dysentery): <i>Shigella</i>	1 to 4 days	Local tissue invasion, primarily involving large intestine and distal ileum; endotoxin causes fluid and electrolyte secretion into bowel lumen.	Watery diarrhea with severe abdominal cramping and tenesmus; lethargy	Fluid and electrolyte replacement; correction of acidosis; antibiotic therapy with trimethoprim-sulfamethoxazole, ciprofloxacin, or ampicillin
Clostridium Difficile Colitis (<i>C. difficile</i>)	1 to 2 weeks	Antibiotic therapy interferes with normal protective bacteria in the colon; <i>C. difficile</i> colonizes and releases toxins that cause mucosal inflammation and damage	Diarrhea, abdominal cramps, malaise, fever, anorexia.	Cessation of the causative antibiotic; antibiotic therapy with vancomycin or metronidazole (specific for <i>C. difficile</i>)

when there is a significant difference in climate, sanitation standards, or food and drink. Strains of enterotoxin-producing *E. coli*, *Shigella* species, *Salmonella*, and *Campylobacter* are the most frequent causes of traveler's diarrhea (Yates, 2005). Other bacteria and viruses also may cause traveler's diarrhea.

Up to 10 or more loose stools per day and abdominal cramping are common manifestations. Nausea and vomiting are less frequent; fever is rare. Manifestations usually resolve within 2 to 5 days. Complications are rare.

STAPHYLOCOCCAL FOOD POISONING Certain foods provide an excellent medium for staphylococcal growth when contaminated and left at room temperature. Examples include meats and fish, dairy products (e.g., custards), and bakery products (e.g., cream-filled pastries). The organism itself does not affect the bowel; the toxin it produces, however, impairs intestinal absorption and acts on receptors in the gut, stimulating the medullary center to produce vomiting.

The onset of staphylococcal food poisoning is abrupt, occurring within 2 to 8 hours after consuming the contaminated food. Nausea and vomiting are severe. Manifestations typically last 3 to 6 hours, and include abdominal cramping, diarrhea, headache, and fever. Complications such as fluid and electrolyte imbalances are rare, but may develop in older adults and people with underlying chronic disease processes.

CHOLERA *Cholera* is an acute diarrheal illness caused by strains of *Vibrio cholerae*. It is endemic in parts of Asia, the Middle East, and Africa. Epidemics occur periodically. Cholera is spread by the fecal–oral route through contaminated water or food. The organism produces an enterotoxin, enzymes, and other substances that affect the entire small intestine. Water and electrolytes are secreted into the bowel lumen in response to the toxin. The enzymes and other substances produced by the bacteria may affect mucous protection of bowel endothelium.

Cholera ranges in severity from very mild, with few or no manifestations, to acute and fulminant. Its onset is typically abrupt, with severe, frequent, watery diarrhea. Up to 1 L of stool may be passed in an hour, rapidly depleting fluid volume. Stool is often described as “rice water stool” and is characteristically gray and cloudy, with no fecal odor, blood, or pus. Vomiting may accompany the diarrhea. Other manifestations relate to the loss of fluid and electrolytes: thirst, oliguria, muscle cramps, weakness, and significant signs of dehydration. Metabolic acidosis and hypokalemia develop. If untreated, circulatory collapse and acute renal failure may occur.

Recovery from cholera usually occurs spontaneously within 3 to 6 days. With prompt and adequate fluid replacement, mortality is less than 1%.

ESCHERICHIA COLI HEMORRHAGIC COLITIS Most pathologic forms of *E. coli* bacteria cause little more than common traveler's diarrhea. However, some strains, such as serotype O157:H7, produce a potent enterotoxin in the large intestine after being ingested. This toxin damages bowel mucosa and the endothelial cells of blood vessels in the GI tract. If absorbed, the toxin can damage other blood vessels as well, such as those of the kidney.

Cattle provide the reservoir for *E. coli* O157:H7. It is usually spread through undercooked beef (hamburger in particular) and unpasteurized milk or apple juice. It may also be spread by direct contact via the fecal–oral route. The onset of hemorrhagic colitis is abrupt, with severe abdominal cramping and watery diarrhea that becomes grossly bloody within 24 hours. Fever may be present.

Hemolytic uremic syndrome and thrombotic thrombocytopenic purpura are significant complications of *E. coli* hemorrhagic colitis, affecting about 5% of people with the disease. Older adults have the highest risk for developing complications.

CLOSTRIDIUM DIFFICILE COLITIS *Clostridium difficile colitis* (*C. difficile colitis*) is associated with antibiotic therapy. Treatment with antibiotics (especially broad-spectrum antibiotics) predisposes to interference with the normal protective bacteria of the colon, leading to colonization by *C. difficile* by the oral–fecal route. Subsequent release of toxins by the bacteria causes mucous damage and inflammation. This is primarily a problem in hospitalized clients, causing diarrhea and abdominal cramping. These manifestations commonly begin within 1 to 2 weeks of antibiotic treatment. It is also being seen in the community in healthy adults. The bacteria can be identified in the stool.

SALMONELLOSIS *Salmonellosis* is food poisoning caused by ingesting raw or improperly cooked meat, poultry, eggs, and dairy products contaminated with *Salmonella* bacteria. These bacteria cause superficial infection of the GI tract, rarely invading further. They do not produce a toxin.

Manifestations develop 8 to 48 hours after ingesting the bacteria. Diarrhea may be violent with abdominal cramping, nausea, and vomiting. A low-grade fever, chills, and weakness may accompany GI manifestations. The disease usually is self-limited, resolving within 3 to 5 days, although bacteremia may develop.

SHIGELLOSIS (BACILLARY DYSENTERY) *Shigellosis* (or bacillary dysentery) occurs worldwide, accounting for up to 5% to 10% of diarrheal illness in some regions. It may be endemic or occur in epidemics. Humans are the reservoir for *Shigella* organisms, which are spread directly via the fecal–oral route or indirectly through contaminated food, fomites (such as inanimate objects), and vectors (such as fleas). The incubation period for shigellosis is 1 to 4 days.

Shigella organisms infect the lower intestine, and sometimes the distal ileum. They invade the tissue, causing inflammation, and they produce an enterotoxin. The result is watery diarrhea containing blood, mucus, and inflammatory exudate. The onset of diarrhea is abrupt, with severe abdominal cramping, and *tenesmus*, a sensation of urgent and continuing need to defecate. Lethargy is common; rarely, neurologic manifestations occur.

In adults, shigellosis is usually mild and self-limiting. Older adults and debilitated clients are at risk for volume depletion and electrolyte imbalances. Secondary infection is another potential complication, as is acute blood loss from mucosal ulcerations.

INTERDISCIPLINARY CARE



The goals of care for gastroenteritis are to manage the manifestations, prevent complications, identify the cause of the infection, and prevent its spread. The history and manifestations provide valuable cues about the cause. Diagnostic testing is used to identify the pathogen and evaluate its effects. In most cases, treatment is supportive, directed toward relieving manifestations, restoring fluid and electrolyte balance, and maintaining function.

Diagnosis

If manifestations are severe or do not resolve within about 48 hours, laboratory testing is used to identify the causative organism and to assess fluid, electrolyte, and acid–base balance. A stool specimen for culture, ova and parasites, and fecal leukocytes usually reveals the infective organism, but may require up to 6 weeks to identify some bacteria. In infections such as botulism, the toxin itself may be isolated in the stool. Contamination of the stool by urine or treatment with antibiotics, bismuth subsalicylate (Pepto-Bismol), or mineral oil may interfere with pathogen growth, altering stool culture results. Use a clean bedpan or collection device to obtain the stool specimen, and instruct the client to avoid mixing the stool with urine or toilet tissue.

A sigmoidoscopy may be done to differentiate inflammatory bowel disease from infectious processes. It does not replace stool cultures, because the lesions associated with some infectious processes are indistinguishable from those of ulcerative colitis. (Nursing care of the client having a sigmoidoscopy is discussed in Chapter 25 .)

Serum osmolality and electrolytes and ABGs are done to assess and monitor fluid, electrolyte, and acid–base balance. Common imbalances associated with enteritis and diarrhea are outlined in Table 26–4.

Medications

Acute enteritis usually resolves spontaneously, and no drug treatment is required. If the client is severely ill and manifestations are prolonged, medications may be prescribed.

Antibiotic therapy specific to the organism may be used to treat bacterial colitis, cholera, salmonellosis, or shigellosis. Trimethoprim-sulfamethoxazole (Septra, Bactrim), ciprofloxacin (Cipro), ampicillin (Ampicin, Omnipen, Polycillin-N), or another antibiotic may be prescribed. Stool culture is obtained prior to starting antibiotics, but treatment may begin before culture results are available. A presumptive diagnosis based on history and presenting manifestations guides the choice of antibiotic.

An antidiarrheal drug may be prescribed to promote comfort and reduce fluid loss. Nursing measures related to antidiarrheal medications are outlined in the Medication Administration box on page 756.

Nutrition and Fluids

Replacing lost fluids and electrolytes is vital when vomiting and/or diarrhea are severe or prolonged. In many cases of enteritis, fluid and electrolyte replacement are all that is required until the infection resolves.

Oral rehydration is preferred for replacing physiologic fluids. An oral glucose-electrolyte solution is often well tolerated in sips, even when vomiting is present. Commercial preparations such as Gatorade, All-Sport, and Pedialyte are available.

TABLE 26–4 Laboratory Values Associated with Enteritis and Diarrhea

TEST	NORMAL VALUE	CHANGE WITH SIGNIFICANT DIARRHEA
Serum osmolality	275 to 295 mOsm/kg	Increased; levels above 320 mOsm/kg indicate significant dehydration.
Serum potassium	3.5 to 5.0 mEq/L	Decreased due to loss through stool and vomitus; levels below 2.5 mEq/L are critical.
Serum sodium	136 to 148 mEq/L	Decreased due to loss through stool and vomitus; may be significant when fluid losses are replaced with pure water; levels below 120 mEq/L may be critical.
Serum chloride	96 to 106 mEq/L	Increased when sodium loss is greater than chloride loss; decreased with severe diarrhea and with vomiting; possible critical values are below 80 mEq/L or above 115 mEq/L.
Blood gases		
■ pH	Arterial: 7.35 to 7.45	Decreased in metabolic acidosis, a possible result of severe diarrhea; increased in metabolic alkalosis, a possible result of severe vomiting and chloride loss; values below 7.25 or above 7.55 are critical.
■ Pco ₂	Arterial: 35 to 45 mmHg	Typically decreased in metabolic acidosis as the body attempts to eliminate excess acid by “blowing off” CO ₂ ; increased with metabolic alkalosis as the body retains CO ₂ in an attempt to normalize pH.
■ Bicarbonate	22 to 26 mEq/L	Decreased in metabolic acidosis; increased in metabolic alkalosis.
Hematocrit	Males: 40% to 50% Females: 37% to 47%	Increased with dehydration and hypovolemia as a result of concentration of blood cells.
Urine specific gravity	1.010 to 1.025	Increased with dehydration and hypovolemia as kidneys attempt to conserve fluid.

A solution of 5 mL (1 teaspoon) table salt, 5 mL baking soda, 20 mL (4 teaspoons) granulated sugar, and flavoring (such as lemon extract or juice) to 1 L (1 quart) of water also is effective.

Intravenous rehydration may be necessary with severe diarrhea and fluid loss. In some cases, a combination of oral and intravenous fluids may be used to replace lost fluids and maintain vascular volume. Balanced electrolyte solutions, such as glucose in normal saline and Ringer's solution, are used. Lactated Ringer's solution or another alkalizing solution may be ordered if metabolic acidosis is present.

Gastric Lavage

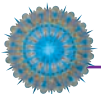
Gastric lavage and catharsis—in effect, “washing out” the stomach and intestines—may be performed to remove unabsorbed toxin from the GI tract if botulism is suspected. The client with botulism is closely observed for signs of respiratory distress. Respiratory support with endotracheal intubation or tracheostomy and mechanical ventilation may be required (see Chapter 36 ∞).

Plasmapheresis

Plasmapheresis (plasma exchange therapy) may be performed to remove circulating toxins for hemorrhagic colitis caused by *E. coli*. See Chapter 46 ∞ for the nursing care of a client having this procedure. Potential complications include those associated with intravenous catheters, shifts in fluid balance, and altered blood clotting.

Dialysis

Acute tubular necrosis and renal failure associated with hemorrhagic colitis may necessitate dialysis to remove wastes and prevent severe fluid and electrolyte imbalances and metabolic acidosis. Although acute renal failure often resolves spontaneously and renal function resumes, dialysis can be lifesaving. Either hemodialysis or peritoneal dialysis may be used, generally as a temporary measure. Nursing care related to acute renal failure and dialysis is discussed in Chapter 29 ∞.



NURSING CARE

Although *C. difficile* colitis bacterial infections are hospital acquired, few clients with acute enteritis require hospitalization. Most are treated in community settings. Assessment, education, and support of self-care measures are major nursing responsibilities.

Health Promotion

Nurses play a significant role in preventing enteritis as educators, community health providers, and advocates for environmental safety.

Teach the importance of proper food handling and maintaining appropriate temperatures. Adequate cooking of meat products is vital to prevent disorders such as staphylococcal food poisoning, *E. coli* hemorrhagic colitis, and salmonellosis. Emphasize the importance of not consuming raw meat products, and cooking hamburger, in particular, to the point that no redness is noted in the meat. The highly pathogenic *E. coli* serotype 0157:H7 is present in the gut of infected animals. Meats from the

animal may be contaminated with bowel contents. The organism is readily destroyed by heat, so cuts of meat such as steaks or roasts are less likely to cause infection, since the organism is on the outside of the meat. However, the process of grinding hamburger allows *E. coli* to be mixed throughout the meat. Thorough cooking destroys the organism. This pathogen (and others) may also be spread through unpasteurized milk. Discuss the dangers of consuming milk that has not been pasteurized and encourage clients to avoid it.

Dairy products, eggs, and egg products left at room temperature provide a good growth medium for bacteria. Discuss the importance of prompt refrigeration of meats and these products to minimize this risk. Many gastrointestinal infections are spread through contaminated water. Encourage travelers to consume only bottled water unless local water supplies are clearly safe. Water purification tablets are available for hikers and campers, and may also be used when traveling abroad.

Assessment

- **Health history:** Onset, duration, and severity of manifestations; recent activities such as attending a picnic or potluck, international travel, or camping; other affected members of the household; measures taken to relieve manifestations or replace fluids.
- **Physical examination:** Vital signs including temperature and orthostatic blood pressure; skin color, temperature, moisture, and turgor; peripheral pulses and capillary refill; abdominal shape, contour, bowel sounds, tenderness.

Nursing Diagnoses and Interventions

Diarrhea and fluid volume deficit are priority nursing diagnoses. See the earlier section of this chapter on diarrhea for specific nursing interventions related to these diagnoses.

Community-Based Care

Discuss the following topics with the client for self-care:

- The importance of good hand washing, particularly before handling food and after each bowel movement
- The need to wash clothing and linens contaminated with feces separately in hot water and detergent
- Oral solutions to replace lost fluids and electrolytes
- Appropriate use of antidiarrheal medications if recommended
- Manifestations of complications to report to the healthcare provider.

THE CLIENT WITH A PROTOZOAL BOWEL INFECTION

Parasites live within, on, or at the expense of other organisms. Parasitic intestinal infections are common in developing countries. They include both protozoal and helminthic (parasitic worms) infections. Parasites that infect the bowel usually enter the GI tract through the mouth by the fecal–oral route; some are spread by direct contact or through sexual activity.

Of the protozoal bowel infections, only giardiasis is common in the United States. Amebiasis is found chiefly in the

tropics and where sanitation is poor. Cryptosporidiosis, a form of coccidiosis, is an important worldwide cause of sporadic mild diarrhea, traveler's diarrhea, and severe diarrhea in people who are immunocompromised.

Pathophysiology and Manifestations

The most common protozoal infections of the bowel are discussed below and summarized in Table 26–5.

Giardiasis

Giardiasis is a protozoal infection of the upper small intestine caused by *Giardia lamblia*. It is the most common intestinal protozoal pathogen in the United States. Humans are the reservoir for *Giardia*. It is spread by the fecal–oral route, usually in contaminated food or water. It is also spread by direct contact. When the cyst form of the organism is ingested, trophozoites emerge in the duodenum and jejunum, attaching themselves to the intestinal mucosa. This leads to superficial invasion, inflammation, and destruction of the mucosa of the small intestine.

Giardiasis may be asymptomatic, although manifestations may develop suddenly or insidiously. Diarrhea is common. It is usually mild, with one or more large, loose stools per day. Diarrhea may be severe, however, with frequent, copious, frothy, malodorous, and greasy stools. Other manifestations include weight loss and weakness; anorexia, nausea, and vomiting; epi-

gastric pain, abdominal cramping and distention, flatulence, and belching. Malabsorption may develop.

Amebiasis

Amebiasis (amebic dysentery) is caused by the protozoan *Entamoeba histolytica*. Several strains of the protozoan have been identified. Tropical strains tend to be more virulent and pathogenic than those found in temperate climates. Humans are the host for this parasite. It usually is transmitted through food or water contaminated by feces and by person-to-person contact. The parasite enters the intestines, where it may live without causing disease, or it may invade the intestinal wall to cause ulceration and inflammation. The cecum, appendix, ascending colon, sigmoid colon, and rectum are most often affected. Ulcers may spread to cause hemorrhage, edema, and mucosal sloughing. The infection may spread via the blood to the liver, lungs, or brain.

Amebiasis is usually asymptomatic. Mild manifestations include abdominal cramps, flatulence, and intermittent diarrhea containing blood and mucus. Severe manifestations of amebic dysentery include frequent watery stools containing blood, mucous, and necrotic tissue; colic, tenesmus, and abdominal tenderness; nausea and vomiting; and fever. The liver may be enlarged and tender to palpation.

Complications are rare, but may include appendicitis, bowel perforation with peritonitis, and fulminating colitis.

TABLE 26–5 Common Protozoal Infections of the Bowel

DISEASE AND ORGANISM	INCUBATION	PATHOGENESIS	MANIFESTATIONS	MANAGEMENT
Giardiasis: <i>Giardia lamblia</i>	1 to 3 weeks or more	Trophozoite attaches to mucosa in duodenum and jejunum, causing superficial invasion, inflammation, and tissue destruction.	Diarrhea, mild or severe, daily or intermittent; anorexia, nausea, vomiting; epigastric pain, cramping, distention; flatulence and belching; may be asymptomatic	Metronidazole quinacrine, furazolidone
Amebiasis: <i>Entamoeba histolytica</i>	2 to 4 weeks	Organisms may reside in large intestine without causing disease or can invade colon wall, causing ulceration; may be carried via blood to liver to produce abscess.	Usually asymptomatic; diarrhea may be mild, with few semiformal mucous-containing stools per day, or severe, with 10 to 20 blood-streaked liquid stools per day; abdominal cramps and flatulence; colic, tenesmus, vomiting, tenderness; fatigue, weight loss; prostration and toxicity	Metronidazole and diloxanide furoate or iodoquinol; chloroquine for hepatic abscess
Cryptosporidiosis: <i>Cryptosporidium</i>	2 to 10 days	Organisms attach to epithelial surface of small bowel (jejunum), causing villous atrophy and mild inflammatory changes; may secrete enterotoxin.	In immunocompetent clients: asymptomatic to profuse, watery diarrhea of sudden onset, abdominal cramping; malaise, fever; anorexia, nausea, vomiting. In immunodeficient clients: profuse watery diarrhea with loss of up to 15 to 20 L/day; severe malabsorption, electrolyte imbalance; weight loss; lymphadenopathy	Self-limiting in immunocompetent clients. For immunodeficient clients: spiramycin, zidovudine (AZT), paromomycin (Humatin), octreotide, eflornithine; fluid and electrolyte replacement; parenteral nutrition as needed

Cryptosporidiosis (Coccidiosis)

Cryptosporidiosis causes sporadic mild diarrhea and traveler's diarrhea in all age groups. In people with impaired immune function, such as those with human immunodeficiency virus (HIV) disease, it causes severe diarrhea, malabsorption, and significant weight loss.

This organism is transmitted by the fecal–oral route. Contaminated water is a frequent source of infection. The organism attaches to bowel epithelium, causing surface damage and inflammation. It does not invade the tissues, but secretes an enterotoxin that causes characteristic watery diarrhea. The disease is self-limited in people with competent immune systems. Watery diarrhea may be accompanied by low-grade fever, nausea, vomiting, abdominal cramps, and general malaise.

Immunocompromised clients develop profuse watery diarrhea with significant fluid and electrolyte losses and severe malabsorption. Lymphadenopathy (enlarged lymph nodes) also may develop.

INTERDISCIPLINARY CARE



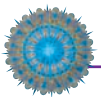
Management of protozoal bowel infections includes identifying the causative organism and administering medications.

Diagnosis

Diagnostic testing may include a stool examination for ova and parasites. Many protozoa are shed intermittently rather than continuously; stools are collected sequentially (e.g., every other day for a total of three specimens). A sigmoidoscopy may be performed to examine the bowel mucosa and collect a stool specimen for examination (in this case, no bowel prep is done prior to the test). When giardiasis is suspected, a duodenal string test (Entero-Test), duodenal aspiration, or duodenal biopsy may be conducted. Duodenal aspirate is stained and examined microscopically for the protozoa. Small bowel biopsy can identify *Cryptosporidium* infection.

Medications

Pharmacologic treatment includes both local and systemic antiparasitic drugs, such as iodoquinol (Amebaquine), paromomycin (Humatin), metronidazole (Flagyl), furazolidone (Furoxone), or albendazole (Albenza). Treatment is usually provided on an outpatient basis. Severe amebic dysentery may require hospitalization for intravenous fluid and electrolyte replacements. Nursing care related to common antiprotozoal drugs is outlined in the Medication Administration box on page 780.



NURSING CARE

Nursing assessment, diagnoses, and interventions for the client with a protozoal GI infection are similar to those indicated for clients with bacterial or viral infections. *Diarrhea* and *Risk for Deficient Fluid Volume* are priority nursing diagnoses. See previous sections of this chapter for specific nursing interventions related to these diagnoses.

Nurses need to teach the public how parasitic diseases are transmitted and how to avoid spreading the infection. Prevention of amebiasis and giardiasis involves:

- Provision of safe water supplies
- Appropriate disposal of human feces
- Safe food storage, handling, and preparation
- Adequate hand washing after defecating and before handling food

Instruct people living in high-risk areas (e.g., tropical climates, areas with untreated water supplies) to boil, filter, or treat water supplies with iodine to eliminate protozoal contamination. Instruct them to avoid foods that cannot be peeled or cooked. Teach the manifestations of protozoal infections and where to obtain treatment.

Emphasize the importance of keeping toilet areas clean and maintaining good personal hygiene. Advise the client to avoid rectal contact during sexual activity. Other household members should also have stool specimens examined for parasites.

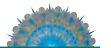
THE CLIENT WITH A HELMINTHIC DISORDER

Helminths are parasitic worms, capable of causing infectious diseases in humans. Helminths are subclassified as round worms (nematodes), flukes (trematodes), or tapeworms (cestodes).

Pathophysiology

Although all helminths can infect humans, the definitive host and intermediate hosts vary with each organism. In nearly all instances of helminthic disorders, the organism enters the body through the GI tract in contaminated and inadequately cooked foods. Some of these organisms remain in the intestinal tract; others migrate to infect the liver, lungs, or other structures. Table 26–6 summarizes the most common helminths and their effects.

INTERDISCIPLINARY CARE



The management of helminthic disorders includes diagnostic testing and medications.

Diagnosis

The primary means of diagnosing helminthic disorders is examination of the stool for ova and parasites. Enterobiasis is diagnosed by the presence of the parasite's eggs on the perianal skin or on cellulose tape placed over the anus. A CBC may also be ordered. Anemia may be present, particularly with hookworm disease. *Eosinophilia* (an increased percentage of eosinophils in the blood) is common in helminthic disorders. With trichinosis, serum muscle enzymes such as the creatinine kinase (CK) and aspartate aminotransferase (AST) are typically elevated. Serologic testing for antibodies to the worm may also be performed. Blood, duodenal washings, and cerebrospinal fluid (CSF) may be examined for the presence of the trichinosis larvae. Inflamed muscle may be biopsied.

Medications

Helminthic infections often are treated with a single oral dose or 3-day course of pyrantel pamoate (Antiminth) or mebendazole (Vermox). Doses may need to be repeated every 2 weeks for clients with heavy infections. These drugs are generally



MEDICATION ADMINISTRATION Antiprotozoal Agents

LOCAL (GASTROINTESTINAL) AGENTS

Iodoquinol (Yodoxin, Amebaquine)

Paromomycin (Humatin)

These drugs exert a local amebicidal effect in the intestines and are poorly absorbed when administered orally. Local agents have the advantage of provoking fewer side effects than systemically active agents.

Nursing Responsibilities

- Assess for potential contraindications:
 - a. Hypersensitivity to the drug or drug class.
 - b. Iodoquinol: malnutrition, thyroid disorders; hepatic or renal impairment, optic neuropathy, or hypersensitivity to iodine.
 - c. Paromomycin: ulcerative bowel lesions; hypersensitivity to aminoglycoside antibiotics, impaired renal function, intestinal obstruction.
- Observe for adverse effects: anorexia, nausea, vomiting, abdominal cramping, diarrhea, and increased flatulence; report skin rash, visual disturbances, or changes in blood work to primary care provider.

Health Education for the Client and Family

- Take as prescribed for the full course of therapy.
- Take with food to reduce gastrointestinal effects.
- Keep follow-up appointments as recommended to evaluate the effects of treatment.
- Report adverse effects to the physician.
 - a. Any change in vision
 - b. Numbness, tingling, or pain in extremities
 - c. Chills, fever, skin rash or boils
 - d. A change in urination or character of urine
 - e. Diminished hearing or tinnitus
 - f. Weight loss, diarrhea, fatty stools
 - g. Candidiasis of the mouth or vagina.
- Practice good hand washing, particularly after using the toilet, to prevent spreading the disease to others.

SYSTEMIC AGENTS

Metronidazole (Flagyl, Satric, Metzol, others)

Furazolidone (Furoxone), Albendazole (Albenza)

Clients with symptomatic protozoal infections are generally treated with a systemic antiprotozoal agent. Metronidazole is the most widely used of these antiprotozoal agents and is the drug of choice for treating amebiasis.

Nursing Responsibilities

- Assess for possible contraindications to therapy:
 - a. Hypersensitivity to the prescribed agent or related drugs
 - b. Liver dysfunction or blood dyscrasias
 - c. Concurrent use of alcohol or an MAOI
 - d. Pregnancy.
- Administer as ordered.
 - a. Metronidazole may be given orally after meals or as a continuous or intermittent intravenous infusion.
 - b. Administer furazolidone and albendazole orally with meals to minimize gastric distress.
- Observe for possible adverse effects; notify the physician if significant. Gastrointestinal effects are common.
 - a. Peripheral neuropathy and CNS effects may occur with metronidazole.
 - b. Blood dyscrasias may develop with furazolidone or albendazole; monitor CBC and report abnormal results.
 - c. Furazolidone can cause hypoglycemia; carefully monitor blood glucose in diabetic clients.
 - d. Report abnormal liver function test results.
- Monitor the character and number of stools; obtain specimens as ordered to evaluate the effectiveness of therapy.

Health Education for the Client and Family

- Take the drug as prescribed for the full duration of the prescription.
- Taking oral preparations after meals helps minimize gastrointestinal side effects. Notify the physician if nausea and vomiting continue.
- Do not use alcohol while taking these drugs. An Antabuse-type response with severe headache, flushing, and vomiting may occur.
- Report adverse effects to the physician, including dizziness and other nervous system changes, sore throats, fatigue, bruising, or infection.
- Candidiasis of the mouth or vagina may occur with metronidazole therapy. Report symptoms to the physician.
- A harmless change in urine color to deep yellow (quinacrine) or rust or brown (metronidazole or chloroquine) may occur while taking these drugs.
- If you are diabetic taking furazolidone, carefully monitor blood glucose levels because hypoglycemia may develop.
- Practice good hand washing, particularly after using the toilet, to prevent transmitting the protozoa to others.

safe, requiring few precautions. Giving the drug after meals minimizes GI side effects. Treatment is followed by a stool culture at 2 weeks to evaluate effectiveness. If necessary, an additional course of the drug is prescribed. Other members of the household are generally also treated.

Most clients with trichinosis recover spontaneously without long-term effects. The intestinal phase of the disease is treated with albendazole, taken twice daily for as long as 60 days, or a 13-day course of mebendazole. Hospitalization may be required during the muscle invasion phase of the disease if the infection is severe. Corticosteroids may be used to reduce the inflammation and manage the manifestations.



NURSING CARE

Because many clients with these disorders are asymptomatic, nurses need to be alert for histories that indicate risk and subtle manifestations of the disorder. Use standard precautions to minimize the risk of spreading these infections to other clients. Wear gloves and gowns as necessary to prevent fecal contamination of hands and clothing. On rare occasions, parasites may be present in the sputum or vomitus, so handle these secretions with care. Disinfect toilets, toilet seats, and commodes after use. Teach the client the importance of washing hands after using the toilet and before handling food to prevent reinfection.

TABLE 26–6 Selected Helminthic Diseases

	INFECTION	HOST	AREA	PATHOGENESIS	MANIFESTATIONS
Nematode infections	Ascariasis	Humans	Worldwide, cosmopolitan; warm, moist climates	Eggs are ingested in fecally contaminated food and drink; motile larvae migrate to lungs and back to small intestine, where they mature to produce more eggs.	Pulmonary: low-grade fever, cough, blood-tinged sputum, wheezing, dyspnea, substernal chest pain. GI: ulcer-like epigastric pain, vomiting, abdominal distention
	Enterobiasis (pinworm infection)	Humans	Worldwide, cosmopolitan	Infect cecum; eggs deposit on perianal skin, organisms may be transmitted to others or reinfect host by oral ingestion.	Nocturnal perianal and perineal pruritus; insomnia, irritability, restlessness
	Hookworm disease	Humans	Tropics and subtropics	Larvae enter through skin or by ingestion and migrate to lungs, up bronchial tree, and down esophagus to mature in upper small bowel, where they attach and suck blood.	Skin: pruritic dermatitis at site of entry Pulmonary: dry cough, wheezing, blood-tinged sputum GI: anorexia, diarrhea, abdominal pain Systemic: anemia, pallor, cardiac insufficiency
	Trichinosis	Pigs, dogs, cats, rats, many wild animals	Temperate areas where pork is consumed	Larvae are ingested in undercooked meat; adult female burrows into mucosa of small intestine to produce larvae that disseminate via blood and lymphatic system to body tissues and become encysted in striated muscle.	GI: diarrhea, abdominal cramps, malaise Muscle: fever; muscle pain, tenderness, edema, and spasm Systemic: periorbital and facial edema, sweating; photophobia and conjunctivitis; manifestations of inflammation in tissues invaded by larvae
Cestode infections	Fasciolopsiasis (intestinal fluke) Tapeworm	Humans; other mammals and fish	Worldwide	Organism is ingested by eating uncooked fish or meat containing embryo cysts, by fecal contamination, or by swallowing infected intermediate hosts, such as arthropods, fleas, or lice; head (scolex) of adult worm attaches in upper small intestine, and eggs form in individual segments.	Large tapeworms: often asymptomatic; infection may cause mild nausea, diarrhea, abdominal pain; anemia, thrombocytopenia, and mild leukopenia Small tapeworms: may be asymptomatic; diarrhea, abdominal pain, anorexia, vomiting, weight loss, and irritability

Discuss measures to prevent spread of the disease in the household. Emphasize the importance of hygiene measures including changing bedding, daily cleaning of toilets with disinfectant, and hand washing.

Many helminthic disorders are acquired by consuming food that has been fecally contaminated or contains larvae of the organism. Explain the importance of not fertilizing food or grain crops with fecal material, particularly human feces. Teach clients to cook all meats and fish adequately to destroy possible larvae. In general, pickled or salt-preserved meats and fish are no safer than raw. Smoking, another means of preserving fish and meat, may not achieve temperatures high enough to destroy the organ-

isms. Vegetables grown in soil that may be contaminated with eggs or larvae should be peeled or cooked prior to eating.

Emphasize the importance of safe water supplies. Encourage people traveling to areas in which water supplies are questionable to drink only bottled water or carry purification tablets. Work with clients who have private water systems to protect water from fecal contamination by either humans or animals.

The client with a helminthic disorder may feel dirty or be ashamed of the disease. Emphasize the prevalence of these disorders, and assure the client that infection can occur despite good health practices when the eggs or larva of the organism are prevalent.

CHRONIC INFLAMMATORY BOWEL DISORDERS

THE CLIENT WITH INFLAMMATORY BOWEL DISEASE

Chronic **inflammatory bowel disease (IBD)** includes two separate but closely related conditions: ulcerative colitis and Crohn's disease. These conditions have a number of similarities. The etiology of both illnesses is unknown, but both have a geographic distribution and a genetic component. IBD occurs more frequently in the United States and northern European nations than it does in southern Europe and countries in the Southern Hemisphere. IBD affects certain ethnic groups more than others, as outlined in the Focus on Cultural Diversity box on this page. As many as 1 million Americans have IBD, with that number divided about equally between ulcerative colitis and Crohn's disease (Crohn's & Colitis Foundation of America [CCFA], 2005). It tends to run in families, with 20% to 25% of clients having a close relative with one of the types of IBD (CCFA, 2005). Factors such as an infectious agent and altered immune responses are thought to play a role in the development of IBD. Autoimmunity is thought to play a role (see Chapter 13 ∞), and lifestyle factors (such as smoking) may also affect its development.

The peak incidence of IBD is in adolescents and young adults between the ages of 15 and 35 years but it can also affect

FOCUS ON CULTURAL DIVERSITY Incidence and Prevalence of IBD

- American Jews of European descent are four to five times more likely to develop IBD than the general population.
- There has been a steady increase of IBD in African Americans.
- The prevalence rates of IBD for Asians and Hispanics are lower than those for whites and African Americans.

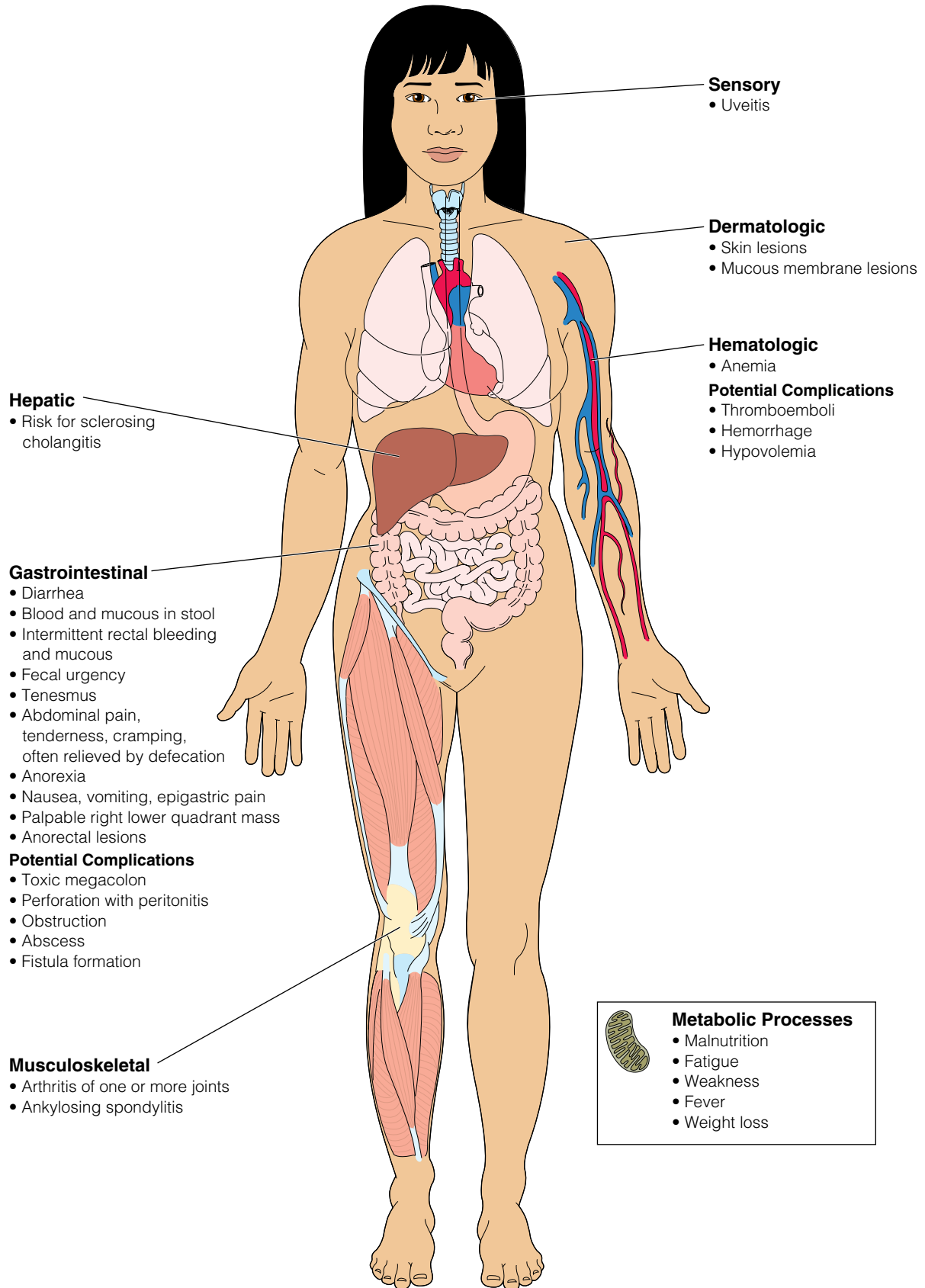
older adults (Porth, 2005). IBD is a chronic and recurrent disease process. Responses to physiologic or psychologic stresses do not cause IBD, but often play a role in exacerbations of the disease.

Despite the similarities, ulcerative colitis and Crohn's disease have distinct differences. Ulcerative colitis primarily affects the large bowel in a continuous pattern, progressing distally to proximally. In Crohn's disease, a patchy pattern of involvement is seen, affecting primarily the small intestine. Ulcerative colitis shows mainly mucosal involvement; in Crohn's disease, the submucosal layers of the bowel are affected. A comparison of ulcerative colitis and Crohn's disease is found in Table 26–7. The *Multisystem Effects of Inflammatory Bowel Disease* are illustrated on page 783.

TABLE 26–7 Characteristics of Ulcerative Colitis and Crohn's Disease

	CHARACTERISTIC	ULCERATIVE COLITIS	CROHN'S DISEASE
Clinical	Gender	Equal	Equal
	Age at onset	15 to 35 years; secondary peak between 50 and 70 years	10 to 30 years
	Course of disease	Typically chronic and intermittent	Slowly progressive, relapsing
	Diarrhea	5 to 30 stools per day with blood and mucous	Common, usually less severe than colitis, with no obvious blood or mucous in stool
	Abdominal pain	Cramping in left lower quadrant; relieved by defecation	Cramping or steady right lower quadrant or periumbilical pain; tenderness and mass noted in right lower quadrant
Pathologic	Nutritional deficit	Common; involves anemia, hypoalbuminemia, and weight loss	Common and significant: involves anemia, weight loss, and multiple vitamin and mineral deficits
	Constitutional manifestations	Fever rare; may have associated arthritic, skin, or other organ involvement, such as erythema nodosum or uveitis	Fever, malaise, fatigue; may have some associated conditions plus urinary complications
	Depth of involvement	Mucosa and submucosa	Transmural (entire bowel wall)
Complications	Portion of bowel involved	Typically rectum and sigmoid colon; may extend to involve entire large bowel	Any portion of GI tract; terminal ileum and ascending colon involvement predominates
	Distribution	Continuous from rectum	Patchy; skip lesions
	Appearance of mucosa	Granular, dull, hyperemic, friable; disease uniform in affected bowel; pseudopolyps may be seen	Cobblestone appearance, with areas of normal tissue surrounded by ulceration and fissures
	Acute	Toxic megacolon, perforation, massive hemorrhage	Obstruction, fistulization, abscess formation, malabsorption
	Long term	Colorectal cancer	Colon cancer

MULTISYSTEM EFFECTS OF Inflammatory Bowel Disease



Ulcerative Colitis

Ulcerative colitis is a chronic inflammatory bowel disorder that affects the mucosa and submucosa of the colon and rectum. *Chronic intermittent colitis* (recurrent ulcerative colitis) is the most common form of the disease and affects 250,000 to 500,000 people in the United States each year, resulting in steep hospital and drug costs as well as lost work (Hellekson, 2005). Its onset is insidious, with attacks that last 1 to 3 months occurring at intervals of months to years. Typically, only the distal colon is affected, with few systemic manifestations of the disease. Approximately 15% of people with ulcerative colitis develop *fulminant colitis*, with involvement of the entire colon, severe bloody diarrhea, acute abdominal pain, and fever. Clients with fulminant disease are at high risk for complications.

Pathophysiology

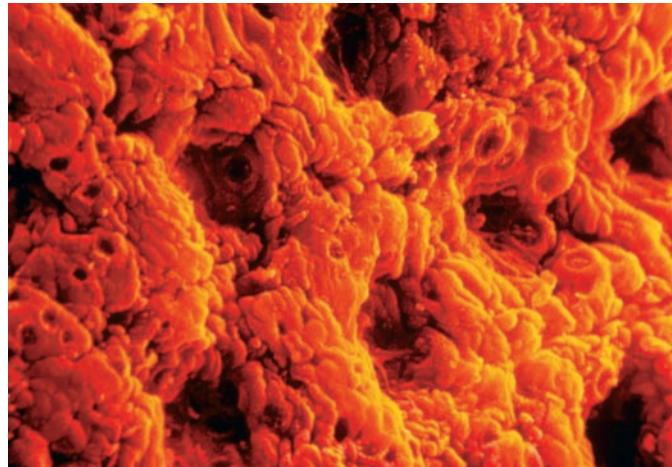
The inflammatory process of ulcerative colitis begins at the rectosigmoid area of the anal canal and progresses proximally. In most clients, the disease is confined to the rectum and sigmoid colon. It may progress to involve the entire colon, stopping at the ileocecal junction.

Ulcerative colitis begins with inflammation at the base of the crypts of Lieberkühn in the distal large intestine and rectum. Microscopic, pinpoint mucosal hemorrhages occur, and crypt abscesses develop (Figure 26–3 ■). These abscesses penetrate the superficial submucosa and spread laterally, leading to necrosis and sloughing of bowel mucosa. Further tissue damage is caused by inflammatory exudates and the release of inflammatory mediators, such as prostaglandins and other cytokines (see Chapter 12 ∞ for further discussion of the inflammatory process). The mucosa is red and edematous due to vascular congestion, friable (easily broken), and ulcerated. It bleeds easily, and hemorrhage is common. Edema creates a granular appearance. Pseudopolyps, tongue-like projections of bowel mucosa into the lumen, may develop as the epithelial lining of the bowel regenerates. Chronic inflammation leads to atrophy, narrowing, and shortening of the colon, with loss of its normal haustra.

Manifestations

Diarrhea is the predominant manifestation of ulcerative colitis. Stools contain both blood and mucous. Nocturnal diarrhea may occur. Mild ulcerative colitis is characterized by fewer than 5 stools per day, intermittent rectal bleeding and mucous, and few systemic manifestations. Severe ulcerative colitis can lead to more than 6 to 10 bloody stools per day, extensive colon involvement, anemia, hypovolemia, and malnutrition. Rectal inflammation causes fecal urgency and tenesmus. Left lower quadrant cramping relieved by defecation is common. Other manifestations include fatigue, anorexia, and weakness.

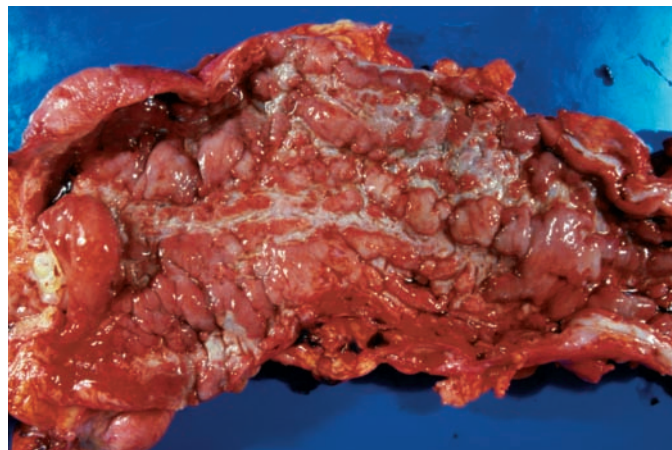
Clients with severe disease may also have systemic manifestations such as arthritis involving one or several joints, skin and mucous membrane lesions, or *uveitis* (inflammation of the uvea, the vascular layer of the eye, which may also involve the sclera and cornea). Some clients develop thromboemboli, with blood vessel obstruction due to clots carried from the site of



A



B



C

Figure 26–3 ■ A, Photomicrograph of the mucosa of the large intestine showing the entrances to the crypts of Lieberkühn. The crypts are the focal points for B, ulcerative colitis and C, Crohn's disease.

Source: B, Dr. E. Walker/Photo Researchers, Inc., C, Javier Domingo/Photo Researchers, Inc.

their formation. Sclerosing cholangitis (inflammation and scarring of the bile ducts) may occur, more often in men than women, and most commonly in the third to fifth decade of life (Porth, 2005).

Complications

Acute complications of ulcerative colitis include hemorrhage, toxic megacolon, and colon perforation. Massive hemorrhage may occur with severe attacks of the disease. *Toxic megacolon*, a condition characterized by acute motor paralysis and dilation of the colon to greater than 6 cm, may affect part or all of the colon. The transverse segment of the bowel is most often affected. Toxic megacolon may be triggered by the use of laxatives, narcotics, and anticholinergic drugs and the presence of hypokalemia (Porth, 2005). Manifestations of toxic megacolon include fever, tachycardia, hypotension, dehydration, abdominal tenderness and cramping, and a change in the number of stools per day. Perforation is rare, but the risk of this dangerous complication is increased with toxic megacolon. Perforation leads to peritonitis.

The risk for colorectal cancer is increased in clients with ulcerative colitis. Beginning 8 to 10 years after the diagnosis, yearly colonoscopies with biopsy to detect masses or cell dysplasia are recommended for clients who have extensive ulcerative colitis (Hellekson, 2005).

Crohn's Disease

Like ulcerative colitis, **Crohn's disease**, also known as regional enteritis, is a chronic, relapsing inflammatory disorder affecting the gastrointestinal tract. Crohn's disease can affect any portion of the GI tract from the mouth to the anus, but usually affects the terminal ileum and ascending colon. Only the small bowel is involved in about 30% to 40% of clients with Crohn's disease. The disease is limited to the colon only in 15% to 20% of those affected. Both the small and large intestine are involved in the majority of clients (Porth, 2005).

Pathophysiology

Crohn's disease typically begins as a small inflammatory *aphthoid lesion* (shallow ulcers with a white base and elevated margin, similar to a canker sore) of the mucosa and submucosa of the bowel. These initial lesions may regress, or the inflammatory process can progress to involve all layers of the intestinal wall. Deeper ulcerations, granulomatous lesions, and fissures (knife-like clefts that extend deeply into the bowel wall) develop. The inflammatory process involves the entire bowel wall (transmural).

The lumen of the affected bowel assumes a "cobblestone appearance" as fissures and ulcers surround islands of intact mucosa over edematous submucosa. The inflammatory lesions of Crohn's disease are not continuous; rather, they often occur as "skip" lesions with intervening areas of normal-appearing bowel. Some evidence suggests that despite its normal appearance, the entire bowel is affected by this disorder.

As the disease progresses, fibrotic changes in the bowel wall cause it to thicken and lose flexibility, taking on an appearance that has been likened to a rubber hose. The inflammation, edema, and fibrosis can lead to local obstruction, abscess development, and the formation of fistulas between loops of bowel or bowel and other organs (Figure 26–4 ■). Fistulas between loops of bowel are known as enteroenteric fistulas; those that occur between bowel and bladder are known as enterovesical fistulas; and fistulas that occur between bowel and skin are known as enterocutaneous fistulas. Perineal fistulas are relatively common, originating in the ileum.

Depending on the severity and extent of the disease, malabsorption and malnutrition may develop as the ulcers prevent absorption of nutrients. When the jejunum and ileum are affected, the absorption of multiple nutrients may be impaired, including carbohydrates, proteins, fats, vitamins, and folate.

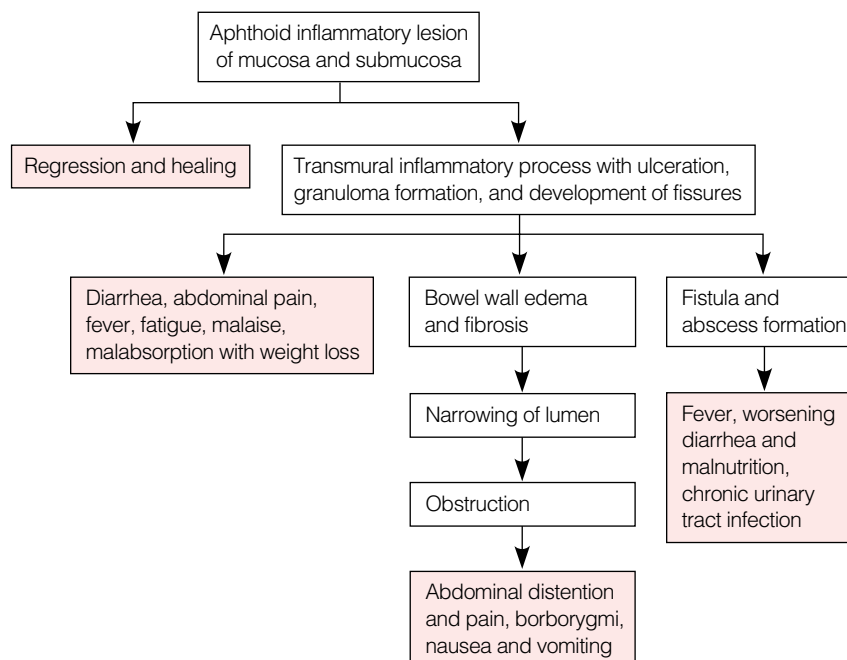


Figure 26–4 ■ The progression of Crohn's disease.

Disease in the terminal ileum can lead to vitamin B₁₂ malabsorption and bile salt reabsorption. The ulcerations can also lead to protein loss and chronic, slow blood loss with consequent anemia.

Manifestations

Because the GI system involvement in Crohn's disease can be so diverse, manifestations vary among clients. The majority of people with Crohn's disease experience persistent diarrhea. Stools are liquid or semifformed and typically do not contain blood, although blood may be passed if the colon is involved. Abdominal pain and tenderness are also common. The pain may be located in the right lower quadrant and relieved by defecation. A palpable right lower quadrant mass is often present. Systemic manifestations such as fever, fatigue, malaise, weight loss, and anemia are common. Anorectal lesions such as fissures, ulcers, fistulas, and abscesses also are common and may occur years before intestinal disease is apparent. If the stomach and duodenum are involved, nausea, vomiting, and epigastric pain may occur.

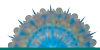
Complications

Certain complications of Crohn's disease (e.g., intestinal obstruction, abscess, and fistula) are so common that they are considered part of the disease process. For many clients, the disease initially presents with one of these complications. Intestinal obstruction is a common complication caused by repeated inflammation and scarring of the bowel that leads to fibrosis and stricture. Obstruction of the bowel lumen causes abdominal distention, cramping pain, and borborygmi. Nausea and vomiting may occur.

Fistulas may be asymptomatic, particularly if they occur between loops of small bowel. When fistulization causes an abscess, chills and fever, a tender abdominal mass, and leukocytosis develop. A fistula between the small bowel and colon may exacerbate diarrhea, weight loss, and malnutrition. When the bladder is involved, recurrent urinary tract infections occur.

Perforation of the bowel is uncommon, but can lead to generalized peritonitis. Massive hemorrhage also is an uncommon complication of Crohn's disease. Long-standing Crohn's disease increases the risk of cancer of the small intestine or colon by 5 to 6 times. This cancer risk, however, is significantly lower than the risk associated with ulcerative colitis.

INTERDISCIPLINARY CARE



Interdisciplinary care for inflammatory bowel disease begins by establishing the diagnosis and the extent and severity of the disease. Treatment is supportive, including medications and dietary measures to decrease inflammation, promote intestinal rest and healing, and reduce intestinal motility. Many clients with IBD require surgery at some point to manage the disease or its complications.

Diagnosis

Diagnostic testing is used to establish the diagnosis of IBD, assess the extent of the disease, and evaluate the effects of the dis-

order. A sigmoidoscopy, colonoscopy, or a barium upper and lower x-ray series is performed to inspect the bowel mucosa for characteristic changes of IBD. (Nursing implications for these diagnostic tests are outlined in Chapter 25 ∞).

Laboratory tests to differentiate IBD and to identify effects and complications of the disease include a stool examination for blood and mucous, and stool cultures to rule out infectious causes of bowel inflammation and diarrhea. CBC with hemoglobin and hematocrit shows anemia from chronic inflammation, blood loss, and malnutrition, and leukocytosis due to inflammation and possible abscess formation. The sedimentation rate is typically elevated during periods of acute inflammation. Serum albumin may be decreased because of malabsorption, malnutrition, protein loss through intestinal lesions, and chronic inflammation. Folic acid and serum levels of most vitamins, including A, B complex, C, and the fat-soluble vitamins, often are decreased due to malabsorption; and liver function tests may show elevated liver enzymes (such as ALT, alkaline phosphatase, AST, GGTP, and LDH) and bilirubin levels if sclerosing cholangitis is present.

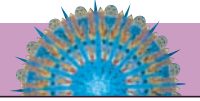
Medications

The ultimate goal of care is to terminate acute attacks as quickly as possible and reduce the incidence of relapse. Drug therapy plays a key role in achieving this goal. Locally acting and systemic anti-inflammatory drugs are the primary medications used to manage mild to moderate IBD. Drugs to suppress the immune response may be used to treat clients with severe disease.

Sulfasalazine (Azulfidine) is a sulfonamide antibiotic that is poorly absorbed from the gastrointestinal tract and acts topically on the colonic mucosa to inhibit the inflammatory process. The active anti-inflammatory ingredient in sulfasalazine, 5-aminosalicylic acid, also is available in preparations that do not contain sulfa, such as olsalazine and mesalamine. They have the advantage of causing fewer adverse effects than sulfasalazine. Azo compounds, such as balsalazide and olsalazine, are 5-aminosalicylic acid compounds that are released in the colon and are especially useful to treat ulcerative colitis. Specific preparations, their method of action, and nursing implications for these medications are outlined in the Medication Administration box on page 787.

For acute exacerbations of IBD, corticosteroids are given to reduce inflammation and induce remission. For ulcerative colitis, the drug may be administered rectally for its local effect and to minimize systemic effects. Hydrocortisone can be administered rectally. Intravenous corticosteroids may be required to treat severe disease; oral preparations are used for less severe manifestations and long-term therapy. Many clients are unable to withdraw from steroid therapy without experiencing relapse and may need chronic low-dose therapy.

Mercaptopurine (6-MP, Purinethol) and other immunosuppressive agents such as azathioprine (Imuran) and cyclosporine (Sandimmune) can be used to treat clients who have not responded to other treatments or who require chronic steroid therapy. These drugs may allow withdrawal from corticosteroids, maintain remission, and facilitate healing. Long-term therapy may be required to produce a beneficial effect. For more information about immunosuppressive drugs, see Chapter 13 ∞.

MEDICATION ADMINISTRATION Inflammatory Bowel Disease

SULFASALAZINE (AZULFIDINE)

Sulfasalazine is an anti-inflammatory drug used for its local effect on the intestinal mucosa in inflammatory bowel disease. The active part of the drug is 5-aminosalicylic acid, which inhibits prostaglandin production in the bowel. Prostaglandin is an important mediator of the inflammatory process; blocking its production reduces inflammation.

Nursing Responsibilities

- Assess for contraindications, including pregnancy or a history of hypersensitivity to sulfonamides or salicylates.
- Assess baseline values for renal function tests (serum creatinine, BUN, urinalysis), liver function tests, and CBC.
- Administer as ordered. Suppositories or retention enemas may be administered at bedtime. Administer oral forms with a full glass of water.
- Have resuscitation equipment available; anaphylactic responses may occur.
- Evaluate for therapeutic response, including reduced number of stools, reduced mucus and blood, and improved stool consistency.
- Monitor for possible adverse responses:
 - a. Skin rash, dermatitis, urticaria, or pruritus
 - b. Evidence of blood dyscrasias, such as bleeding, easy bruising, fever
 - c. Leukopenia, thrombocytopenia, hemolytic anemia, or agranulocytosis
 - d. Changes in urinary output or renal function studies
 - e. Evidence of hepatitis or myocarditis.

Health Education for the Client and Family

- Take oral preparations after meals to decrease gastric distress.
- Drink at least 2 quarts of fluid per day to reduce the risk of kidney damage.
- Use sunscreen to prevent burns; this drug increases sensitivity to sun.
- Do not take aspirin, vitamin C, or any other over-the-counter medications containing aspirin or vitamin C without consulting your doctor.
- This medication may interfere with the effectiveness of oral contraceptives; use alternative methods of contraception.
- Notify your doctor if you develop skin rash or hives, sore throat or mouth, bleeding gums, joint pain, easy bruising, or fever.

MESALAMINE (ASACOL ROWASA) AND OLSALAZINE (DIPENTUM)

Mesalamine and olsalazine contain the same active ingredient, 5-aminosalicylic acid, as sulfasalazine, but cause fewer adverse effects. Their mechanism of action is the same as that of sulfasalazine. These drugs are available as suppositories, suspension for enema, or oral tablets.

Nursing Responsibilities

- Assess for possible contraindications such as pregnancy, lactation, or hypersensitivity to these drugs or aspirin.
- Administer as ordered. If more than one dose per day is ordered, space doses evenly over the 24-hour period.
- Evaluate for desired effects (as for sulfasalazine) and potential adverse effects.
 - a. Nausea, diarrhea, abdominal cramps, or flatulence
 - b. CNS effects including headache, dizziness, insomnia, weakness, or fatigue

- c. Rash or itching
- d. Flulike symptoms, general malaise.

Health Education for the Client and Family

- Teach the recommended method of administration, including how to insert rectal suppositories or administer a retention enema.
- Shake suspension forms well prior to using.
- Diarrhea is the most common side effect of these drugs. Notify your doctor if adverse effects occur.

CORTICOSTEROIDS
Methylprednisolone (Medrol, Solu-Medrol) Prednisolone (Delta-Cortel) Prednisone

Glucocorticoids are hormones produced by the adrenal cortex. These hormones are necessary for the stress response. Cortisol, the main glucocorticoid, has potent anti-inflammatory effects. Corticosteroids are used to treat acute episodes of IBD. Because of their multiple and significant side effects, they are not used to maintain remission.

Nursing Responsibilities

- Assess for conditions that may be adversely affected by corticosteroid drugs: peptic ulcer disease, glaucoma or cataracts, diabetes, or psychiatric disorders.
- Obtain baseline vital signs and weight; monitor both routinely during therapy. Hypertension and weight gain may result from salt and water retention.
- Monitor for edema.
- Administer as ordered. For daily or alternate-day dosing, administer in the morning, when physiologic glucocorticoid levels are highest, to reduce adrenal cortisone suppression.
- Administer oral preparations with food to decrease gastrointestinal side effects. Antacids or histamine H₂-receptor blocking agents, such as cimetidine (Tagamet), may be prescribed during corticosteroid therapy.
- Monitor for desired effects: reduced diarrhea, less blood and mucous in the stool, and less abdominal cramping.
- Monitor for adverse effects:
 - a. Increased susceptibility to infection and masking of early signs of infection
 - b. Hyperglycemia
 - c. Hypokalemia, as manifested by muscle weakness, nausea, vomiting, and cardiac rhythm disturbances
 - d. Edema, hypertension, and signs of heart failure
 - e. Peptic ulcer formation and possible gastrointestinal hemorrhage (abdominal pain, black or tarry stools, and signs of bleeding)
 - f. Changes in mental status, including depression, euphoria, aggression, and behavioral changes
 - g. With long-term use, Cushingoid effects, such as abnormal fat deposits in the face (moon faces) and trunk (buffalo hump), muscle wasting and thin extremities, thinning of the skin, and osteoporosis.

Health Education for the Client and Family

- Take as prescribed; do not change the dose or time of day. Do not stop the medication abruptly. The dose will be tapered down gradually when the drug is discontinued.

(continued)



MEDICATION ADMINISTRATION Inflammatory Bowel Disease (continued)

- Notify the physician if adverse or Cushingoid effects occur.
- Take with food or at mealtimes to decrease the gastrointestinal effects.
- Monitor weight. If a gain of more than 5 pounds is noted, notify the physician.
- Moderate salt intake and avoid foods and snacks high in sodium, such as processed meats and potato chips. Increase intake of foods high in potassium, such as fruits, vegetables, and lean meats.
- Carry a card or wear a bracelet or tag at all times identifying corticosteroid use.


Newer treatments for IBD employ other immune response modifiers, such as the monoclonal antibody infliximab (Remicade) to suppress tumor necrosis factor (TNF, an inflammatory mediator substance) in clients who have not responded to standard therapies. Mesalamine (Canasa, Rowasa) is an orally or rectally administered anti-inflammatory medication that provides topical anti-inflammatory action in the colon of clients with ulcerative colitis.

Although antibiotic therapy generally is not indicated in IBD, metronidazole (Flagyl) has active anti-inflammatory effects. It may be prescribed to help prevent remission after ileal resection in Crohn's disease. Ciprofloxacin (Cipro) is an alternative to metronidazole.

Antidiarrheal agents, such as loperamide and diphenoxylate, may be given to slow gastrointestinal motility and reduce diarrhea. These drugs are safe for clients with mild, chronic manifestations, but they are not given during acute attacks because they may precipitate toxic dilation of the colon.

Nutrition

Antigens in the diet may stimulate the immune response in the bowel, exacerbating IBD. As a result, dietary management for inflammatory bowel disease is individualized. Some clients benefit from eliminating all milk and milk products from the diet. Increased dietary fiber may help reduce diarrhea and relieve rectal manifestations, but is contraindicated for clients with intestinal strictures caused by repeated inflammation and scarring.

All food may be withheld to promote bowel rest during an acute exacerbation of Crohn's disease. Nutritional status is maintained using enteral or total parenteral nutrition (TPN). See Chapter 22  for more information about enteral feedings and TPN. TPN carries a higher risk of complications than does enteral nutrition. An elemental diet such as Ensure, which contains all essential nutrients in a residue-free formula, may be prescribed. Enteral diets provide essential nutrients to the small intestine to support cell growth, but are not always palatable.


Surgery

Surgical interventions for IBD differ, depending on the primary disease process and the portion of the bowel affected. Generally, surgery is performed only when necessitated by complications of the disease or failure of conservative treatment measures.

Bowel obstruction is the leading indication for surgery in Crohn's disease. Other complications that may require surgical intervention include perforation, internal or external fistula, abscess, and perianal complications. Resection of the affected

portion of bowel with an end-to-end anastomosis to preserve as much bowel as possible is the usual treatment. The disease process tends to recur in other areas following removal of affected bowel segments. There is an increased risk of fistula formation following surgery. Bowel strictures may be treated with a stricturoplasty. In this procedure, longitudinal incisions are made in the narrowed segment to relieve the stricture while preserving bowel.

COLECTOMY Clients with extensive chronic ulcerative colitis may require a total **colectomy** (surgical resection and removal of the colon) to treat the disease itself; for complications such as toxic megacolon, perforation, or hemorrhage; or as a prophylactic measure due to the high colon cancer risk associated with extensive ulcerative colitis.

The surgical procedure of choice for extensive ulcerative colitis is a *total colectomy with an ileal pouch-anal anastomosis (IPAA)*. In this procedure, the entire colon and rectum are removed; a pouch is formed from the terminal ileum; and the pouch is brought into the pelvis and anastomosed to the anal canal (Figure 26-5 ). A temporary or loop ileostomy (described in the next section) is generally performed at the same time and is maintained for 2 to 3 months to allow the anal anastomosis to heal. When the healing is complete, the ileostomy is closed, and the client has six to eight daily bowel movements through the anus. Advanced age, obesity, or other factors may

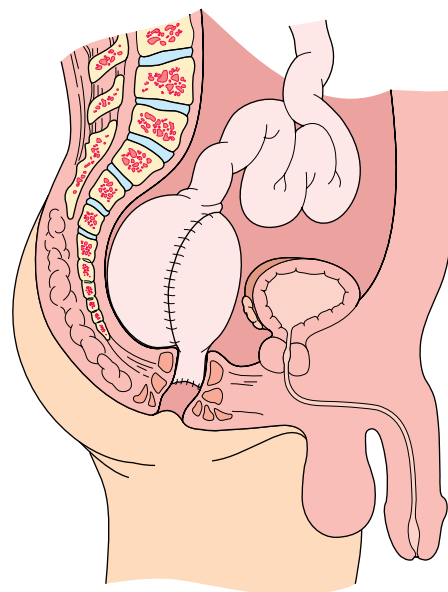


Figure 26-5  Ileal pouch-anal anastomosis (IPAA).

preclude an IPAA. For these clients, a permanent ileostomy or continent ileostomy may be created.

OSTOMY An intestinal ostomy is a surgically created opening between the intestine and the abdominal wall that allows the passage of fecal material. The surface opening is called a **stoma** (Figure 26–6 ■). The precise name of the ostomy depends on the location of the stoma. An **ileostomy** is an ostomy made in the ileum of the small intestine. In an ileostomy, the colon, rectum, and anus are usually completely removed (*total proctocolectomy with permanent ileostomy*). The anal canal is closed, and the end of the terminal ileum is brought to the body surface through the right abdominal wall to form the stoma. A temporary or *loop ileostomy* may be formed to eliminate feces and allow tissue healing for 2 to 3 months following an IPAA. A loop of ileum is brought to the body surface to



Figure 26–6 ■ A healthy-appearing stoma.

Courtesy of Carol Williams, RN, BS, UC Davis Medical Center.

form a stoma and allow stool drainage into an external pouch. When the ileostomy is no longer necessary, a second surgery is performed to close the stoma and repair the bowel, restoring fecal elimination through the anus.

In a *continent ileostomy* (Figure 26–7 ■), an intra-abdominal reservoir is constructed and a nipple valve formed (the ileum folded back on itself) from the terminal ileum, before it is brought to the surface of the abdominal wall. Stool collects in the internal pouch; the nipple valve prevents it from leaking through the stoma. A catheter is inserted into the pouch to drain the stool.

Nursing care of the client with an ileostomy is outlined in the box below. Procedure 26–1 on page 791 describes how to apply one- and two-piece drainable ostomy pouches.

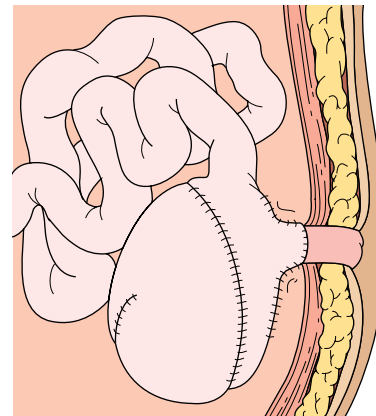
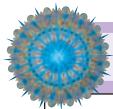


Figure 26–7 ■ Continent (Kock's) ileostomy.



NURSING CARE OF THE CLIENT HAVING AN Ileostomy

PREOPERATIVE CARE

- Provide routine preoperative care and teaching as outlined in Chapter 4 ∞.
- Refer to an enterostomal therapist for marking and teaching about the stoma location, ostomy care, and options for ostomy appliances. *It is important to begin teaching prior to surgery to facilitate learning and acceptance of the ostomy postoperatively.*
- Discuss the availability of a local United Ostomy Association chapter, and provide a referral as necessary or desired. *Local chapters often have members with ostomies who are willing to provide both preoperative and postoperative teaching, listening, and support.*
- Provide preoperative bowel preparation as ordered. *Cathartics, enemas, and preoperative antibiotics are often ordered to reduce the risk of abdominal contamination and infection after surgery.*

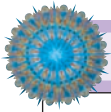
POSTOPERATIVE CARE

- Provide routine postoperative care and teaching as outlined in Chapter 4 ∞.
- Apply an ostomy pouch over the stoma. (See Procedure 26–1.) *Stool from an ileostomy is expressed continuously or irregularly,*

and it is liquid in nature; continuous use of a pouch to collect the drainage is necessary.

- Assess frequently for bleeding, stoma viability, and function. In the early postoperative period, small amounts of blood in the pouch are expected. A healthy stoma appears pink or red and moist as a result of mucous production (Figure 26–6). It should protrude approximately 2 cm from the abdominal wall. *Frequent assessment is particularly important in the initial postoperative period to ensure stoma health and monitor for possible complications. A dusky, brown, black, or white stoma indicates circulatory compromise. Other possible stoma complications include retraction (indentation or loss of the external portion of the stoma) or prolapse (outward telescoping of the stoma, that is, an abnormally long stoma).*
- As the stoma starts to function, empty the pouch, explaining the procedure to the client. Initial drainage is dark green, viscid, and usually odorless. Drainage gradually thickens and becomes yellow-brown. Empty the pouch when it is one-third full. Measure drainage, and include it as output on intake and output records. Rinse the pouch and reapply the clamp. *Emptying the pouch when it is no more than one-third full helps prevent the skin seal from breaking as a result of the*

(continued)



NURSING CARE OF THE CLIENT HAVING AN Ileostomy (continued)

weight of the pouch. Because of the potential for excess fluid loss through ileostomy drainage, it is important to include it as fluid output.

- Assess the peristomal skin. Skin around the stoma should remain clean and pink and free of irritation, rashes, inflammation, or excoriation. *Skin complications may arise from appliance irritation or hypersensitivity, excoriation from a leaking appliance, or Candida albicans, a yeast infection.*
- Protect peristomal skin from enzymes and bile salts in the ileostomy effluent. Using a skin barrier on the pouch is essential. Change the pouch if leakage occurs or if the client complains of burning or itching skin. *Enzymes and bile salts normally reabsorbed in the large intestine are irritating to the skin. Excoriation of skin surrounding the stoma impairs the first line of defense against microorganisms and can interfere with the ability to achieve a tight skin seal and prevent pouch leakage.*
- Report the following abnormal assessment findings to the physician:
 - a. Allergic or contact dermatitis. *A rash may result from contact with fecal drainage or indicate sensitivity to pouch, paste, tape, or sealant.*
 - b. Purulent ulcerated areas surrounding the stoma. *Disruption of the protective barrier of the skin allows bacterial entry.*
 - c. A red, bumpy, itchy rash or white-coated area. *This is a manifestation of Candida albicans, a yeast infection.*
 - d. Bulging around the stoma. *This finding may indicate herniation, caused by loops of intestine protruding through the abdominal wall.*
- Apply protective ointments to the perirectal area of clients with newly functioning ileoanal reservoirs and anastomoses. *This helps protect the skin from the initial stools. As stools thicken and become fewer per day, the client experiences less perirectal irritation.*

Health Education for the Client and Family

- While caring for the ostomy, explain procedures to the client. *Teaching is immediate and ongoing to facilitate acceptance of the ostomy and self-care.*
 - Teach to manage the pouch clamp, to empty, rinse, and perform pouch changes. *Self-care is vital to independence and self-esteem.*
 - Instruct now to use an electric razor to shave the peristomal hair if necessary. *An electric razor prevents accidental cutting of the stoma with a razor blade.*
 - Teach to check the stoma and peristomal skin with each pouch change. *Ongoing assessment is important for optimal health and function of the stoma and surrounding skin. Stripping of tape or excessively frequent pouch removal may cause mechanical trauma to peristomal skin. Chronic skin irritation by ileostomy effluent may lead to pseudoverrucous lesions, or wartlike nodules.*
 - Instruct to report abnormal appearance of the stoma or surrounding skin (as noted previously and below) to the physician:
 - a. Narrowing of the stoma lumen. *This indicates stenosis and may interfere with fecal elimination.*
 - b. Lacerations or cuts in the stoma. *The stoma contains no nerves, so trauma may occur without pain.*
 - c. Separation of the stoma from the abdominal surface. This potential complication may require surgical repair.
 - Emphasize the importance of adequate fluid and salt intake; the risk for dehydration and hyponatremia is increased particularly during hot weather, when fluid is lost through perspiration as well as ileostomy drainage. Water intake should be sufficient to maintain pale urine and an output of at least 1 quart per day. When exercising in hot weather, the client should consume extra water and salt. High-potassium foods, such as bananas and oranges, may also be recommended. *Loss of the reabsorptive surface of the large bowel increases the amount of water and sodium loss in the stool. If the ileostomy is high (more proximal in the ileum), additional potassium losses may also occur.*
 - Discuss manifestations of fluid and electrolyte imbalances:
 - a. Extreme thirst
 - b. Dry skin and oral mucous membrane
 - c. Decreased urine output
 - d. Weakness, fatigue
 - e. Muscle cramps
 - f. Abdominal cramps, nausea, vomiting
 - g. Shortness of breath
 - h. Orthostatic hypotension (feeling faint when suddenly changing positions).
 - Discuss dietary concerns. A low-residue diet is recommended initially (see Table 26–8). Foods that may cause excessive odor or gas are typically avoided as well. *Because food blockage is a potential problem, high-fiber foods are limited, and foods that may cause blockage, such as popcorn, corn, nuts, cucumbers, celery, fresh tomatoes, figs, strawberries, blackberries, and caraway seeds, are avoided. Symptoms of food blockage include abdominal cramping, swelling of the stoma, and absence of ileostomy output for over 4 to 6 hours.*
 - Teach self-care measures to relieve food blockage:
 - a. Take a warm shower or tub bath. *This can help relax the abdominal muscles.*
 - b. Assume a knee–chest position. *The knee–chest position reduces intra-abdominal pressure.*
 - c. Drink warm fluids or grape juice if not vomiting. *This provides a mild cathartic effect.*
 - d. Massage peristomal area. *Massage may stimulate peristalsis and fecal elimination.*
 - e. Remove pouch if the stoma is swollen, and apply a pouch with a larger opening. *If the stoma swells, the pouch may create a mechanical obstruction to output.*
 - Notify the physician or enterostomal therapy nurse if:
 - a. The above measures fail to relieve the obstruction.
 - b. Signs of a partial obstruction persist including high-volume odorous fluid output, abdominal cramps, nausea, and vomiting.
 - c. There is no ileostomy output for 4 to 6 hours.
 - d. Signs of fluid and electrolyte imbalance occur, such as weakness, dizziness, lightheadedness, or headache.
- Should self-care measures not succeed in breaking up a blockage, ileostomy lavage, as described in Procedure 26–2, may be required.*

PROCEDURE 26–1 CHANGING A ONE- OR TWO-PIECE DRAINABLE OSTOMY POUCH



GATHER SUPPLIES

- Disposable gloves
- One- or two-piece pouch
- Skin barrier paste
- Skin prep
- Clamp
- Pouch deodorant
- Measuring guide
- Adhesive remover
- Skin cleanser
- Washcloths
- Plastic bag

BEFORE THE PROCEDURE

Explain the procedure and provide for privacy.

Follow standard precautions. Don gloves.

PROCEDURE

1. Remove soiled pouch (and the flange if a two-piece pouch) by gently pulling on the pouch or flange and pushing on skin. Use adhesive remover to remove skin barrier paste.
2. Empty pouch, discarding it and the flange (if applicable) in a plastic bag. Save the tail closure clamp. The pouch from a two-piece system may be cleaned out and reused.
3. Cleanse skin and stoma with warm water and skin cleanser or mild soap. Rinse skin and stoma, and pat dry.
4. Note stoma color and peristomal skin condition.
5. If necessary, clip or shave peristomal hair.
6. Use measuring guide or previous pattern to check size of stoma.
 - a. Presized pouch: check to verify that size is correct.
 - b. Cut-to-fit pouch or flange: Trace the correct size of the stoma onto the back of the flange, and cut the opening to match the pattern. The opening should be no more than 1/8 inch larger than stoma.
7. Apply skin prep to skin covered by a wafer, pouch, or tape. Allow to dry.
8. Remove backings from pouch or flange.
9. Apply a bead of skin barrier paste around the stoma base or around the opening of the pouch or flange. Allow the paste to air-dry for 1 to 2 minutes.
10. Center the pouch or flange over the stoma, and press to adhere.
11. For a two-piece pouch, snap the pouch onto skin barrier flange.
12. Place deodorizing tablets or a few drops of liquid pouch deodorizer (in some cases, antiseptic mouthwash may be used) in the pouch. Apply the clamp.
13. "Picture frame" the pouch with tape to provide extra security.



TABLE 26–8 Low-Residue Diet

FOOD GROUP	ALLOWED	AVOID
Beverages	Coffee, teas, juices, carbonated beverages; milk limited to 2 cups per day	Alcohol, prune juice
Breads and cereals	Products made from refined flours (white bread, crackers) or finely milled grains (e.g., corn flakes, crisp rice cereal, puffed wheat)	Whole-grain breads, rolls, or cereal; breads or rolls with seeds, nuts, or bran
Desserts	Gelatins, tapioca, plain custards, or puddings; angel-food or sponge cake; ice cream or frozen desserts without fruit or nuts	Any desserts containing dried fruits, nuts, seeds, or coconut; rich pastries, pies
Fruits	Fruit juices and strained fruits; cooked or canned apples, apricots, cherries, peaches, pears; bananas	All other raw or cooked fruits
Meats and other protein sources	Roasted, baked, or broiled tender or ground beef, veal, pork, lamb, poultry, or fish; smooth peanut butter; cottage, cream, American, or mild cheddar cheeses in small amounts	Tough or spiced meats and those prepared by frying; highly flavored cheeses; nuts
Potatoes, rice, and pasta	Peeled potatoes; white rice; most pasta products	Potato skins, potato chips, or fried potatoes; brown rice; whole-grain pasta products
Sweets	Sugar, honey, jelly, hard candy and gumdrops, plain chocolates	Jam, marmalade; candy made with seeds, nuts, coconut
Vegetables	Vegetable juices and strained vegetables; cooked or canned vegetables	Raw or whole cooked vegetables
Other	Salt, ground seasonings; cream sauce and plain gravy	Chili sauce, horseradish; popcorn, seeds of any kind; whole spices, olives, vinegar

PROCEDURE 26–2 ILEOSTOMY LAVAGE



GATHER SUPPLIES

- Disposable gloves
- Disposable irrigation sleeve
- 60 mL catheter-tipped syringe
- #14 Fr. catheter
- Water-soluble lubricant
- Normal saline for irrigation
- Bedpan
- Clean ostomy pouch

BEFORE THE PROCEDURE

Explain the procedure and provide for privacy.
Follow standard precautions. Don gloves.

PROCEDURE

1. Remove the pouch. Apply disposable irrigation sleeve.
2. Clamp the bottom of the sleeve, or place it into the bedpan.
3. Gently examine stoma digitally to break up any fecal mass proximal to stoma and determine direction of the bowel.
4. Lubricate catheter, and insert into stoma until blockage is reached. If the catheter does not reach the blockage after 8 to 10 cm, notify the physician. This may indicate a more proximal obstruction.
5. Instill 30 to 50 mL normal saline.
6. Remove catheter. Allow stoma to drain.
7. Repeat the procedure until the mass is removed.
8. When the blockage is removed, remove the irrigation sleeve.
9. Clean peristomal skin.
10. Apply pouch and clamp.

AFTER THE PROCEDURE

1. Document the procedure, amount of solution used, consistency of results, and the client's tolerance of the procedure.
2. Discuss dietary intake to help determine cause of blockage.

Complementary and Alternative Therapies

The chronic nature of inflammatory bowel disease and adverse effects of many prescribed treatments lead many clients with IBD to seek or use complementary and alternative therapies. Chiropractic care, megavitamin therapy, dietary supplements, and herbal medicine have been reported as common complementary and alternative therapies for IBD (Heuschkel et al., 2002; Verhoef et al., 2002). A study by Langmead et al. (2002) concluded that herbal remedies such as slippery elm, fenugreek, devil's claw, Mexican yam, tormentil, and wei tong ning have antioxidant effects and may provide an effect similar to that of 5-aminosalicylic acid preparations. Peppermint tea is an excellent tonic for reducing nausea, relieving abdominal pain, and providing a calming effect. Chamomile tea helps to reduce intestinal inflammation (Balch & Stengler, 2004). Many complementary and alternative therapies for IBD may interact with prescribed medications; instruct the client to discuss all potential therapies with the primary care provider. Accupressure, body massage, reflexology, aromatherapy, and stress reduction therapies can also aid in reducing manifestations of IBD.



NURSING CARE

Health Promotion

Although inflammatory bowel disease cannot, at this time, be predicted or prevented, effective management may help the client avoid complications of the disease. Stress the importance of complying with the prescribed treatment regimen and promptly reporting manifestations of exacerbations to the physician.

Assessment

Assessment data related to inflammatory bowel disease includes the following subjective and objective data:

- **Health history:** Current manifestations, including onset, duration, severity (number of stools per day, presence of blood or mucous in stool, abdominal pain or cramping, tenesmus); usual diet, ability to maintain weight and nutrition, food intolerances; associated manifestations such as arthralgias, fatigue, malaise; current medications; previous treatment and diagnostic tests.
- **Physical examination:** General appearance; weight; vital signs including orthostatic vitals and temperature; abdominal assessment including shape, contour, bowel sounds, palpation for tenderness and masses, presence of stoma or scars.

Nursing Diagnoses and Interventions

When planning nursing care for the client with inflammatory bowel disease, it is vital to consider the chronic, recurrent nature of the disorder. Teaching is a major aspect of care. Diarrhea and disturbed body image are significant nursing care problems for the client with IBD. With severe disease, impaired nutrition must be considered a priority problem as well. A Nursing Care Plan for a client with ulcerative colitis is included on the following page.

Diarrhea

During an acute exacerbation of IBD, diarrhea can be frequent and painful. The frequency of defecation and associated abdominal pain and cramping may interfere with ADLs and increase the risk for fluid volume deficit and impaired skin integrity.

- Record the frequency, amount, and color of stools using a stool chart. Measure and record liquid stool as output. *The severity of diarrhea is an indicator of the severity of the disease and helps determine the need for fluid replacement.*



NURSING CARE PLAN A Client with Ulcerative Colitis

Cortez Lewis is a 42-year-old real estate agent and mother of three school-age children. She has had ulcerative colitis for 18 years and has been treated with prednisone and sulfasalazine. Over the past 4 months she has been having abdominal pain and cramping and frequent bloody diarrhea stools. During the same period, she has lost 20 lb (9 kg); and has had difficulty maintaining her career. She recently developed several lesions of the lower leg identified as erythema nodosum. A recent colonoscopy revealed extensive involvement of the entire colon. On admission, Mrs. Lewis states, "I'm tired of fighting this disease. I am a prisoner in my home because of the diarrhea." She is admitted for a total proctocolectomy and ileal pouch-anal anastomosis.

ASSESSMENT

Janet Wheeler, RN, completes the admission assessment. Mrs. Lewis now weighs 115 lb (52.2 kg). She complains of abdominal cramping, pain, and frequent bloody diarrhea stools. Several reddened lesions are noted on her lower legs. Physical assessment findings include T 98°F (36.6°C), P 72, R 20, and BP 104/72. Skin cool and pale. Abnormal laboratory findings include hemoglobin 7.3 g/dL (normal 11.7 to 15.7 g/dL); hematocrit 23.3% (normal 35% to 47%); WBC 15,580/mm³ (normal 3500 to 11,000/mm³); platelet count 995,000/mm³ (normal 150,000 to 450,000/mm³); serum protein 4.6 g/dL (normal 6 to 8 g/dL); serum albumin 2.4 g/dL (normal 3.5 to 5 g/dL). Preparation for surgery is begun.

DIAGNOSES

- *Imbalanced Nutrition: Less than Body Requirements* related to impaired absorption
- *Diarrhea* related to inflammation of bowel
- *Risk for Deficient Fluid Volume* related to abnormal fluid loss
- *Risk for Impaired Tissue Integrity* related to drainage from temporary ileostomy
- *Acute Pain* related to surgical intervention
- *Risk for Sexual Dysfunction* related to temporary ileostomy.

EXPECTED OUTCOMES

- Resume prescribed diet within 5 days after surgery.
- Demonstrate normal fecal elimination through the temporary ileostomy.
- Maintain adequate fluid balance.

- Demonstrate appropriate ostomy care prior to discharge.
- Report a tolerable level of discomfort.
- Verbalize feelings about sexuality and acknowledge importance of discussing sexual issues with husband.

PLANNING AND IMPLEMENTATION

- Discuss dietary modifications related to nutritional status and presence of ileostomy. Provide referral to dietitian for diet planning and teaching.
- Teach importance of maintaining a high fluid intake and manifestations of dehydration.
- Teach to empty and change ostomy, pouch of choice.
- Teach stoma and peristomal skin assessment with each pouch change.
- Teach food blockage management.
- Refer to local United Ostomy Association.
- Provide list of local medical suppliers for ostomy appliances.

EVALUATION

On discharge, Mrs. Lewis is caring for her ileostomy by demonstrating her ability to empty, rinse, and change the pouch. The ET nurse has provided written and verbal instructions on ileostomy care. Mrs. Lewis verbalizes her understanding of the recommended diet and the need to limit high-fiber food intake and avoid enteric-coated and timed-release medications. The ET nurse has discussed sexual aspects of having an ileostomy and has given Mrs. Lewis a booklet, "Sex and the Female Ostomate," available through the United Ostomy Association. Mrs. Lewis is looking forward to the planned surgery to close the temporary ileostomy.

CRITICAL THINKING IN THE NURSING PROCESS

1. Why is the client with an ileostomy at risk for dehydration? How can Mrs. Lewis monitor her fluid status at home?
2. Why were Mrs. Lewis's hemoglobin and hematocrit low on admission? If her hemoglobin had been low but her hematocrit normal on admission, what might be the explanation?
3. Outline a teaching plan that could be given to clients for home care of an ileostomy.
4. Develop a care plan for Mrs. Lewis for the nursing diagnosis *Risk for Impaired Skin Integrity*.
See Evaluating Your Response in Appendix C.

PRACTICE ALERT

Observe stools for obvious blood and test for occult blood as indicated. Report grossly bloody stools (**hematochezia**), which may indicate hemorrhage and necessitate emergency surgery.

- Monitor vital signs every 4 hours. *Tachycardia, tachypnea, and fever may be indicators of fluid volume deficit.*
- Weigh daily and record. *Rapid weight loss (over days to a week) usually indicates fluid loss, whereas weight loss over weeks to months may indicate malnutrition.*
- Assess for other indications of fluid deficit: warm, dry skin, poor skin turgor, dry shiny mucous membranes, weakness, lethargy, complaints of thirst. *The extent of fluid loss may not*

be readily evident with diarrhea, particularly if the client uses the bathroom without assistance. Systemic manifestations of fluid volume deficit may be the first indicators of the problem.

- Maintain bowel rest by keeping NPO or limiting oral intake to elemental feedings as indicated. *Bowel rest during an acute exacerbation of IBD promotes healing and reduces diarrhea and other manifestations.*
- Administer prescribed anti-inflammatory and antidiarrheal medications as indicated. *Anti-inflammatory medications reduce the extent of bowel inflammation and diarrhea. Unless contraindicated, antidiarrheal medications help reduce fluid loss and increase comfort.*

PRACTICE ALERT

When giving antidiarrheal medications to a client with ulcerative colitis, closely observe for manifestations of toxic megacolon: fever, tachycardia, hypotension, dehydration, abdominal pain and cramping, and an abrupt relief of diarrhea.

- Maintain fluid intake by mouth or intravenously as indicated. *The client with IBD requires fluid to replace ongoing losses, as well as fluid to meet the usual daily needs of the body. If an elemental diet or total parenteral nutrition is prescribed, additional fluids may be required to meet fluid intake needs.*
- Provide good skin care. *Fluid deficit and tissue dehydration increase the risk for skin excoriations or breakdown.*
- Assess perianal area for irritation or denuded skin from the diarrhea. Use gentle cleansing agents, such as Peri-Wash or Tucks, diaper wipes, or cotton balls saturated with witch hazel. Apply a protective cream, such as zinc oxide–based preparations, to protect skin from the irritating effects of diarrheal stool. *Digestive enzymes in the stool are very corrosive, increasing the risk of skin breakdown where exposed to diarrheal stool.*

Disturbed Body Image

The client with IBD may experience frustration at not being able to control, or even predict, fecal elimination, particularly when the disease is severe. Diarrhea can interfere with the ability to complete tasks, maintain employment or engage in social activities, and even meet basic needs such as eating, sleeping, and sexual activity. Body image can suffer as a result. Treatment of IBD, be it total colectomy with ileal pouch-anal anastomosis, ileostomy, or chronic corticosteroid therapy, also can affect the view of self.

- Accept feelings and perception of self. *Negating or denying the reality of the client's perception impairs trust.*
- Encourage discussion of physical changes and their consequences as they relate to self-concept. *This demonstrates acceptance and provides an opportunity to express the impact of the disease and its treatment on the client's life.*
- Encourage discussion about concerns regarding the effect of the disease or treatment on close personal relationships. *This demonstrates understanding and provides an opportunity for the client to express feelings about the impact of the disease on relationships and significant others.*
- Encourage the client to make choices and decisions regarding care. *This increases the client's sense of control over the disease and his or her future.*
- Discuss possible treatment options and their effects openly and honestly. *Open discussion allows more informed decisions.*
- Involve the client in care, teaching and demonstrating as needed. *This encourages and facilitates independence and decision making.*
- Provide care in an accepting, nonjudgmental manner. *Acceptance of the client despite potential embarrassment about odors or diarrhea enhances self-esteem.*
- Arrange for interaction with other clients or groups of people with IBD or ostomies. *The client may feel that no one who has not experienced a similar problem can understand his or her feelings.*

- Teach coping strategies (odor control, dietary modifications, and so on), and support their use. *This facilitates healthy adaptation to the disease.*

Imbalanced Nutrition:**Less than Body Requirements**

Crohn's disease can significantly alter the bowel's ability to absorb nutrients. In both forms of IBD, blood and protein-rich fluid may be lost in diarrheal stools. With malabsorption and continuing nutrient losses, multiple nutrient deficits can develop, affecting growth and development, healing, muscle mass, bone density, and electrolyte balances.

- Monitor laboratory results, including hemoglobin and hematocrit, serum electrolytes, and total serum protein and albumin levels. *These studies provide an indicator of nutritional status.*
- Provide the prescribed diet: high-kilocalorie, high-protein, low-fat diet with restricted milk and milk products if lactose intolerance is present. *Calories and protein are important to replace lost nutrients. Fat restriction helps reduce diarrhea and nutrient loss, particularly when significant portions of the terminal ileum have been resected.*
- Provide parenteral nutrition as necessary if the client is unable to absorb enteral nutrients. *Parenteral nutrition can help reverse nutritional deficits and promote weight gain and healing in the client with acute manifestations.*
- Arrange for dietary consultation. Consider food preferences as allowed. *Providing preferred foods in the prescribed diet increases intake and supports nutritional status.*
- Provide or administer elemental enteral nutrition and supplements as ordered. *Elemental enteral nutritional supplements support healing while providing for bowel rest. They can replace losses and improve nutritional status more rapidly than diet alone.*
- Include family members, the primary food preparer in particular, in teaching and dietary discussions. *Families can reinforce teaching and help the client maintain required restrictions or kilocalorie intake.*

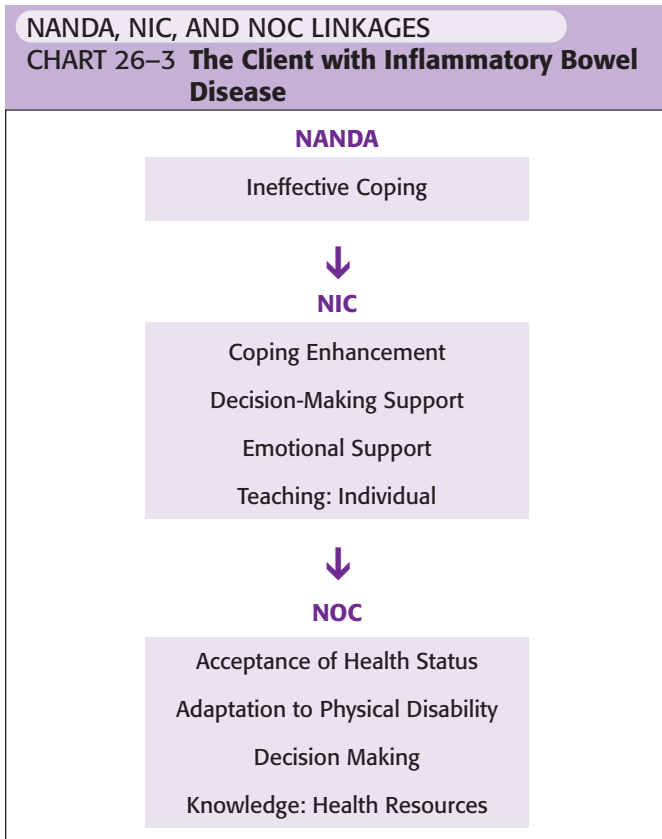
Using NANDA, NIC, and NOC

Chart 26–3 shows links between NANDA nursing diagnoses, NIC, and NOC when caring for the client with inflammatory bowel disease.

Community-Based Care

Inflammatory bowel disease is a chronic condition for which the client provides daily self-management. For this reason, teaching is a vital component of care. Teach the client and family about the following topics:

- The type of inflammatory bowel disease affecting the client, including the disease process, short- and long-term effects, the relationship of stress to disease exacerbations, and the manifestations of complications
- Prescribed medications, including drug names, desired effects, schedules for tapering the doses if ordered (as with corticosteroids), and possible side effects or adverse reactions and their management
- The recommended diet and the rationale for any specific restrictions



Data from *NANDA's Nursing Diagnoses: Definitions & Classification 2005–2006* by NANDA International (2005), Philadelphia; *Nursing Interventions Classification (NIC)* (4th ed.) by J. M. Dochterman & G. M. Bulechek (2004), St. Louis, MO: Mosby; and *Nursing Outcomes Classification (NOC)* (3rd ed.) by S. Moorhead, M. Johnson, and M. Maas (2004), St. Louis, MO: Mosby.

- Use of nutritional supplements such as Ensure to maintain weight and nutritional status
- Indicators of malabsorption and impaired nutrition; recommendations for self-care and when to seek medical intervention
- If discharged with a central catheter and home parenteral nutrition, written and verbal instructions on catheter care, troubleshooting, and TPN administration (Have the client and a family member demonstrate catheter care and TPN maintenance.)
- The importance of maintaining a fluid intake of at least 2 to 3 quarts per day, increasing fluid intake during warm weather, exercise, or strenuous work, and when fever is present
- The increased risk for colorectal cancer and importance of regular bowel exams
- Risks and benefits of various treatment options
If surgery is planned or has been done, include the following topics in home care instructions:
 - Ileal pouch-anal anastomosis or ileostomy care as indicated
 - Where to obtain ostomy supplies
 - Use of nonprescription drugs, such as enteric-coated and timed-release capsules that may not be adequately absorbed before elimination through the ileostomy
 - Community and national ostomy support groups (see below).
Provide referrals to a dietary consultant or nutritionist, a community healthcare agency, home care services, and home intravenous care services as indicated. In addition, suggest the following resources:
 - Crohn's and Colitis Foundation of America, Inc.
 - The Israel Foundation for Crohn's Disease and Ulcerative Colitis
 - United Ostomy Association, Inc.

MALABSORPTION SYNDROMES

Malabsorption is a condition in which the intestinal mucosa ineffectively absorbs nutrients—including carbohydrates, proteins, fats, water, electrolytes, minerals, and vitamins—resulting in their excretion in the stool. Multiple different bowel disorders can lead to malabsorption.

Diseases of the small intestine often cause malabsorption. Other medical and/or surgical conditions can result in malabsorption if they affect digestion or the intestinal mucosa. Primary diseases of the small-bowel mucosa, such as sprue, Crohn's disease, and acute infections, can lead to malabsorption. It can also result from *maldigestion*, inadequate preparation of chyme for absorption. For example, major gastric resections, pancreatic disorders with impaired pancreatic enzyme secretion, and biliary disorders that affect bile secretion can impair digestion and absorption of chyme. Selected causes of impaired absorption and digestion are listed in Table 26–9.

Regardless of the cause, malabsorption causes common manifestations resulting from impaired absorption of chyme and the nutrients it contains (Table 26–10). Predominant GI manifestations include anorexia; abdominal bloating; diarrhea with loose,

TABLE 26–9 Selected Causes of Malabsorption

CAUSE	RELATED FACTORS OR CONDITIONS	
Impaired absorption	Sprue	
	Short bowel syndrome	
	Acute enteritis and other bowel infections or infestations	
	AIDS-related opportunistic infections and Kaposi's sarcoma	
	Celiac disease	
	Crohn's disease	
	Intestinal ischemia or infarction	
	Scleroderma	
	Impaired digestion	Lactose intolerance
		Gastrectomy
Chronic pancreatitis, cancer of the pancreas		
Cystic fibrosis		
Biliary obstruction		
	Cirrhosis, hepatitis, or liver failure	
	Zollinger-Ellison syndrome	

TABLE 26–10 Local and Systemic Manifestations of Malabsorption

CATEGORY	MANIFESTATION	CAUSE
Local (GI)	Diarrhea	Impaired absorption of fluid and electrolytes, leading to excess water in the stool
	Abdominal distention	Gas formation from fermentation of undigested carbohydrates
	Steatorrhea	Impaired fat absorption leading to excess fat in feces
Systemic	Weight loss	Carbohydrate, protein, and fat deficit
	Weakness and malaise	Kilocalorie deficit, anemia, fluid, and electrolyte losses
	Anemia	Vitamin B ₁₂ , folic acid, and iron deficits
	Bone pain	Calcium and vitamin D deficits
	Muscle cramps, paresthesias	Protein wasting, vitamin B ₁₂ and electrolyte deficits
	Easy bruising and bleeding	Vitamin K deficit
	Glossitis, cheilosis	Iron, folic acid, and vitamin B ₁₂ deficits

bulky, foul-smelling stools; and steatorrhea (fatty stools). Weight loss, weakness, general malaise, muscle cramps, bone pain, abnormal bleeding, and anemia are common systemic manifestations of malabsorption. These manifestations result from malnutrition and fluid loss due to poor absorption.

Three common malabsorption disorders in adults are sprue, lactose intolerance, and short bowel syndrome.

THE CLIENT WITH SPRUE

Sprue is a chronic primary disorder of the small intestine in which the absorption of nutrients, particularly fats, is impaired. The severity of the disease depends on the extent of mucosal involvement in the intestine and the duration of the disease. Two major forms of sprue are celiac disease (celiac sprue) and tropical sprue.

Pathophysiology

Most absorption of nutrients occurs in the small intestine. The mucosa of the small intestine is arranged in microscopic folds, which in turn contain even smaller finger-like projections called villi. The cells of the villi are covered with microscopic hairs, microvilli, projecting from the cell membrane. The folds, villi, and microvilli of the intestinal mucosa provide a huge surface area for nutrient absorption. Cells of the intestines are specialized to absorb different nutrients. Readily digested nutrients are absorbed in the proximal intestine; others are absorbed more distally in the intestines. Nutrients are absorbed by the processes of simple diffusion (water and small lipids), facilitated diffusion (water-soluble vitamins), and active transport (glucose and

amino acids). Once absorbed into the cells of the villi, nutrients enter the blood or lymph for systemic distribution.

Sprue is characterized by flattening of the intestinal mucosa with a loss of villi and microvilli. With the loss of villi, intestinal absorptive surface is lost, and digestive enzyme production, including disaccharidase and particularly lactase, is reduced.

Celiac Sprue

Celiac sprue, also known as celiac disease or nontropical sprue, is a chronic malabsorption disorder characterized by sensitivity to the gliadin fraction of gluten, a cereal protein. Gluten is found in wheat, rye, barley, and oats. It is also used as a filler in many prepared foods and in medications. The cause of celiac sprue is unknown; however, genetic, environmental, and immune factors are known to play a role in its development. Caucasians of European descent are most commonly affected (Tierney et al., 2005). Manifestations of celiac sprue often develop in childhood, but may develop at any age.

In celiac sprue, it appears that the intestinal mucosa is damaged by an immunologic response. Gliadin acts as an antigen (a substance that induces the formation of antibodies that interact specifically with it), prompting the formation of antibodies and immune complexes. These complexes may deposit in the intestinal mucosa, prompting an inflammatory response and loss of villi. Gluten also may directly damage the villi, causing cell loss, inflammation, and edema. The villi shorten and atrophy, resulting in loss of intestinal folds and absorptive surface.

MANIFESTATIONS Manifestations of celiac sprue may develop at any age. Local manifestations include abdominal bloating and cramps, diarrhea, and steatorrhea. Systemic manifestations result from the effects of malabsorption and resulting deficiencies. Anemia is common. Clients with celiac disease are often small in stature, and may have delayed maturity. Other signs of nutrient deficiencies include tetany, vitamin deficiencies, muscle wasting, and rickets (impaired bone development). When gluten is removed from the diet, the manifestations resolve.

Gastrointestinal malignancies and intestinal lymphoma are potential complications of celiac sprue. Other complications include intestinal ulceration and development of refractory sprue, or disease that no longer responds to a gluten-free diet.

Tropical Sprue

Tropical sprue is a chronic disease of unknown cause, although bacterial infection or toxins are thought to contribute. Tropical sprue occurs chiefly in the Caribbean, south India, and southeast Asia. Its onset may be abrupt or insidious. The pathophysiologic changes in bowel mucosa closely resemble those of celiac sprue, although gluten intake has no effect on this condition.

MANIFESTATIONS Manifestations of tropical sprue include sore tongue, diarrhea, and weight loss. Initially, diarrhea may be explosive and watery; as the disease progresses, stools become fewer in number and more solid with obvious steatorrhea. Folic acid deficiency is common. Vitamin B₁₂ and iron deficiencies may occur, resulting in glossitis; stomatitis; dry, rough skin; and anemia.

INTERDISCIPLINARY CARE



With any malabsorptive disorder, the initial focus of management is to identify the cause. Once this has been determined, specific therapy can be prescribed.

Diagnosis

Laboratory and diagnostic testing are used to make the differential diagnosis for various causes of malabsorption syndromes and to determine the severity of nutrient deficiencies.

An enteroscopy permits direct examination of intestinal mucosa and collection of a tissue specimen for biopsy. Upper GI series with small-bowel follow-through may be done to evaluate the structures of the upper GI tract. With sprue, the typical “feathery” pattern of barium in the small bowel is lost, and the barium may precipitate and clump. Nursing implications of diagnostic tests are included in Chapter 25 ∞.

Laboratory tests are used to identify pathophysiologic effects and monitor compliance with the prescribed diet. Fecal fat is measured to document the presence of steatorrhea. The expected result is less than 10 g of fat per 24 hours (Tierney et al., 2005). The fat content of stool is increased in many malabsorptive disorders, including celiac and tropical sprue. Serologic testing for IgA endomysial antibodies, and IgG and IgA anti gliadin antibodies is used to diagnose celiac sprue and evaluate compliance with the prescribed gluten-free diet. Serum levels of protein, albumin, cholesterol, electrolytes, and iron may be ordered to evaluate for nutrient deficiencies. The hemoglobin, hematocrit, and RBC indices are used to evaluate anemia. Prothrombin time is increased in vitamin K deficiency.

Medications

Clients with severe nutritional deficits may require vitamin and mineral supplements, as well as iron and folic acid to correct anemia. Vitamin K may be administered parenterally if the prothrombin time is prolonged. In clients whose disease fails to respond to dietary management, corticosteroids may be ordered to suppress the inflammatory response.

Tropical sprue is treated with a combination of folic acid and tetracycline. This regimen is continued for 1 to 2 months.

Nutrition

The client with celiac sprue is placed on a gluten-free diet. This treatment is generally successful, as long as the client avoids gluten totally. Gluten is so widely used in prepared foods that this may be no easy task. Consultation with a dietitian and detailed dietary instructions are necessary. Clients need to become aware of hidden sources of gluten and to analyze dietary labels. Common sources of gluten and foods to be avoided are indicated in Table 26–11.

The prescribed diet is high in calories and protein to correct nutrient deficits. Fat content is restricted to minimize steatorrhea. Initially, the diet usually is restricted in lactose as well to compensate for the loss of lactase-containing microvilli. Foods containing lactose may be reintroduced once remission has occurred (Tierney et al., 2005).



NURSING CARE

Nursing care for the client with sprue focuses on the effects of the disorder on health and nutrition, as well as the client’s ability to manage the disease.

Assessment

- *Health history:* Onset, duration, and severity of manifestations; number and character of stools; history of travel to the Caribbean or southeast Asia; previous teaching related to disorder; current treatment and diet.
- *Physical examination:* Vital signs; abdominal shape, contour, bowel sounds; manifestations of malnutrition (e.g., anemia, small stature, muscle wasting, signs of other nutrient deficiencies).

Nursing Diagnoses and Interventions

Diarrhea and malnutrition are significant problems for the client with sprue and the priority foci for nursing intervention.

Diarrhea

Steatorrhea and diarrhea typically occur with sprue because fat, water, and other nutrients are poorly absorbed, remaining in the

TABLE 26–11 Dietary Sources of Gluten

FOOD GROUP	CONTAINS GLUTEN	MAY CONTAIN GLUTEN
Cereals, grains, and grain products	Bread, crackers, cereal, and pasta containing wheat, rye, or barley grain or flour	Seasoned rice and potato mixes
Beverages	Malt, Postum, Ovaltine, beers, and ales	Commercial chocolate milk, cocoa, and other beverage mixes, such as instant tea mix, dietary supplements
Desserts	Cakes, cookies, and pastries made with wheat, rye, or barley flour	Commercial ice cream and sherbet
Meats and other protein sources		Meat loaf, cold cuts and prepared meats, breaded meats; cheese products; soy protein meat substitutes; commercial egg products
Fruits and vegetables		Commercial seasoned vegetable mixes or vegetables with sauce; canned baked beans; commercial pie fillings
Miscellaneous		Commercial salad dressings and mayonnaise; ketchup and prepared mustard; gravy, white sauce; nondairy creamer; syrups; commercial pickles

bowel to be eliminated in the stool. Diarrhea can interfere with lifestyle, ADLs, skin integrity, and fluid and electrolyte balance.

- Assess and document the frequency and nature of stools. *Bowel elimination reflects the severity of the disease and efficacy of treatment. With effective treatment, stools become less frequent and more normal in color and appearance.*
- Weigh daily, monitor intake and output, and assess skin turgor and mucous membranes for indications of fluid balance. *Diarrhea increases the risk for hypovolemia and dehydration resulting from excess fluid loss in the stool.*
- Assess and document perianal skin condition. *Frequent defecation can irritate skin and mucous membranes, increasing the risk of breakdown.*
- Encourage a liberal fluid intake. *Oral fluids help replace fluid lost through diarrheal stool.*

Imbalanced Nutrition: Less than Body Requirements

Celiac sprue is a chronic condition. With continuing malabsorption, multiple nutrient deficits may occur, resulting in impaired growth and development, impaired healing, muscle wasting, bone disease, and electrolyte imbalances.

- Maintain accurate dietary intake records. *Assessment of dietary intake provides information about compliance with the prescribed diet as well as the adequacy of nutrient intake.*
- Monitor laboratory results, including hemoglobin and hematocrit, serum electrolytes, total serum protein, and albumin levels. *These studies provide information about nutritional status.*
- Arrange for dietary consultation. Provide for food preferences as allowed. *An individualized diet developed to address the client's food preferences as well as nutrient needs will promote appetite and food intake.*
- Provide the prescribed high-kilocalorie, high-protein, low-fat, gluten-free diet for the client with celiac sprue. Restrict lactose (dairy product) intake as indicated. *Calories and protein are important to replace lost nutrients. Fat restriction helps reduce diarrhea and nutrient loss. Lactose may be restricted during initial treatment, then slowly reintroduced into the diet as the gut heals and its normal structure is restored.*
- Provide parenteral nutrition as ordered if the client is unable to absorb enteral nutrients. *Parenteral nutrition can help reverse nutritional deficits and promote weight gain when manifestations are acute.*
- Encourage nutritional supplements. *Nutritional supplements often are necessary to replace losses and restore nutrient levels to normal more rapidly than diet alone can achieve.*
- Include family members, the primary food preparer in particular, in teaching and dietary discussions. *Families can reinforce teaching and help the client maintain required restrictions or kilocalorie intake.*

Community-Based Care

Although tropical sprue can be treated with antibiotic and folic acid therapy, the client with celiac sprue has a chronic condition that requires continuing dietary management.

Provide a detailed list of foods that contain gluten and need to be eliminated from the diet, as well as foods that are allowed.

Teach the client and family how to identify gluten-containing commercial products by reading labels and lists of ingredients. Encourage the purchase and use of a gluten-free cookbook.

If corticosteroids have been prescribed, stress the importance of taking the medication as ordered. Emphasize the need to avoid stopping the medication abruptly and to notify all caregivers that a corticosteroid is part of the client's medication regimen. Instruct to frequently monitor weight. A weight gain of 5 lb (2.3 kg) or more in less than a week usually reflects fluid gain, a possible adverse effect of corticosteroids. Other potential effects include decreased resistance to infection, an impaired inflammatory response, and changes in the metabolism of carbohydrates, proteins, and fats.

THE CLIENT WITH LACTASE DEFICIENCY

For carbohydrates to be absorbed from the small intestine, they first must be broken down into simple sugars, or monosaccharides. Lactose is the primary carbohydrate in milk and milk products. It is a disaccharide, requiring the enzyme lactase for digestion and absorption. Lactase deficiency can lead to **lactose intolerance** and manifestations of malabsorption. Lactase deficiency usually is genetic in origin, but also occurs secondarily to celiac sprue, Crohn's disease, and other disorders affecting the mucosa of the small intestine. There is a racial/ethnic component to the disorder, as described in the Focus on Cultural Diversity box below.

Manifestations

Many people with lactase deficiency are asymptomatic. Small to moderate amounts of milk (one to two 8-ounce glasses) may be well tolerated. Manifestations of lactose intolerance include lower abdominal cramping, pain, and diarrhea following milk ingestion. Undigested lactose ferments in the intestine, forming gases that contribute to bloating and flatus. Lactic and fatty acids produced by this fermentation irritate the bowel, leading to increased motility and abdominal cramping. The undigested lactose draws water into the intestine, which contributes to increased motility and diarrhea. The diarrhea associated with lactose intolerance may be explosive.

INTERDISCIPLINARY CARE

The diagnosis of lactose intolerance usually is based on a history of intolerance to milk and milk products, and a trial of a



FOCUS ON CULTURAL DIVERSITY Lactase Deficiency

- Lactase deficiency affects up to 90% of Asians and Native Americans.
- Lactase deficiency affects approximately 70% of African Americans.
- Lactase deficiency is common among Jewish Americans and Hispanics.
- Less than 25% of Caucasians are affected.

lactose-free diet. If manifestations resolve when lactose intake is eliminated, the diagnosis of lactose intolerance is confirmed.

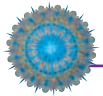
Diagnosis

The lactose breath test is a noninvasive test that may be used to diagnose lactose intolerance. Expired hydrogen gas (H_2) is measured following oral administration of 50 g of lactose. If lactose is digested and absorbed normally, then little change occurs in the amount of exhaled H_2 from fasting to postlactose administration. With lactose intolerance, exhaled H_2 increases following lactose administration as the sugar ferments in the bowel.

For the lactose tolerance test, 100 g of lactose solution is orally administered, followed by measurement of blood glucose levels at intervals of 30, 60, and 120 minutes. If lactose is digested and absorbed normally, the blood glucose rises more than 20 mg/dL. The expected blood glucose elevation does not occur in lactose intolerance.

Nutrition

A lactose-free or reduced lactose diet relieves the manifestations of the disorder. Some clients require total elimination of milk and milk products from the diet. Many can tolerate limited amounts of lactose. Milk pretreated with lactase is readily available. Non-prescription lactase enzyme preparations are available to improve milk tolerance. Yogurt containing bacterial lactases may be well tolerated. Calcium supplements are often recommended, particularly for women on a reduced-lactose or lactose-free diet.



NURSING CARE

Nursing care for the client with lactose intolerance focuses on providing education and support. Discuss sources of lactose: Milk, ice cream, and cottage cheese are high in lactose; aged cheese and yogurt contain much smaller amounts. Potential hidden sources of lactose include sherbets, desserts made from milk and milk chocolate, sauces and gravies, and cream soups. Suggest a trial of lactase-treated milk or lactase enzyme supplements. Emphasize the importance of obtaining nutrients contained in dairy products from other sources. Proteins may be obtained from meats, eggs, legumes, and grains. Other sources of calcium include sardines, oysters, and salmon, as well as plant sources such as beans, cauliflower, rhubarb, and green leafy vegetables.

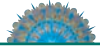
THE CLIENT WITH SHORT BOWEL SYNDROME

The small bowel may be resected due to tumors, infarction of bowel mucosa, incarcerated hernias, Crohn's disease, trauma, and enteropathy resulting from radiation therapy. Resection of significant portions of the small intestine may result in a condition known as *short bowel syndrome*. The severity of the disorder depends on the total amount of bowel resected, as well as the portions of bowel removed. Removal of the proximal portions, including the duodenum, jejunum, and proximal ileum, and the distal portion of the ileum is associated with more severe malabsorption and manifestations than is resection of midportions of the ileum.

Resection of the small intestine affects the absorption of water, nutrients, vitamins, and minerals. Transit time of ingested

foods and fluids is reduced, and digestive processes are impaired. The bowel undergoes an adaptive process in which the remaining villi enlarge and lengthen to increase absorptive surface following resection. For many clients, absorption and bowel function return to preoperative or near-normal levels. Others have continued significant impairment of digestion and absorption, leading to nutrient deficiencies, weight loss, and diarrhea.

INTERDISCIPLINARY CARE



Management of short bowel syndrome focuses on alleviating manifestations. Clients often simply require frequent, small, high-kilocalorie, high-protein feedings.

Diagnosis

Laboratory and diagnostic studies are used to evaluate nutrient deficiencies. Total serum proteins and albumin are reduced, as are serum levels of folate, iron, vitamins, minerals, and electrolytes. Anemia and a prolonged prothrombin time (indicative of vitamin K deficiency) may develop.

Medications

Multivitamin and mineral supplementation is also frequently necessary. Antidiarrheal medications are used to reduce bowel motility, allowing a greater amount of time for nutrient absorption. Some clients are affected by gastric hypersecretion following bowel resection. For these clients, a proton-pump inhibitor such as omeprazole (Prilosec) may be ordered. Clients with severe manifestations of short bowel syndrome may require TPN.



NURSING CARE

Nursing care for the client with short bowel syndrome focuses on the problems of potential fluid volume deficit, malnutrition, and diarrhea.

Fluid losses are generally greatest in the initial periods following surgery, warranting the closest attention at that time. Close monitoring of vital signs, intake and output, daily weights, skin turgor, and condition of mucous membranes is vital. It is important to remember that the risk also is high when other abnormal fluid losses occur through, for example, fever, draining wounds, or excess perspiration.

Document nutritional status, including weight, anthropometric measurements, laboratory values, and kilocalorie intake. Provide nutritional supplementation with enteral feedings as needed. Maintain central lines and TPN, using aseptic technique.

For diarrhea, document the number and character of stools. Administer antidiarrheal medications as ordered. If the client is lactose intolerant, limit intake of milk and milk products. Provide good skin care of the perianal region to prevent breakdown from frequent bowel movements. Refer to the discussion of nursing care for the client with sprue for other measures for altered nutrition and diarrhea.

The client and family affected by this condition require extensive education. Because there is no way to cure or replace

the lost bowel at this time, the client must manage the disorder on a day-to-day basis. Provide instructions about the recommended diet and medication regimen. Emphasize the importance of maintaining an adequate fluid intake, particularly in hot weather or during strenuous exercise. Teach the client to

monitor his or her weight frequently and report changes. Include teaching about possible manifestations of dehydration and nutrient deficiencies that should be reported to the physician. Referring the client to a dietitian or counselor can help the person cope with what may be a lifelong problem.

NEOPLASTIC DISORDERS

Cancer remains the second leading cause of death in the United States, preceded only by heart disease. Although cancer may affect any portion of the digestive tract, the large intestine and rectum are the most common sites. Malignant neoplasms of the lower bowel are the second leading cause of death from cancer (after lung cancer), making this a significant healthcare concern.

THE CLIENT WITH POLYPS

A *polyp* is a mass of tissue that arises from the bowel wall and protrudes into the lumen. Polyps may develop in any portion of the bowel, but they occur most often in the sigmoid colon and rectum. They vary considerably in size and may be single or multiple. It is estimated that approximately 30% of people over the age of 50 have polyps. Although most polyps are benign, some have the potential to become malignant.

Pathophysiology

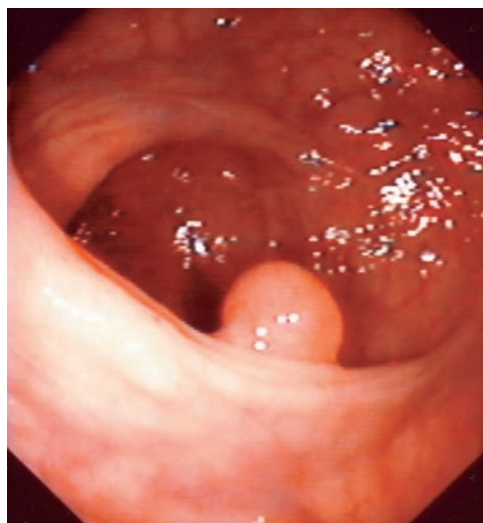
Polyps are identified by their structure and tissue type. Most polyps are adenomas, benign epithelial tumors that are considered premalignant lesions. Greater than 95% of adenocarcinomas arise from adenomas. Of polyps that are removed during colonoscopy, more than 70% are adenomatous (Tierney et al., 2005).

Adenomatous polyps represent disruption of the normal process of cell proliferation to replace epithelial cells lining the intestine. Cells are constantly being reproduced to replace those shed as feces move through the colon. Disruption of the normal process of cell division and maturation can lead to for-

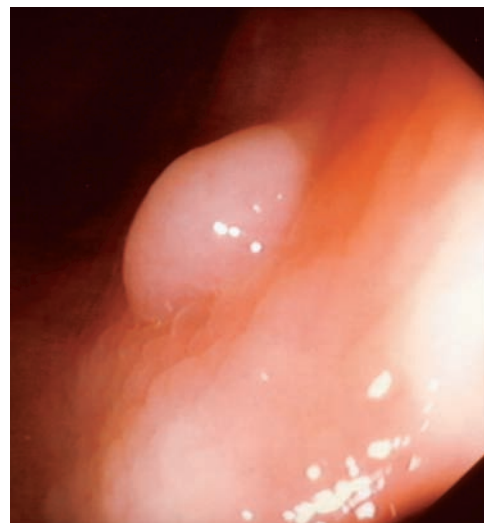
mation of a polyp composed of tightly packed epithelial cells. The cells may appear grossly normal or show signs of dysplasia. Polyps may develop as tubular, villous, or tubulovillous adenomas. Polyps may be named by the way they are attached to the bowel wall as either sessile (raised nodules) or pedunculated (attached by a stalk) (Figure 26–8 ■).

Tubular adenomas (also called pedunculated polyps) are more common than sessile polyps and account for about 65% of benign polyps of the large intestine (Porth, 2005). A tubular adenoma is a globelike structure attached to the intestinal wall by a thin, stalk-like stem. The incidence of this type of polyp increases with age, although it occurs in all age groups and in both genders. Most are small, 1 cm or less in diameter, although they may be as large as 4 to 5 cm. The malignant potential of these polyps seems to be related to their size. Small adenomas less than 1 cm have a low risk of being malignant, and larger adenomas greater than 1 cm have a much higher risk of harboring malignancy or a high-grade dysplasia. Adenomatous polyps are present in 35% of adults greater than 50 years of age (Tierney et al., 2005).

Villous adenomas (also called sessile polyps) have a broad base and an elevated, cauliflower-like surface (Figure 26–8B). They typically develop in the rectosigmoid colon. This type of polyp is often larger than tubular adenomas, usually more than 5 cm. Villous adenomas are not common, accounting for about 10% of colon polyps. They have a higher malignant potential than tubular adenomas. Some adenomatous polyps contain both tubular epithelium and villi and are known as *tubulovillous adenomas*.



A



B

Figure 26–8 ■ A, Tubular (or pedunculated) polyps; and B, villous (or sessile) polyps.

Source: ISM/Phototake NYC

Manifestations

Most polyps are asymptomatic, found coincidentally during routine examination or diagnostic testing. Intermittent painless rectal bleeding, bright or dark red, is the most common presenting complaint. A large polyp may cause abdominal cramping, pain, or manifestations of obstruction. Diarrhea and mucous discharge may be associated with a large villous adenoma.

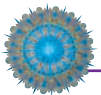
INTERDISCIPLINARY CARE



The diagnosis of intestinal polyps is generally based on diagnostic studies such as sigmoidoscopy or colonoscopy. A rectal polyp may be palpable on digital examination, but further studies are necessary to determine its size and type and the extent of colon involvement, and to assess for malignancy.

Once identified, polyps are removed because of the risk of malignancy. Pedunculated polyps and small villous lesions may be removed during colonoscopy using an electrocautery snare or hot biopsy forceps passed through the scope. This relatively safe procedure has less than a 2% risk of complications such as perforation or hemorrhage. Large villous adenomas are completely excised and examined histologically for evidence of malignancy. In some cases, the colon segment containing the polyp is resected; a total colectomy with ileorectal anastomosis may be performed for multiple polyps in different anatomic parts of the colon.

Treatment following polypectomy depends on histologic examination of the excised tissue. Because polyps tend to recur, follow-up colonoscopy is recommended in 3 years and then every 5 years if no further polyps are detected. When the polyp is found to be malignant, follow-up care is determined by the tissue type and degree of invasion.



NURSING CARE

Health Promotion

The incidence of intestinal polyps increases with age. They affect men and women equally. It is believed that an adenomatous polyp requires more than 5 years of growth to become significant in size and malignant potential. Advise all clients to have a screening for colorectal cancer (with a colonoscopy being the “gold standard” for diagnosis) at age 50 and as recommended thereafter for early detection of polyps (American Cancer Society [ACS], 2005a).

Assessment

Polyps are a “silent” disease, with few or no manifestations.

- **Health history:** Rectal bleeding; personal or family history of intestinal polyps or colorectal cancer.

Nursing Diagnoses and Interventions

Nursing care for the client with polyps focuses on education and assisting the client through diagnostic testing and polyp removal. Before and after colonoscopy and polypectomy, provide direct care and teaching about the procedure, expected

sensations during the procedure, and anticipated postoperative care. Cathartics are prescribed prior to colonoscopy; cleansing enemas also may be ordered. Observe for evidence of fluid and electrolyte imbalance during preoperative preparation. If enemas are ordered, use normal saline (not tap water) to reduce the risk of electrolyte imbalances. Following polypectomy, observe closely for possible complications such as hemorrhage.

Community-Based Care

Include the following topics when teaching for home care:

- The significance of polyps and their relationship to colorectal cancer
- The importance of keeping follow-up appointments and undergoing repeat colonoscopy as recommended: at 3 years following polypectomy, then every 5 to 10 years unless additional polyps are found
- Manifestations to report to the physician, such as diarrhea, pain, rectal bleeding, light-headedness, or other indications of possible blood loss.

THE CLIENT WITH COLORECTAL CANCER

Colorectal cancer (cancer of the colon or rectum) is the third most common cancer diagnosed in the United States. In the United States, about 145,290 new cases of colorectal cancer were diagnosed in 2005, and is expected to cause about 56,290 deaths (28,540 men and 27,750 women) during 2005 (ACS, 2005b). Earlier diagnosis and improved treatment have improved the survival rate for colorectal cancer. Its incidence, which is nearly equal among men and women, has been declining in the United States for the past 15 years. Colorectal cancer occurs most frequently after age 50. The incidence continues to rise with increasing age. With early diagnosis and treatment, the 5-year survival rate for colorectal cancer is 90%; however, only 39% of colorectal cancers are diagnosed at this early stage.

Although the specific cause of colorectal cancer is unknown, a number of risk factors have been identified (Box 26–2). Genetic factors are strongly linked to the risk for colorectal cancer. Up to 20% of people who develop colorectal cancer have a family history of the disease (ACS, 2005c). Persons with familial adenomatous polyposis inevitably will develop colon cancer unless the colon is removed. Hereditary nonpolyposis colorectal cancer (also known as Lynch syndrome) is an autosomal dominant disorder that significantly increases the risk for developing colorectal and other cancers. Tumors associated with Lynch

BOX 26–2 Risk Factors for Colorectal Cancer

- Age over 50 years
- Polyps of the colon and/or rectum
- Family history of colorectal cancer
- Inflammatory bowel disease
- Exposure to radiation
- Diet: high animal fat and kilocalorie intake

syndrome often affect the ascending colon, and tend to occur at an earlier age. Inflammatory bowel diseases also increase the risk of colorectal cancer.

Diet plays a role in the development of colorectal cancer. The disease is prevalent in economically prosperous countries where people consume diets high in calories, meat proteins, and fats. This dietary pattern, common in the United States, is thought to increase the population of anaerobic bacteria in the gut. These anaerobes convert bile acids into carcinogens. Diets high in fruits and vegetables, folic acid, and calcium appear to reduce the risk of colorectal cancer. Cereal fiber, once thought to reduce colorectal cancer risk, does not now appear to play a role either way in its development. Other factors that may reduce the risk of colorectal cancer include regular exercise, taking a daily multivitamin, and the use of aspirin and other NSAIDs.

Pathophysiology

Nearly all colorectal cancers are adenocarcinomas that begin as adenomatous polyps. Most tumors develop in the rectum and sigmoid colon, although any portion of the colon may be affected (Figure 26–9 ■). The tumor typically grows undetected, producing few manifestations. By the time manifestations occur, the disease may have spread into deeper layers of the bowel tissue and adjacent organs. Colorectal cancer spreads by direct extension to involve the entire bowel circumference, the submucosa, and outer bowel wall layers. Neighboring structures such as the liver, greater curvature of the stomach, duodenum, small intestine, pancreas, spleen, genitourinary tract, and abdominal wall also may be involved by direct extension. Metastasis to regional lymph nodes is the most common form of tumor spread. This is not always an orderly process; distal nodes may contain cancer cells while regional nodes remain normal. Cancerous cells from the primary tumor may also spread by way of the lymphatic system or circulatory system to secondary sites such as the liver, lungs, brain, bones, and kidneys. “Seeding” of the tumor to other areas of the peritoneal cavity can occur when the tumor extends through the serosa or during surgical resection.

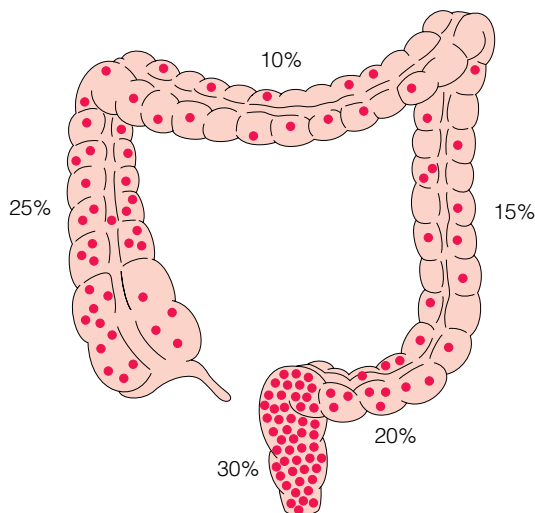


Figure 26–9 ■ The distribution and frequency of cancer of the colon and rectum.

Manifestations

Bowel cancer often produces no manifestations until it is advanced. Because it grows slowly, 5 to 15 years of growth may occur before manifestations develop. The manifestations depend on its location, type and extent, and complications. Rectal bleeding is often the initial manifestation that prompts clients to seek medical care. Other common early manifestations include a change in bowel habits, either diarrhea or constipation. Pain, anorexia, and weight loss are characteristic in advanced disease. A palpable abdominal or rectal mass may be present. Occasionally the client presents with anemia from occult bleeding.

Complications

The primary complications associated with colorectal cancer are (1) bowel obstruction due to narrowing of the bowel lumen by the lesion; (2) perforation of the bowel wall by the tumor, allowing contamination of the peritoneal cavity by bowel contents; and (3) direct extension of the tumor to involve adjacent organs.

Most recurrences of colorectal cancer after tumor removal occur within the first 4 years. The size of the primary tumor does not necessarily relate to long-term survival. The number of involved lymph nodes, penetration of the tumor through the bowel wall, and tumor adherence to adjacent organs are better predictors of the prognosis for the disease.

INTERDISCIPLINARY CARE



The focus of interdisciplinary care for colorectal cancer is prevention, early detection, and intervention. Colorectal cancer is always treated by surgical resection, with chemotherapy and radiation therapy used as adjuncts.

Prevention

Measures to prevent colon cancer that are considered to be effective and safe include oral supplements of calcium and folic acid, diets high in fruits and vegetables and low in saturated fat and red meat, regular exercise, avoiding obesity, and quitting smoking. Although considered safe, these measures are the subject of further research to demonstrate conclusive proof of effectiveness (MedicineNet.com, 2005).


Screening

The American Cancer Society (2005c) recommends one of the following testing schedules for the early detection of colorectal cancer, beginning at age 50. These options are acceptable choices for average-risk adults.

- Yearly fecal occult blood test (FOBT) or fecal immunochemical test (FIT). (For FOBT, the take-home multiple sample method should be used.)
- Flexible sigmoidoscopy every 5 years.
- Yearly FOBT or FIT plus flexible sigmoidoscopy every 5 years.
- Double-contrast barium enema every 5 years.
- Colonoscopy every 10 years.

Diagnosis

Diagnostic and laboratory tests are used for screening, diagnosis, and monitoring purposes. Diagnostic tests include a sig-

moidoscopy or colonoscopy as the primary diagnostic test used to detect and visualize tumors. While flexible sigmoidoscopy can detect 50% to 65% of colorectal cancers, many clinicians recommend colonoscopy. Tissue for biopsy is obtained at the time of endoscopy to confirm cancerous tissue and evaluate cell differentiation (see Chapter 14 ). Current staging methods primarily use the TNM system, as outlined in Table 26–12. Radiologic examinations may include a chest x-ray to detect tumor metastasis to the lung, and computed tomography (CT) scan, magnetic resonance imaging (MRI), or ultrasonic examination may be used to assess tumor depth and involvement of other organs by direct extension or metastasis.

Laboratory tests used are a fecal occult blood (by guaiac or hemoccult testing) to detect blood in the feces, a CBC to detect anemia resulting from chronic blood loss and tumor growth, and a carcinoembryonic antigen (CEA) level, which is a tumor marker that can be detected in the blood of clients with colorectal cancer. CEA levels are used to estimate prognosis, monitor treatment, and detect cancer recurrence.

Laser Photocoagulation

Laser photocoagulation uses a very small, intense beam of light to generate heat in tissues toward which it is directed. The heat generated by the laser beam can be used to destroy small tumors. It is also used for palliative surgery of advanced tumors to remove obstruction. Laser photocoagulation can be performed endoscopically and is useful for clients who cannot tolerate major surgery.

Surgery

Surgical resection of the tumor, adjacent colon, and regional lymph nodes is the treatment of choice for colorectal cancer. Options for surgical treatment vary from destruction of the tumor by

laser photocoagulation performed during endoscopy to abdominoperineal resection with permanent colostomy. When possible, the anal sphincter is preserved and colostomy avoided.

Other surgical treatment options for small, localized tumors include local excision and fulguration. These procedures also may be performed during endoscopy, eliminating the need for abdominal surgery. Local excision may be used to remove a disk of rectum containing a tumor in clients with a small, well-differentiated, mobile polypoid lesion. *Fulguration* or electrocoagulation is used to reduce the size of some large tumors for clients who are poor surgical risks. This procedure requires general anesthesia and may need to be repeated at intervals.

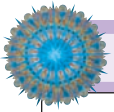
Most clients with colorectal cancer undergo surgical resection of the colon with anastomosis of remaining bowel as a curative procedure. The distribution of regional lymph nodes determines the extent of resection because these may contain metastatic lesions. Most tumors of the ascending, transverse, descending, and sigmoid colon can be resected.

Tumors of the rectum usually are treated with an abdominoperineal resection in which the sigmoid colon, rectum, and anus are removed through both abdominal and perineal incisions. A permanent sigmoid colostomy is performed to provide for elimination of feces. Nursing care of the client having bowel surgery is outlined on page 804.

COLOSTOMY Surgical resection of the bowel may be accompanied by a colostomy for diversion of fecal contents. A **colostomy** is an ostomy made in the colon. It may be created if the bowel is obstructed by the tumor, as a temporary measure to promote healing of anastomoses, or as a permanent means of fecal evacuation when the distal colon and rectum are removed. Colostomies take the name of the portion of the colon from which they are formed: ascending colostomy,

TABLE 26–12 The TNM Classification for Colorectal Cancer

STAGE	PRIMARY TUMOR (T)	REGIONAL LYMPH NODES (N)	DISTANT METASTASIS (M)
	TX—Primary tumor cannot be assessed TO—No evidence of primary tumor	NX—Regional lymph node cannot be assessed	MX—Presence of distant metastasis cannot be assessed
Stage 0	Tis—Carcinoma <i>in situ</i>	NO—No regional lymph node metastasis	MO—No distant metastasis
Stage I	T1—Tumor invades submucosa T2—Tumor invades muscularis propria		
Stage II	T3—Tumor invades through muscularis propria into subserosa or into non-peritonealized pericolic or perirectal tissues T4—Tumor perforates visceral peritoneum or directly invades other organs or structures		
Stage III	Any T	N1—Metastasis in 1 to 3 pericolic or perirectal lymph nodes N2—Metastasis in 4 or more pericolic or perirectal lymph nodes N3—Metastasis in any lymph node along course of a major named vascular trunk	
Stage IV	Any T	Any N	M1—Distant metastasis



NURSING CARE OF THE CLIENT HAVING Bowel Surgery

PREOPERATIVE NURSING CARE

- Provide routine preoperative care for the surgical client as outlined in Chapter 4.
- Arrange for consultation with enterostomal therapy (ET) specialist if appropriate. *The ET nurse is trained to identify and mark an appropriate stoma location, taking into consideration the level of ostomy, skinfolds, and the client's clothing preferences. Initial ostomy care teaching also is provided by the ET nurse during the preoperative visit.*
- Insert a nasogastric tube if ordered. *Although it is often inserted in the surgical suite just prior to surgery, the nasogastric tube may be placed preoperatively to remove secretions and empty stomach contents.*
- Perform bowel preparation procedures as ordered. *Oral and parenteral antibiotics as well as cathartics and enemas may be prescribed preoperatively to clean the bowel and reduce the risk of peritoneal contamination by bowel contents during surgery.*

POSTOPERATIVE NURSING CARE

- Provide routine care for the surgical client (Chapter 4).
- Monitor bowel sounds and degree of abdominal distention. *Surgical manipulation of the bowel disrupts peristalsis, resulting in an initial ileus. Bowel sounds and the passage of flatus indicate a return of peristalsis.*
- Assess the position and patency of the nasogastric tube, connecting it to low suction. If the tube becomes clogged, gently irrigate with sterile normal saline. *A nasogastric or gastrostomy tube is used postoperatively to provide gastrointestinal decompression and facilitate healing of the anastomosis. Ensuring its patency is important for comfort and healing.*
- Assess color, amount, and odor of drainage from surgical drains and the colostomy (if present), noting any changes or the pres-

ence of clots or bright bleeding. *Initial drainage may be bright red and then become dark and finally clear or greenish yellow over the first 2 to 3 days. A change in the color, amount, or odor of the drainage may indicate a complication such as hemorrhage, intestinal obstruction, or infection.*

- Alert all personnel caring for the client with an abdominoperineal resection to avoid rectal temperatures, suppositories, or other rectal procedures. *These procedures could disrupt the anal suture line, causing bleeding, infection, or impaired healing.*
- Maintain intravenous fluids while nasogastric suction is in place. *The client on nasogastric suction is unable to take oral food and fluids and, moreover, is losing electrolyte-rich fluid through the nasogastric tube. If replacement fluid and electrolytes are not maintained, the client is at risk for dehydration, sodium, potassium, and chloride imbalance, and metabolic alkalosis.*
- Provide antacids, histamine₂ receptor antagonists, and antibiotic therapy as ordered. *The above medications may be ordered for the postoperative client, depending on the procedure performed. Antibiotic therapy is a common measure to prevent infection resulting from contamination of the abdominal cavity with gastric contents.*
- Resume oral food and fluids as ordered. Initial feedings may be clear liquids, progressing to full liquids, and then frequent small feedings of regular foods. Monitor bowel sounds and monitor for abdominal distention frequently during this period. *Oral feedings are reintroduced slowly to minimize abdominal distention and trauma to the suture lines.*
- Begin discharge planning and teaching. Consult with a dietitian for instructions and menu planning; reinforce teaching. Teach about potential postoperative complications such as abdominal abscess, or bowel obstruction, their signs and symptoms, and preventive measures.

transverse colostomy, descending colostomy, and sigmoid colostomy (Figure 26–10).

A *sigmoid colostomy* is the most common permanent colostomy performed, particularly for cancer of the rectum. It

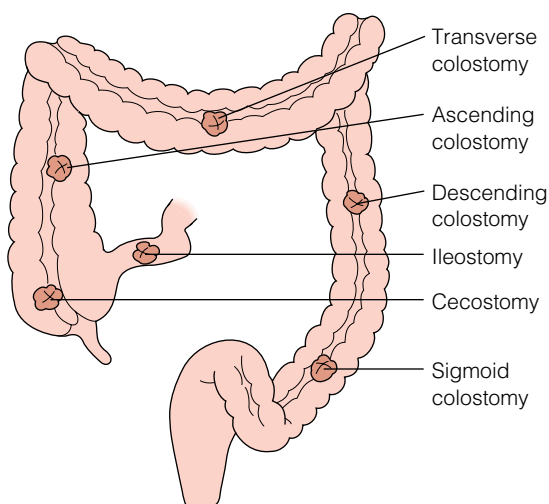


Figure 26–10 ■ Various ostomy levels and sites.

is usually created during an abdominoperineal resection. This procedure involves the removal of the sigmoid colon, rectum, and anus through abdominal and perineal incisions. The anal canal is closed, and a stoma formed from the proximal sigmoid colon. The stoma usually is located on the lower left quadrant of the abdomen.

When a *double-barrel colostomy* is performed, two separate stomas are created (Figure 26–11). The distal colon is not removed, but bypassed. The proximal stoma, which is functional, diverts feces to the abdominal wall. The distal stoma, also called the mucous fistula, expels mucus from the distal colon. It may be pouched or dressed with a 4 × 4 gauge dressing. A double-barrel colostomy may be created for cases of trauma, tumor, or inflammation, and it may be temporary or permanent.

An emergency procedure used to relieve an intestinal obstruction or perforation is called a *transverse loop colostomy*. During this procedure, a loop of the transverse colon is brought out from the abdominal wall and suspended over a plastic rod or bridge, which prevents the loop from slipping back into the abdominal cavity. The loop stoma may be opened at the time of surgery or a few days later at the client's bedside. The bridge may be removed in 1 to 2 weeks. Transverse loop colostomies are typically temporary.

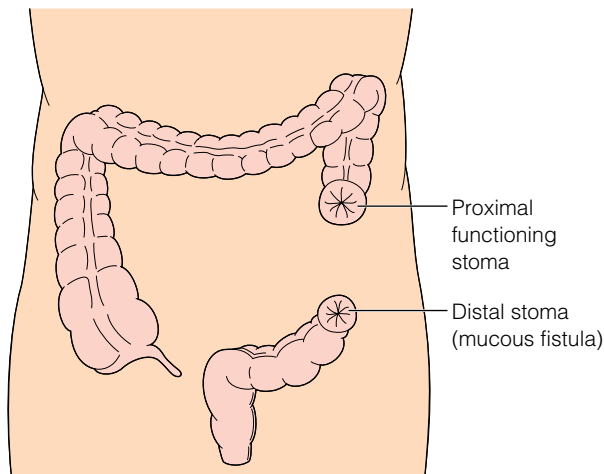


Figure 26–11 ■ A double-barrel colostomy. The proximal stoma is the functioning stoma; the distal stoma expels mucus from the distal colon.

In a *Hartmann procedure*, a common temporary colostomy procedure, the distal portion of the colon is left in place and is oversewn for closure. A temporary colostomy may be done to allow bowel rest or healing, such as following tumor resection or inflammation of the bowel. It also may be created following traumatic injury to the colon, such as a gunshot wound. Anastomosis of the severed portions of the colon is delayed because bacterial colonization of the colon would prevent proper healing of the anastomosis. About 3 to 6 months following a temporary colostomy, the colostomy is closed and the colon is reconnected. Clients with temporary colostomies require the same care as clients with permanent colostomies. See nursing care for a client with a colostomy on page 806.

Radiation Therapy

Although radiation therapy is not used as a primary treatment for colon cancer, it is used with surgical resection for treating rectal tumors. Small rectal cancers may be treated with intracavitary, external, or implantation radiation. Rectal cancer has a high rate of regional recurrence following complete surgical resection, particularly when the tumor has invaded tissues outside the bowel wall or regional lymph nodes. Pre- or postoperative radiation therapy reduces the recurrence of pelvic tumors, although the effect of radiation therapy on long-term survival is less clear. Radiation therapy also is used preoperatively to shrink large rectal tumors enough to permit surgical removal of the tumor.

Chemotherapy

Chemotherapeutic agents, such as intravenous fluorouracil (5-FU) and folinic acid (leucovorin), are also used postoperatively as adjunctive therapy for colorectal cancer. When combined with radiation therapy, chemotherapy reduces the rate of tumor recurrence and prolongs survival for clients with stage II and stage III rectal tumors. The benefit for colon cancers is less clear, but chemotherapy may be used to reduce its spread to the liver and prevent recurrence. Irinotecan (CPT-11) or oxaliplatin also may be used in chemotherapy regimens for colorectal can-

cer. Further discussion about chemotherapy and nursing implications is included in Chapter 14 ∞.



NURSING CARE

Health Promotion

Primary prevention of colorectal cancer is a significant nursing care issue. Teach clients about dietary recommendations provided by the American Cancer Society for the prevention of colorectal cancer. These recommendations include decreasing the amount of fat, refined sugar, and red meats in the diet while increasing intake of dietary fiber. Foods that contain high amounts of fiber include raw fruits and vegetables, legumes, and whole-grain products.

Stress the importance of regular health examinations, including digital rectal exams. Discuss recommendations for regular hemoccult testing of stool after age 40. Include the importance of seeking medical treatment if blood is noted in or on the stool. Teach clients the warning signs for cancer, including those specific to bowel cancer, such as a change in bowel habits.

Assessment

- **Health history:** Usual bowel patterns and any recent changes; weight loss, fatigue, decreased activity tolerance; presence of blood in the stool; pain with defecation, abdominal discomfort, perineal pain; usual diet; family history of colon cancer, other specific risk factors such as inflammatory bowel disease or colon polyps.
- **Physical examination:** General appearance; weight; abdominal shape, contour; bowel sounds, abdominal tenderness; stool hemoccult or guaiac.

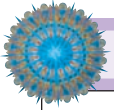
Nursing Diagnoses and Interventions

In planning and implementing care, consider both physical care needs and emotional response to the diagnosis. Because colorectal cancer is often advanced at the time of diagnosis, the prognosis, even with treatment, may be poor. Denial and anger are common. Extensive abdominal surgery and potentially a colostomy may be necessary, and the effects of chemotherapy and radiation therapy can leave the client fatigued and discouraged. A nursing care plan for a client with colorectal cancer is included on page 807.

Nursing care includes providing emotional support, teaching, and direct care before and after diagnostic procedures and surgery and during adjunctive treatments. Priority nursing diagnoses include *Acute Pain*, *Imbalanced Nutrition*, and *Anticipatory Grieving*. *Risk for Sexual Dysfunction* should be considered as a priority diagnosis if a colostomy has been created.

PRACTICE ALERT

If an abdominoperineal resection has been performed, alert all care personnel to avoid rectal temperatures, suppository use, or other procedures that could damage sutures.



NURSING CARE OF THE CLIENT WITH A Colostomy

- Assess the location of the stoma and the type of colostomy performed. *Stoma location is an indicator of the section of bowel in which it is located and a predictor of the type of fecal drainage to expect.*
- Assess stoma appearance and surrounding skin condition frequently (see the box page 789). *Assessment of stoma and skin condition is particularly important in the early postoperative period, when complications are most likely to occur and most treatable.*
- Position a collection bag or drainable pouch over the stoma. *Initial drainage may contain more mucus and serosanguineous fluid than fecal material. As the bowel starts to resume function, drainage becomes fecal in nature. The consistency of drainage depends on the stoma location in the bowel.*
- If ordered, irrigate the colostomy, instilling water into the colon similar to an enema procedure. *The water stimulates the colon to empty.*
- When a colostomy irrigation is ordered for a client with a double-barrel or loop colostomy, irrigate the proximal stoma. Digital assessment of the bowel direction from the stoma can assist in determining which is the proximal stoma. *The distal bowel carries no fecal contents and does not need irrigation. It may be irrigated for cleansing just prior to reanastomosis.*
- Empty a drainable pouch or replace the colostomy bag as needed or when it is no more than one-third full. *If the pouch is allowed to overfill, its weight may impair the seal and cause leakage.*
- Provide stomal and skin care for the client with a colostomy as for the client with an ileostomy (see the box on page 789). *Good skin and stoma care is important to maintain skin integrity and function as the first line of defense against infection.*
- Use caulking agents, such as Stomahesive or karaya paste, and a skin barrier wafer as needed to maintain a secure ostomy pouch. This may be particularly important for the client with a loop colostomy. *The main challenge for a client with a transverse loop colostomy is to maintain a secure ostomy pouch over the plastic bridge.*
- A small needle hole high on the colostomy pouch will allow flatus to escape. This hole may be closed with a Band-Aid and opened only while the client is in the bathroom for odor control. *Ostomy bags may “balloon” out, disrupting the skin seal, if excess gas collects.*

Health Education for the Client and Family

- Prior to discharge, provide written, verbal, and psychomotor instruction on colostomy care, pouch management, skin care, and irrigation for the client. *Whether the colostomy is tempo-*

rary or permanent, the client will be responsible for its management. Good understanding of procedures and care enhances the ability to provide self-care, as well as self-esteem and control.

- Allow ample time for the client (and family, if necessary) to practice changing the pouch, either on the client or a model. *Practice of psychomotor skills improves learning and confidence.*
- If an abdominoperineal resection has been performed, emphasize the importance of using no rectal suppositories, rectal temperatures, or enemas. Suggest that the client carry medical identification or a Medic-Alert tag or bracelet. *These measures are important to prevent trauma to the tissues when the rectum has been removed.*
- The diet for a client with a colostomy is individualized and may require no alteration from that consumed preoperatively. Dietary teaching should, however, include information on foods that cause stool odor and gas and foods that thicken and loosen stools. Foods that cause these effects on ostomy output are listed below.

Foods That Increase Stool Odor

- Asparagus
- Beans
- Cabbage
- Eggs
- Fish
- Garlic
- Onions
- Some spices

Foods That Increase Intestinal Gas

- Beer
- Broccoli
- Brussels sprouts
- Cabbage
- Carbonated drinks
- Cauliflower
- Corn
- Cucumbers
- Dairy products
- Dried beans
- Peas
- Radishes
- Spinach

Foods That Thicken Stools

- Applesauce
- Bananas
- Bread
- Cheese
- Yogurt
- Pasta
- Pretzels
- Rice
- Tapioca
- Creamy peanut butter

Foods That Loosen Stools

- Chocolate
- Dried beans
- Fried foods
- Greasy foods
- Highly spiced foods
- Leafy green vegetables
- Raw fruits and juices
- Raw vegetables

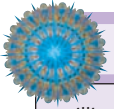
Foods That Color Stools

- Beets
- Red gelatin

Acute Pain

The client with colorectal cancer may experience pain related to preparatory procedures, diagnostic examinations, and surgery. Following an abdominoperineal resection, “phantom” rectal pain related to the severing of nerves during the wide excision of the rectum may develop. Finally, the primary tumor it-

self and, potentially, metastatic tumors may impinge on nerves and other organs, causing pain. In the early postoperative period, an epidural infusion or PCA often is used to manage pain. PCA, routine administration of ordered analgesics, or a continuous analgesia delivery (CAD) system also may be used for pain management when the tumor is far enough advanced to



NURSING CARE PLAN A Client with Colorectal Cancer

William Cunningham is a 65-year-old retired railroad employee, husband, and father of three grown children. For the past 3 months, Mr. Cunningham has noticed small amounts of blood and occasional mucous in his stools. He has a sensation of pressure in the rectum, and notices that his stools are smaller in diameter, about the size of pencil. After palpating a mass on digital examination of the rectum, the physician orders a colonoscopy. A large sessile lesion is found in the rectum and biopsied. The pathology report shows the lesion to be adenocarcinoma. Mr. Cunningham is scheduled for an abdominoperineal resection and sigmoid colostomy.

ASSESSMENT

Madonna Hart, RN, completes the admission assessment. Mr. Cunningham states that his bowel habits have recently changed, but denies pain or other symptoms. Physical assessment findings include T 98.4°F (36.9°C), P 82, R 18, and BP 118/78. He is 70 inches (178 cm) tall and weighs 185 lb (84 kg). Laboratory findings are normal except for the previous pathology report of adenocarcinoma of rectal lesion.

Mr. Cunningham states, “I really don’t want a colostomy, but if that is what it takes to get rid of this, I’m ready to get it over with.”

DIAGNOSES

- *Acute Pain* related to surgical intervention
- *Risk for Impaired Skin Integrity (Peristomal)* related to fecal drainage and pouch adhesive
- *Risk for Constipation/Diarrhea* related to effects of surgery on bowel function
- *Disturbed Body Image* related to colostomy
- *Risk for Sexual Dysfunction* related to wide rectal incision, radiation therapy, and colostomy

EXPECTED OUTCOMES

- Report pain within an acceptable range that allows ease of movement and ambulation.

- Perform colostomy care using correct technique.
- Demonstrate willingness to discuss changes in sexual function.
- Wear clothing to enhance physical and emotional self-esteem.

PLANNING AND IMPLEMENTATION

- Provide analgesia as ordered, evaluating its effectiveness.
- Discuss foods that cause odor and gas.
- Teach colostomy care.
- Maintain consistent nursing personnel assignment to facilitate trust.
- Refer to the local United Ostomy Association.
- Provide a list of local medical supply companies for ostomy supplies.
- Provide for privacy when teaching and discussing concerns about ostomy.

EVALUATION

On discharge, Mr. Cunningham is able to empty and rinse out his colostomy pouch. He is changing the pouch and caring for surrounding skin appropriately. Ms. Hart has given him verbal and written instructions on colostomy care. He verbalizes understanding of phantom rectal pain, and the importance of avoiding rectal suppositories. He expresses an understanding of the need to avoid heavy lifting, and the importance of follow-up care. Ms. Hart has referred Mr. Cunningham to a home health agency in his community for further questions and follow-up care.

CRITICAL THINKING IN THE NURSING PROCESS

1. What is the cause of phantom rectal pain?
2. Why is it important to discuss dietary concerns with a client with a colostomy, especially odor- and gas-forming foods?
3. Outline a plan to teach Mr. Cunningham how to irrigate a colostomy.
4. Develop a care plan for Mr. Cunningham for the nursing diagnosis *Disturbed Body Image*.

See Evaluating Your Response in Appendix C.

preclude surgical resection. See Chapter 9  for more information on caring for clients with pain.

- Monitor for adequate pain relief. Use subjective and objective information, including the location, intensity, and character of the pain, as well as nonverbal signs, such as grimacing; muscle tension; apparent dozing; changes in pulse or blood pressure; rapid, shallow respirations. *The client may assume that pain is to be expected or tolerated or may fear becoming addicted to analgesic medications. Careful questioning and assessment can provide accurate information about pain status, allowing better control of discomfort.*
- Ask client to rate pain using a 0 to 10 pain scale. Document the level of pain. *Pain is a subjective experience. Clients perceive and respond to pain differently. Religion and ethnic background may affect the response to pain.*
- Monitor analgesic effectiveness 30 minutes after administration. Monitor for pain relief and adverse effects. *The method of delivery, dosage, or medication itself may need to be adjusted to provide adequate pain relief.*

- Assess the incision for inflammation or swelling; assess drainage catheters and tubes for patency. *Poorly controlled pain or pain that changes may be related to organ distention from an obstructed nasogastric tube, urinary catheter, or wound drain, or may indicate an infection.*
- Assess the abdomen for distention, tenderness, and bowel sounds. *Intra-abdominal bleeding, peritonitis, or paralytic ileus can cause pain that may be confused with incisional pain.*
- Administer analgesia prior to an activity or procedure. *Adequate pain relief reduces muscle tension, allowing for more comfortable participation in activities.*
- Assist with adjunctive comfort measures, such as positioning, diversional activities, management of environmental stimuli, guided imagery, and teaching relaxation techniques. *These measures enhance the effects of analgesia by reducing muscle tension.*
- Splint incision with a pillow, and teach the client how to self-splint when coughing and deep breathing *to prevent respiratory complications related to fear of pain.*

Imbalanced Nutrition: Less than Body Requirements

Bowel preparation for diagnostic procedures, surgery, radiation therapy, and chemotherapy place the client with colorectal cancer at risk for nutritional deficiencies. Fluid and electrolyte replacement is provided following surgery, along with possible TPN (see Chapter 22 ∞). Adequate kilocalorie and nutrient intake are necessary for healing after surgery. Additionally, if the tumor is advanced, metabolic needs may be increased and the appetite decreased.

- Assess nutritional status, using data such as height and weight, skinfold measurements, body mass index (BMI) calculation (see Chapter 21 ∞), and laboratory data including serum albumin level. Refer to dietitian or nutritionist for dietary management. *The client who is malnourished before beginning aggressive cancer treatment requires more vigorous nutrition management to promote healing.*
- Assess readiness for resumption of oral intake after surgery or procedures using data such as statements of hunger, presence of bowel sounds, passage of flatus, and minimal abdominal distention. *Manipulation of the bowel interrupts peristalsis of the GI tract. It is important to ensure that peristalsis has resumed prior to resumption of oral intake.*
- Monitor and document food and fluid intake. *Documentation helps identify the adequacy of kilocalories and other nutrient intake.*
- Weigh daily. *Weight fluctuation may indicate adequate or inadequate dietary intake.*
- Maintain TPN and central intravenous lines as ordered. *Parenteral nutrition prevents tissue catabolism and promotes healing when food intake is disrupted for more than 2 to 3 days.*
- When oral intake resumes, help the client develop a meal plan that incorporates food preferences and considers the client's schedule and environment. *Consideration of likes, dislikes, and circumstances in meal planning promotes adequate intake.*

Anticipatory Grieving

When a bowel resection is performed for colorectal cancer, the client needs to adjust to the loss of a major body part as well as to the diagnosis of cancer. Even when the prognosis for recovery is good, many people perceive cancer as fatal. Supporting the client and family during the initial stages of grieving can improve physical recovery as well as psychologic coping and eventual adaptation.

- Work to develop a trusting relationship with the client and family. *This increases the nurse's effectiveness in helping them work through the grieving process.*
- Listen actively, encouraging the client and family to express their fears and concerns. Assist to identify strengths, past experiences, and support systems:
 - Demonstrate respect for cultural, spiritual, and religious values and beliefs; encourage use of these resources to cope with losses.
 - Encourage discussion of the potential impact of loss on individual family members, family structure, and family

function. Assist family members to share concerns with one another.

- Refer to cancer support groups, social services, or counseling as appropriate.

These resources can be used throughout the grieving process.

Risk for Sexual Dysfunction

Colorectal cancer and ostomy surgery increase the risk for sexual dysfunction, defined as a change in sexual function so that it becomes unsatisfying, unrewarding, or inadequate (NANDA, 2005). Physical factors that can lead to sexual dysfunction include disruption of nerves and blood vessels that supply the genitals, radiation therapy, chemotherapy, and other medications prescribed after surgery.

Psychologically, an *ostomate* (client with an ostomy) experiences an altered body image and may develop low self-esteem. The client may feel undesirable and fear rejection. He or she may be concerned about odors or pouch leakage during sexual activity. This emotional stress can also contribute to sexual dysfunction.

- Provide opportunities for the client and family to express feelings about the cancer diagnosis, ostomy, and effects of other treatments. *Encouraging verbalization of feelings about the diagnosis, ostomy, and treatments provides an opportunity to validate that feelings of anger and depression are normal responses to the diagnosis and change in body function.*
- Provide consistent colostomy care. *An accepting attitude and consistent care that provides a secure appliance and controls odor and leakage instill a sense of confidence in the client.*
- Encourage expression of sexual concerns. Provide privacy and caregivers who have established trust with the client and family and are comfortable with discussions about sexual concerns. *Sexuality is a very private concern to most people. The client and family are not likely to express their concerns openly unless trust has been established.*
- Reassure the client and significant other that the effect of physical illness and prescribed interventions on sexuality usually is temporary. *The client and partner may misinterpret an initial decrease in libido as evidence that sexual activity will not be possible or resume following recovery.*
- Refer the client and partner to social services or a family counselor for further interventions. *Clients are often discharged from acute care settings well before concerns about sexual activity surface. Ongoing counseling provides a continuing resource.*
- Arrange for a visit from a member of the United Ostomy Association. *People who are living and coping with an ostomy can provide information and support, helping the new ostomate overcome feelings of isolation and rejection.*

Using NANDA, NIC, and NOC

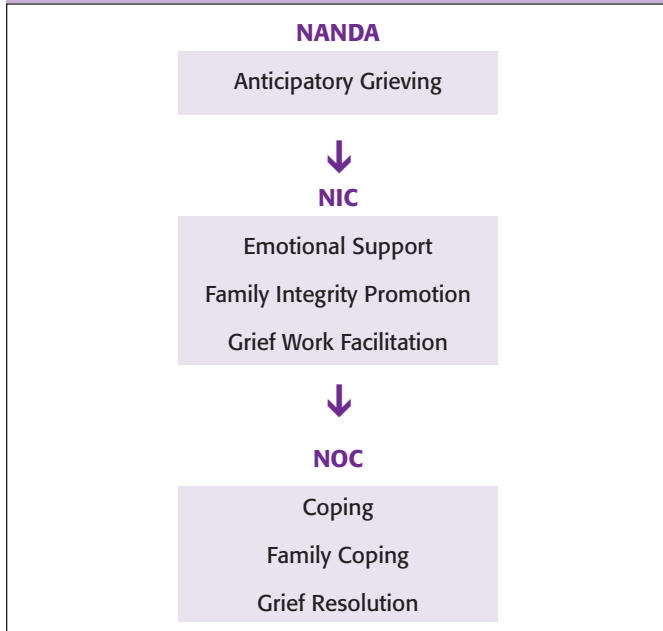
Chart 26–4 shows links between NANDA nursing diagnoses, NIC, and NOC when caring for the client with colorectal cancer.

Community-Based Care

During the diagnostic and preoperative periods, provide instruction about the following topics:

NANDA, NIC, AND NOC LINKAGES

CHART 26–4 The Client with Colorectal Cancer



Data from *NANDA's Nursing Diagnoses: Definitions & Classification 2005–2006* by NANDA International (2005), Philadelphia; *Nursing Interventions Classification (NIC)* (4th ed.) by J. M. Dochterman & G. M. Bulechek (2004), St. Louis, MO: Mosby; and *Nursing Outcomes Classification (NOC)* (3rd ed.) by S. Moorhead, M. Johnson, and M. Maas (2004), St. Louis, MO: Mosby.

- Tests to be performed and preparatory procedures, including dietary restrictions, laxatives, enemas, and food and fluid restrictions just prior to the procedure
- Recommended postprocedure care and potential adverse effects to report
- Preoperative care, such as intestinal preparation and food and fluid restrictions

If a colostomy is planned, refer to an enterostomal therapist for stoma placement and initial teaching.

Once treatment has been initiated, include the following topics (as appropriate) in teaching for home care:

- Pain management
- Skin care and management of potential adverse effects of radiation therapy and/or chemotherapy (Refer to Chapter 14 ∞ for further discussion of teaching needs related to these therapies.)
- Incision and ostomy care
- Recommended diet
- Follow-up appointments and care.

If the tumor is inoperable or a cure is not anticipated, provide information about pain and symptom management. Discuss the hospice philosophy and available services. Provide a referral to a local hospice or home health department.

STRUCTURAL AND OBSTRUCTIVE BOWEL DISORDERS

Any portion of the intestines may be affected by a structural or obstructive disorder. When the structural defect is in the bowel wall, the intestine may be directly affected, as is the case with diverticula. Defects in the abdominal wall may allow intra-abdominal contents (such as loops of bowel) to protrude, indirectly affecting bowel function. Likewise, obstructions may result from disease of the bowel itself or from obstruction of the bowel lumen by an external force.

THE CLIENT WITH A HERNIA

A **hernia** is a defect in the abdominal wall that allows abdominal contents to protrude out of the abdominal cavity. Trauma, surgery, and increased intra-abdominal pressure caused by such conditions as pregnancy, obesity, weight lifting, or tumors are risk factors for hernia formation.

Pathophysiology

Hernias are classified by location (Figure 26–12 ■), and may be congenital or acquired. Most hernias occur in the groin (inguinal or femoral hernias). Inguinal hernias often are congenital, caused by improper closure of the tract that develops as the testes descend into the scrotum during fetal development. Groin hernias may be acquired, resulting from weakness of fascia in a region called Hesselbach's area or from dilation of the femoral ring (e.g., during pregnancy and childbirth). Ventral or incisional hernias of the abdominal wall generally are acquired, caused by weakening of nor-

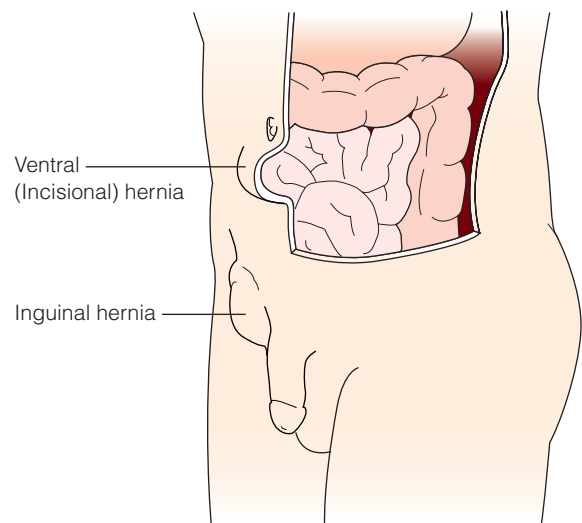


Figure 26–12 ■ An abdominal wall (ventral or incisional) hernia and an inguinal hernia.

mal abdominal wall musculature. Umbilical hernias also are congenital, and usually are detected in infancy. Hiatal hernias develop in the diaphragm (see Chapter 23 ∞).

Inguinal Hernia

Inguinal hernias usually affect males, and may be classified as indirect or direct inguinal hernias. *Indirect inguinal hernias* are

caused by improper closure of the tract that develops as the testes descend into the scrotum before birth. A sac of abdominal contents protrudes through the internal inguinal ring into the inguinal canal. It often descends into the scrotum. Although indirect inguinal hernias are congenital defects, they often are not evident until adulthood, when increased intra-abdominal pressure and dilation of the inguinal ring allow abdominal contents to enter the channel.

Direct inguinal hernias are acquired defects that result from weakness of the posterior inguinal wall. Direct inguinal hernias usually affect older adults. *Femoral hernias* are also acquired defects in which a peritoneal sac protrudes through the femoral ring. These hernias usually affect obese or pregnant women.

Inguinal hernias may produce no manifestations and are discovered during routine physical examination. They may cause a lump, swelling, or bulge in the groin, particularly with lifting or straining. An inguinal hernia may cause sharp pain or a dull ache that radiates into the scrotum. A palpable mass may be present in the groin, although it may be felt only with increased intra-abdominal pressure (as occurs during coughing) and invagination of the scrotum toward the inguinal ring.

Umbilical Hernia

Pregnancy and obesity contribute to the development of umbilical hernias in adults. *Umbilical hernias* may be congenital and evident during infancy, or acquired as the tissue closing the umbilical ring weakens, allowing protrusion of abdominal contents. These hernias are more common in women. Other predisposing factors include multiple pregnancies with prolonged labor, ascites, and large intra-abdominal tumors.

Umbilical hernias tend to enlarge steadily and contain omentum, although they may also contain small or large bowel. The hernia may cause sharp pain on coughing or straining or a dull, aching sensation. Strangulation is a common complication of umbilical hernias.

Incisional or Ventral Hernia

Incisional or ventral hernias occur at a previous surgical incision or following abdominal muscle tears. Inadequate healing of the incision or tear can lead to hernia development. Contributing factors include poor wound closure, postoperative infection, age or debility, obesity, inadequate nutrition, and excess incisional stress caused by vigorous coughing.

Ventral hernias are characterized by a bulge at the incisional site, often noted when the client pulls to a sitting position from a lying position. Ventral hernias often are asymptomatic, and the risk of incarceration is low because of the size of the defect.

Manifestations

Abdominal contents (peritoneum, bowel, and other abdominal organs) can protrude through the abdominal wall to form a sac covered by skin and subcutaneous tissues. In most cases, abdominal contents move into the sac when intra-abdominal pressure increases, then return to the abdominal cavity when pressure returns to normal or when manual pressure is placed on the bulging sac. This is known as a *reducible hernia*.

Complications

The risk for complications is low with a reducible hernia. If the contents of a hernia cannot be returned to the abdominal cavity, it is said to be *incarcerated*. Contents of an incarcerated hernia are trapped, usually by a narrow neck or opening to the hernia. Incarceration increases the risk of complications, including obstruction and strangulation. Obstruction occurs when the lumen of the bowel contained within the hernia becomes occluded, much like the crimping of a hose. A *strangulated hernia* develops when blood supply to bowel and other tissues in the hernia sac is compromised, leading to necrosis. The affected bowel can infarct, leading to perforation with contamination of the peritoneal cavity. Manifestations of a strangulated hernia include severe abdominal pain and distention, nausea, vomiting, tachycardia, and fever.

INTERDISCIPLINARY CARE



The diagnosis of a hernia is made by a physical examination. The client is examined in a supine or standing position. A bulge may be seen or felt when the client coughs or bears down. No laboratory or diagnostic testing is usually required, unless bowel obstruction or strangulation is suspected.

Surgical repair, or *herniorrhaphy*, is the usual treatment of hernia. Surgery is generally well tolerated by people of all ages and carries a much lower risk than the complications of incarceration, obstruction, and strangulation. Emergency surgery is indicated for a hernia that is incarcerated, painful, or tender. In a herniorrhaphy, the abdominal wall defect is closed by suturing or with wire or mesh over the defect. If incarceration has occurred or strangulation is suspected, the abdomen is explored at the time of surgery and any infarcted bowel resected. Heavy lifting and heavy manual labor are restricted for approximately 3 weeks after surgery.

When surgery is contraindicated, the client may be taught to reduce the hernia by lying down and gently pushing against the mass. A binder or truss may be worn to prevent or control the protrusion. An incarcerated hernia should not be reduced by the client.



NURSING CARE

Assessment

- **Health history:** Manifestations of hernia, such as bulging in the groin or of the abdominal wall when coughing, straining, or moving from lying to standing; pain (abdominal, groin, or scrotal); history of hernia or abdominal surgery.
- **Physical examination:** Observe for bulging of the abdominal wall or around the umbilicus when raising head and shoulders from supine position; wearing gloves, palpate inguinal region for bulges when the client coughs or bears down (Valsalva maneuver) while standing.

Nursing Diagnoses and Interventions

Herniorrhaphy is generally an uncomplicated procedure, usually performed as same-day surgery. Preoperative assessment

and teaching and immediate postoperative care are the primary nursing care needs. Care is similar to that provided for a client with an appendectomy.

Risk for Ineffective Tissue Perfusion: Gastrointestinal

When providing care for a client with a known hernia, the possibility of obstruction and strangulation must be considered throughout nursing assessments. Although nursing interventions may not be able to prevent these complications, rapid identification of the problem allows timely surgical treatment. Prompt treatment may prevent major complications related to infection and peritoneal contamination by bowel contents.

- Assess bowel sounds and abdominal distention at least every 8 hours. *A change in bowel sounds—either cessation of sounds or an onset of hyperactive, high-pitched sounds—may indicate obstruction. With obstruction, abdominal girth may increase.*

PRACTICE ALERT

Promptly report any acute increase in abdominal, groin, perineal, or scrotal pain. An abrupt increase in the intensity of pain may indicate bowel ischemia due to strangulation.

- Notify primary care provider if the hernia becomes painful or tender. *Pain and tenderness may indicate incarceration and increased risk for strangulation.*
- If signs of possible obstruction or strangulation occur, notify the physician. Place client in supine position with the hips elevated and knees slightly bent. Withhold all food and fluids (NPO), and begin preparations for surgery. *This position helps relax abdominal muscles and may facilitate reduction of the hernia. Strangulation or obstruction require immediate surgical intervention.*

Community-Based Care

Include the following topics when teaching clients about hernias and home care:

- Rationale for examining the groin and abdomen for bulges
- The nature of hernia, risk factors, and manifestations
- Surgical intervention for hernia
- How to reduce a hernia if necessary
- The importance of seeking immediate medical intervention for signs of strangulation or obstruction
- The need to notify the physician if upper respiratory infection and cough develop preoperatively (forceful coughing is not recommended postoperatively)
- Postoperative pain management and activity restrictions.

THE CLIENT WITH INTESTINAL OBSTRUCTION

Intestinal obstruction is failure of intestinal contents to move through the bowel lumen. Intestinal obstructions may affect either the large or small bowel. The small intestine is more commonly affected; however, bowel obstructions may also occur in the large intestine. Obstruction is the most common reason for small-bowel surgery.

Pathophysiology

Intestinal obstructions may be either mechanical or functional in nature. *Mechanical* obstructions may be caused by (1) problems outside the intestine, such as bands of scar tissue or hernias; (2) problems within the intestine, such as tumors or inflammatory bowel disease; or (3) obstruction of the intestinal lumen. The obstruction may be partial or complete. *Functional* obstruction occurs when peristalsis fails to propel intestinal contents although there is no mechanical obstruction. *Adynamic ileus* (also known as *paralytic ileus* or simply *ileus*) is the most common functional obstruction after abdominal surgery, and probably accounts for most intestinal obstructions altogether (Porth, 2005). Obstructions are further classified by the portion of intestine affected.

When the intestine is obstructed, gas and fluid accumulate proximal to and within the obstructed segment, distending the bowel. Swallowed air accounts for most of the gas. Ingested fluid, saliva, gastric juice, and pancreatic secretions contribute to accumulated fluid. Water and sodium are drawn into the bowel lumen, contributing to fluid accumulation, distention, and vascular fluid losses.

In some mechanical obstructions, such as a strangulated hernia, blood supply to the affected portion of bowel also is impaired, leading to necrosis and bacterial peritonitis.

Significant bowel distention, vomiting, and third spacing of fluids in the bowel and peritoneal cavity can lead to massive loss of fluids and electrolytes with resulting hypovolemia, hypokalemia, renal insufficiency, and shock.

Small-Bowel Obstruction

Adhesions, or bands of scar tissue, and hernias account for most mechanical small bowel obstructions. In adults, adhesions develop following abdominal surgery or inflammatory processes. Adhesions usually produce a *simple obstruction*, or single blockage in one portion of the intestine (Figure 26–13A ■). The obstruction produced by an incarcerated hernia is a *closed-loop obstruction*, with two different portions of the bowel lumen obstructed (Figure 26–13B).

Tumors, either intrinsic (of the bowel itself) or extrinsic (of another organ but affecting the bowel because of their size), can progressively occlude the bowel lumen and eventually obstruct it (Figure 26–13C). Other, less common causes of bowel obstruction include intussusception (rare in adults) (Figure 26–13D); volvulus, which is the rotation of loops of bowel about a fixed point (Figure 26–13E); foreign bodies; stricture; and inflammatory bowel disease.

Both volvulus and an incarcerated hernia can cause a *strangulated obstruction*. In a strangulated obstruction, not only is the lumen of the bowel obstructed, but the blood supply to the affected portion is also compromised.

In a functional obstruction or adynamic ileus, peristalsis stops due to either neurogenic or muscular impairment. The bowel lumen remains patent, but contents are not propelled forward. Temporary ileus commonly follows gastrointestinal surgery. It may also result from tissue anoxia or peritoneal irritation due to hemorrhage, peritonitis, or perforation of an organ. Other conditions that can precipitate paralytic ileus include renal colic, spinal cord injuries, uremia, and electrolyte

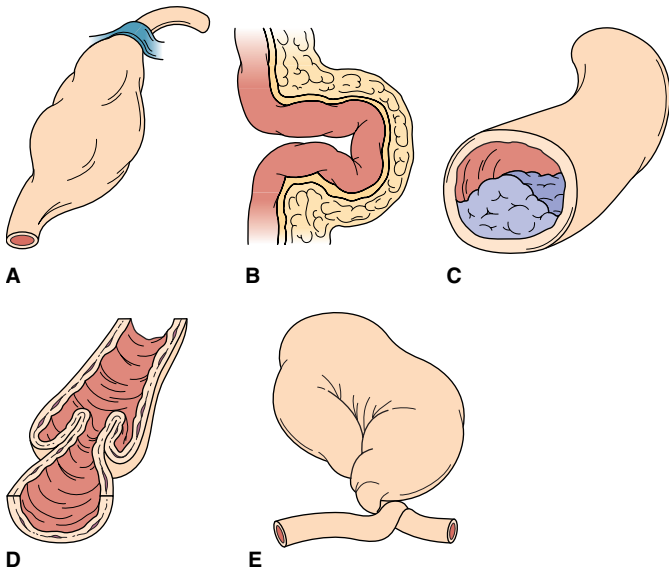


Figure 26–13 ■ Selected causes of mechanical obstruction. A, Adhesions; B, incarcerated hernia; C, tumor; D, intussusception; and E, volvulus.

imbalances, hypokalemia in particular. In addition, the effects of some narcotics, anticholinergic drugs, and antidiarrheal medications such as diphenoxylate can produce a functional obstruction.

MANIFESTATIONS The manifestations of a small-bowel obstruction vary, depending on the level of obstruction and how rapidly it develops. Cramping or colicky abdominal pain that may be intermittent or increasing in intensity is common. Vomiting is common, particularly in high or proximal obstructions, because distention of the lumen stimulates the vomiting center. As bacterial fermentation occurs, vomitus often contains fecal matter, particularly with a low or distal obstruction. Flatus and feces already present in the lower bowel may be expelled early in the obstructive process, but this expulsion ceases as the obstruction continues.

Early in the course of a mechanical obstruction, borborygmi and high-pitched tinkling bowel sounds are present, as the intestine attempts to propel contents past the obstruction. Visible peristaltic waves may be noted in the distended loops of bowel in thin clients. In the later stages, the bowel becomes silent. With a paralytic ileus, bowel sounds are greatly diminished or absent throughout the process. Abdominal distention is minimal with proximal obstructions, but may be pronounced with distal obstruction and paralytic ileus. The abdomen may be tender to palpation as well.

In addition to abdominal and gastrointestinal manifestations, signs of fluid and electrolyte imbalance develop. Hypovolemia can develop rapidly as extracellular fluid is sequestered in the bowel and vomiting occurs. Although early vital signs may be normal, changes are noted as dehydration and hypovolemia develop. The client becomes tachycardic and tachypneic, and blood pressure falls. Temperature may be elevated. Urine output drops, and signs of hypovolemic shock may be seen.

COMPLICATIONS Hypovolemia and hypovolemic shock with multiple organ dysfunction is a significant complication of bowel obstruction and can lead to death. Renal insufficiency from hypovolemia can lead to acute renal failure. Pulmonary ventilation may be impaired because abdominal distention elevates the diaphragm and interferes with respiratory processes.

Strangulation associated with incarcerated hernia or volvulus impairs the blood supply to the bowel. Gangrene may rapidly result, causing bleeding into the bowel lumen and peritoneal cavity and eventual perforation. With perforation, bacteria and toxins from the strangulated intestine enter the peritoneum and, potentially, the circulation, resulting in peritonitis and possible septic shock. Strangulation greatly increases the risk of mortality.

Large-Bowel Obstruction

Obstruction of the large intestine occurs much less frequently than small-bowel obstruction. Although any portion of the colon may be affected, obstruction usually occurs in the sigmoid segment. Cancer of the bowel is the most common cause; other causes include volvulus, diverticular disease, inflammatory disorders, and fecal impaction.

MANIFESTATIONS Constipation and colicky abdominal pain are usual manifestations of large-bowel obstruction. The pain is often deep and cramping; severe, continuous pain may signal bowel ischemia and possible perforation. Vomiting is a late sign, if it occurs at all. The abdomen is distended, with high-pitched, tinkling bowel sounds with rushes and gurgles. On palpation, localized tenderness or a mass may be noted.

COMPLICATIONS If the ileocecal valve between the small and large intestines is competent, distention proximal to the obstruction is limited to the colon itself. This is known as a *closed-loop obstruction*. It can lead to massive colon dilation as the ileum continues to empty gas and fluid into the colon. Increasing pressure within the obstructed colon impairs circulation to the bowel wall. Gangrene and perforation are potential complications.

INTERDISCIPLINARY CARE



The management of a bowel obstruction focuses on relieving the pressure and obstruction, and providing supportive care. The intestine is decompressed, and fluid and electrolyte balance is restored. Surgery may be necessary to relieve a mechanical obstruction or if strangulation is suspected.

Diagnosis

Radiologic studies (x-rays and CT scan) are used to confirm the diagnosis of bowel obstruction. Laboratory testing is used to evaluate for the presence of infection and fluid and electrolyte imbalances.

An abdominal x-ray often shows distended loops of intestine with fluid and gas in a small-bowel obstruction. Free air under the diaphragm indicates a perforation. X-ray or CT scan with contrast media may be required to confirm a mechanical obstruction and assess the completeness of the obstruction. Meglumine diatrizoate (Gastrografin) is often used to provide

contrast rather than barium when a bowel obstruction is suspected. Barium enema may be used to confirm the diagnosis of large-bowel obstruction and determine its location, unless perforation is suspected.

Laboratory tests used are WBC, serum amylase, serum osmolality, electrolytes, and arterial blood gases. These tests will show the following results with a bowel obstruction:

- *WBC* often shows mild leukocytosis due to an inflammatory response to changes within the obstructed bowel lumen. With strangulation, leukocytosis is marked.
- *Serum amylase levels* may be elevated, particularly when strangulation is present.
- *Serum osmolality* and *electrolyte levels* are affected by fluid and electrolyte losses from vomiting and fluid sequestering in the bowel lumen. With hypovolemia, the serum osmolality and urine specific gravity increase. Potassium and chloride are lost through vomiting, leading to hypokalemia and hypochloremia.
- *ABGs* may reveal metabolic alkalosis ($\text{pH} > 7.45$, bicarbonate > 26 mEq/L, $\text{PCO}_2 > 45$ mmHg) with small-bowel obstruction due to loss of hydrochloric acid from the stomach.

Gastrointestinal Decompression

Most partial small-bowel obstructions are successfully treated with gastrointestinal decompression using a nasogastric or long intestinal tube. Functional obstructions respond to treatment with bowel rest and intestinal decompression as well. Intestinal tubes (see Figure 26–2) may be inserted through the nares or via gastrostomy. A balloon or weighted tip draws the tube from the stomach into the intestine and to the area of obstruction. Collected fluid and gas are removed using low suction until peristalsis resumes or the obstruction is relieved.

Surgery

Surgical intervention is required for complete mechanical obstructions as well as for strangulated or incarcerated obstructions of the small intestine. Clients with incomplete mechanical obstruction may also require surgery if the obstruction persists.

Prior to surgery, a nasogastric tube is inserted to relieve vomiting and abdominal distention and to prevent aspiration of intestinal contents. Fluid and electrolyte balance must be restored before surgery. Isotonic intravenous fluids, such as normal (physiologic) saline, Ringer's solution, or other balanced electrolyte solutions, are used. Additional electrolytes may be added to the solution to correct low levels. It is particularly important to correct hypokalemia prior to surgery. Acid–base imbalances are also addressed, often using intravenous acidifiers or alkalizing agents. If strangulation has occurred, the client may require plasma or blood replacement. Intravenous broad-spectrum antibiotics are administered prophylactically (see the section on peritonitis).

A laparotomy usually is performed to allow inspection of the small intestine and removal of infarcted or gangrenous tissue. If the obstruction was caused by adhesions, they are removed or lysed. Obstructing tumors are resected, and foreign bodies are removed. Any bowel that appears to be gangrenous is resected, usually followed by an end-to-end anastomosis of remaining intestine. If a large tumor mass or dense adhesions are found, the area of obstruction may be bypassed by anasto-

mosis of proximal small bowel to small or large intestine distal to the obstruction. Nursing care of the client having bowel surgery is included in the box on page 804.

Obstructions of the large intestine usually necessitate surgery. The primary goal is to relieve colonic distention and prevent perforation; the secondary goal is to remove the obstructing lesion. In some cases, colonoscopy may be used to relieve the distention. If the client's condition prohibits major surgery or the obstructing tumor is advanced, laser photocoagulation may be used to enlarge the bowel lumen. Removal of the obstructing lesion is the preferred treatment. The proximal and distal bowel segments may be anastomosed, or a permanent colostomy or ileostomy may be required.



NURSING CARE

Health Promotion

Teach health promotion activities, such as increasing dietary fiber intake, maintaining a generous fluid intake, and exercising daily to help prevent constipation and possible large-bowel obstruction, particularly in the older adult. Stress the importance of complying with dietary restrictions (such as avoiding popcorn) for clients who experience repeated small-bowel obstructions.

Assessment

Nurses may be instrumental in the early identification of intestinal obstructions in older adults, the homebound client, or the institutionalized client. Early identification and intervention significantly reduce morbidity from bowel obstruction.

- *Health history*: Complaints of abdominal pain and bloating, constipation; previous history of bowel obstruction or risk factors such as hernia, inflammatory bowel disease, diverticulosis, or previous abdominal surgery; current medications.
- *Physical examination*: Vital signs including orthostatic blood pressure, temperature; skin color, temperature, texture, and turgor; color and moisture of mucous membranes; abdominal shape, contour, bowel sounds, presence of tenderness or masses on palpation.

Nursing Diagnoses and Interventions

In clients with a suspected or confirmed bowel obstruction, frequent assessment for complications such as fluid and electrolyte imbalance, acid–base imbalances, hypovolemic shock, perforation, and peritonitis is necessary.

Deficient Fluid Volume

Because of the large collection of fluid in the bowel proximal to an obstruction, the accompanying vomiting, and nasogastric suction, the client with an intestinal obstruction often has a fluid volume deficit. If not corrected promptly, hypovolemic shock, acute renal failure, and multiple organ system dysfunction from poor tissue perfusion may result.

- Monitor vital signs, pulmonary artery pressures, cardiac output (CO), and central venous pressure (CVP) hourly. A decrease in blood pressure, tachycardia, and tachypnea may

indicate hypovolemia. Although invasive, hemodynamic parameters such as pulmonary artery pressures, CO, and CVP allow accurate assessment of fluid volume status.

- Measure urinary output hourly and nasogastric drainage every 2 to 4 hours. A urinary output of 30 mL per hour or more usually indicates an adequate glomerular filtration rate (GFR), another indicator of fluid volume. Nasogastric output provides a tool for evaluating fluid replacement needs.

PRACTICE ALERT

Promptly report urine output of less than 30 mL per hour. This often indicates hypovolemia and an increased risk for shock and acute renal failure.

- Maintain intravenous fluids and blood volume expanders as ordered. The amount of fluid administered is calculated to meet ongoing fluid needs and replace previous and current losses. Restoration and maintenance of blood volume are necessary to maintain cardiac output and tissue and organ perfusion.
- Measure abdominal girth every 4 to 8 hours. Mark the level of measurement on the abdomen. A reference mark allows consistent, accurate measurements. An increase in abdominal girth indicates increasing intestinal distention.
- Notify the physician of changes in status. Changes in vital signs, pain, and signs of increasing distention can indicate the need for immediate surgical intervention.

Ineffective Tissue Perfusion: Gastrointestinal

Perfusion of the intestinal wall and mucosa may be impaired by the obstructive process itself (e.g., strangulation or volvulus) or by significant intestinal distention. The goal is to maintain tissue perfusion and promote normal peristalsis and bowel elimination.

- Monitor vital signs hourly. Assess peripheral pulses, skin color, temperature, and capillary refill. Cardiovascular assessment is vital to detect early signs of hypovolemic shock resulting from sequestering large volumes of fluid in the intestines. Hypovolemia and shock can convert mild bowel ischemia to infarction as the blood supply to the tissue falls.
- Monitor urine output hourly. Report output of less than 30 mL per hour. Urine output is a good indicator of the GFR and tissue perfusion. The urine output often falls before vital sign changes are apparent in hypovolemia.
- Monitor temperature at least every 4 hours. An elevated temperature may be an early indication of sepsis from bowel perforation as a result of gangrene.
- Frequently assess pain. A change in the character of pain or a rapid increase in its intensity may signal bowel infarction or perforation.
- Maintain NPO status until peristalsis resumes. Enteral food or fluids may increase distention and bowel ischemia. They also are restricted until the possibility of perforation is eliminated.

Ineffective Breathing Pattern

Significant abdominal distention from a bowel obstruction can cause the diaphragm to flatten, impairing pulmonary ventilation. Following surgery, splinting of abdominal muscles to avoid pain can lead to shallow respirations. These factors, plus the risk of aspiration of gastrointestinal contents during vomit-

ing, place the client at high risk for respiratory complications, particularly with a small-bowel obstruction.

- Assess respiratory rate, pattern, and lung sounds at least every 2 to 4 hours. Tachypnea, shortness of breath, or apparent dyspnea may be early signs of respiratory compromise. Diminished breath sounds, particularly in the bases of the lungs, or crackles indicate poor lung expansion and possible impaired ventilation.
- Monitor ABG results for possible effects of altered respiratory status. Tachypnea may lead to respiratory alkalosis as excess carbon dioxide is eliminated. Conversely, impaired chest expansion can lead to respiratory acidosis because of alveolar hypoventilation.
- Elevate the head of the bed. Elevating the head of the bed reduces the work of breathing and improves alveolar ventilation by reducing the pressure of abdominal distention on the diaphragm.
- Provide a pillow or folded bath blanket to use in splinting the abdomen while coughing postoperatively. Splinting abdominal muscles and incisions improves the ease and effectiveness of coughing postoperatively.
- Maintain nasogastric or intestinal tube patency. Maintaining gastrointestinal suction helps reduce abdominal distention and prevent aspiration associated with vomiting.
- Encourage use of incentive spirometer or other assistive device hourly. These devices encourage deep breathing, opening distal airways and preventing atelectasis.
- Contact respiratory therapy as indicated. The respiratory therapist may suggest or perform additional measures to maintain effective pulmonary ventilation.
- Provide good oral care at least every 4 hours. Dehydration and nasogastric suction dry the mucous membranes of the mouth and throat, increasing the risk of bacterial growth. Many respiratory infections result from aspirated organisms.

Using NANDA, NIC, and NOC

Linkages between NANDA, NIC, and NOC when caring for the client with intestinal obstruction are similar to those for clients with appendicitis. (See Chart 26–2.)

Community-Based Care

Include the following topics when teaching the client with intestinal obstruction in preparation for home care:

- Wound care
- Activity level, return to work, and any other recommended restrictions
- Recommended follow-up care
- Care of temporary colostomy (if appropriate) and planned reanastomosis
- For recurrent obstructions, their cause, early identification of manifestations, and possible preventive measures.

THE CLIENT WITH DIVERTICULAR DISEASE

Diverticula are small (0.5- to 1.0-cm) outpouchings of the colon that occur in rows (Figure 26–14 ■). Diverticula may oc-

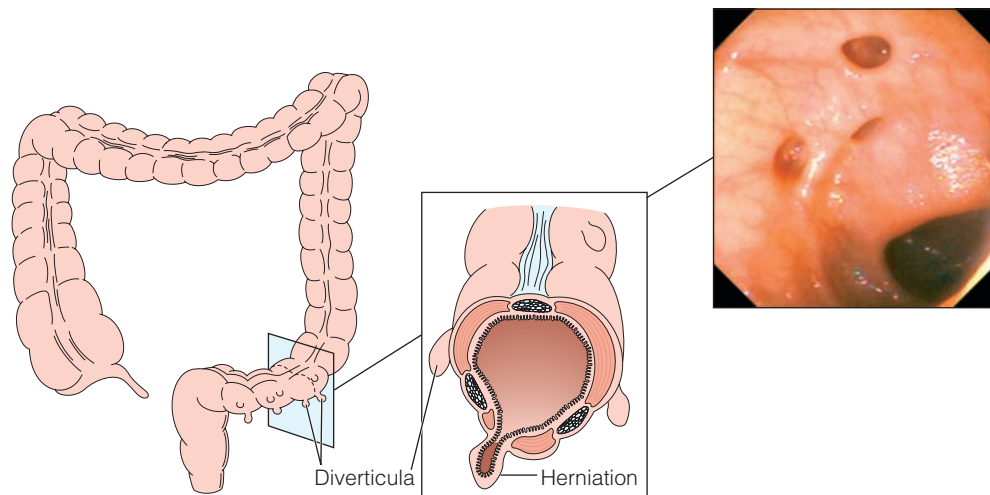


Figure 26–14 ■ Diverticula of the colon.

cur anywhere in the intestinal tract, excluding the rectum. The vast majority, however, affect the large intestine, with 90% occurring in the sigmoid colon (Welch & Cohen, 2004).

FAST FACTS

Diverticular Disease

- People in the United States, Australia, the United Kingdom, and France have high and increasing incidence rates of diverticular disease. The incidence of diverticula increases with age, with 5% to 10% of the population older than 45 years of age and almost 80% of those older than 85 years of age experiencing it.
- Most of the people diagnosed with diverticular disease remain asymptomatic.
- Men and women are equally affected.

Cultural factors, diet in particular, are thought to play an important role in the development of diverticula. A diet consisting of highly refined and fiber-deficient foods is believed to be the major factor contributing to the disease. Decreased activity levels and delaying defecation have been suggested as contributing factors. The increasing incidence of diverticula with aging suggests that dietary factors (lack of fiber), a decrease in physical activity, poor bowel habits (neglecting the urge to defecate), and the effects of aging contribute to development of the disease (Porth, 2005).

Pathophysiology

Diverticula form when increased pressure within the bowel lumen causes bowel mucosa to herniate through defects in the colon wall. The circular and longitudinal muscles often thicken or hypertrophy in the area affected by diverticula. This narrows the bowel lumen, increasing intraluminal pressure. Deficient dietary fiber and a lack of fecal bulk contribute to muscle hypertrophy and narrowing of the bowel. Contraction of the muscles in response to normal stimuli such as meals may occlude the narrowed lumen, further increasing intraluminal pressure. The high pressure causes mucosa to herniate through the mus-

cle wall, forming a diverticulum. Areas where nutrient blood vessels penetrate the circular muscle layer are the most common sites for diverticula formation.

Diverticulosis

Diverticulosis indicates the presence of diverticula. More than two-thirds of clients with diverticulosis are asymptomatic. When manifestations such as episodic pain (usually left-sided), constipation, and diarrhea occur, they often can be attributed to irritable bowel syndrome, which commonly accompanies diverticular disease. (Irritable bowel syndrome is discussed earlier in this chapter.) As the disease progresses, abdominal cramping, narrow stools (decrease in caliber), increased constipation, bleeding in the stools, weakness, and fatigue may develop.

Complications of diverticulosis include hemorrhage and diverticulitis. A diverticulum may bleed, whether it is inflamed or not, possibly due to erosion of an adjacent blood vessel by a fecalith (hard mass) in the diverticulum.

Diverticulitis

Diverticulitis is inflammation in and around the diverticular sac. It typically affects only one diverticulum, usually in the sigmoid colon. Undigested food and bacteria collect in the diverticula, forming a hard mass that impairs the mucosal blood supply, allowing bacterial invasion. Mucosal ischemia leads to perforation. With microscopic perforation, inflammation is localized. Gross perforation of a diverticulum results in more extensive bacterial contamination and can lead to abscess formation or peritonitis.

MANIFESTATIONS Pain is a common manifestation of diverticulitis. It is usually left-sided and may be mild to severe and either steady or cramping. The client may also experience either constipation or increased frequency of defecation. Depending on the location and severity of the inflammation, nausea, vomiting, and a low-grade fever may occur. On examination, the abdomen may be distended, with tenderness and a palpable mass in the left lower quadrant resulting from the inflammatory response.

The older adult may have less specific manifestations, complaining of vague abdominal pain. A palpable mass and signs of a large bowel obstruction may be present.

COMPLICATIONS Complications associated with diverticulitis (in addition to peritonitis and abscess formation) include bowel obstruction, fistula formation, and hemorrhage. Severe or repeated episodes of diverticulitis may lead to scarring and fibrosis of the bowel wall, further narrowing the bowel lumen. This increases the risk for obstruction of the large bowel. Acutely inflamed tissue may adhere to the small bowel, increasing the potential for small-bowel obstruction as well. Fistulas may form, usually between the sigmoid colon and the bladder. Urinary tract infection is the usual sign of a colovesical fistula. Fistulas may also perforate into the small intestine, ureter, vagina, perineum, or abdominal wall. Bleeding from perforation of a vessel wall can occur with diverticulitis. Although it may be significant, bleeding usually stops spontaneously.

INTERDISCIPLINARY CARE




Management of diverticular disease varies from no prescribed treatment to surgical resection of affected colon, depending on the severity of the disease and its complications.

Diagnosis

Diagnostic testing is used to identify diverticular disease when the disease is symptomatic or complications develop. In addition to illustrating diverticula, a barium enema and X-rays can reveal segmental spasm and muscular thickening with a narrowed bowel lumen. Flexible sigmoidoscopy or colonoscopy may be done to detect diverticulosis, assess for strictures or bleeding, and rule out tumor as the cause of the client's manifestations. Abdominal X-ray films may show free abdominal air associated with diverticulitis and perforation. CT scan may be done with or without contrast media to assess inflammation and detect an abscess or fistula.

Laboratory tests include hemoccult or guaiac testing of stool to identify the presence of occult blood, and a WBC count, which may show leukocytosis with a left shift (an increased number of immature WBCs) due to inflammation in diverticulitis.

Medications

Systemic broad-spectrum antibiotics effective against usual bowel flora are prescribed to treat acute diverticulitis. Oral antibiotics such as metronidazole (Flagyl) and ciprofloxacin (Cipro) or trimethoprim-sulfamethoxazole (Septra, Bactrim) may be prescribed if manifestations are mild. Severe, acute attacks often necessitate hospitalization and treatment with intravenous fluids and antibiotics effective against anaerobic and gram-negative bacteria. Therapy may include a second-generation cephalosporin such as cefoxitin (Mefoxin), or another antibiotic such as piperacillin-tazobactam (Zosyn) or ticarcillin-clavulanate (Timentin). Antibiotics and their nursing implications are discussed in Chapter 12 .

Pentazocine (Talwin) may be prescribed for relief of pain associated with diverticulitis. This analgesic causes less increase in colonic pressure than morphine or meperidine (Demerol).

Although a stool softener such as docusate sodium (Colace) may be prescribed, it is important to note that laxatives (which can further increase intraluminal pressure in the colon) are avoided for the client with diverticular disease.

Nutrition

Dietary modification is central to the management of diverticular disease. It appears that dietary changes can reduce the risk of complications of diverticulosis. A high-fiber diet is recommended; it increases stool bulk, decreases intraluminal pressures, and may reduce spasm (Table 26–13). Bran is a low-cost fiber supplement that can be added to cereal, soups, salads, or other foods. Commercial bulk-forming products, such as psyllium seed (Metamucil) or methylcellulose also may be recommended. These products are discussed in the Medication Administration box on pages 759–760. The client may be advised to avoid foods with small seeds (such as popcorn, caraway seeds, figs, or berries), which could obstruct diverticula.

Bowel rest is prescribed during an acute episode of diverticulitis. The client initially may be NPO with intravenous fluids and possibly TPN. Feeding is resumed gradually. Initially, a clear liquid diet is prescribed with gradual advancement to a soft, low-roughage diet (i.e., a diet low in insoluble fiber) with daily added psyllium seed to soften stool and increase its bulk. Among the foods the client should avoid are wheat and corn bran, vegetable and fruit skins, nuts, and dry beans. The high-fiber diet is resumed following full recovery.

Surgery

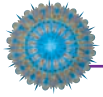
Clients with acute diverticulitis may require surgery, usually to treat generalized peritonitis or an abscess that fails to respond to medical treatment. Hemorrhage that recurs or cannot be controlled may also necessitate surgery. Elective surgery may be performed for recurrent episodes of diverticulitis or persistent diverticulitis with continuing pain, tenderness, and a palpable mass.

The affected bowel segment is resected, and if possible an anastomosis of the proximal and distal portions is performed. When an acute infection and diverticulitis are present, a two-stage Hartmann procedure is required. A temporary colostomy

TABLE 26–13 Foods Recommended in a High-Fiber, High-Residue Diet

FOOD GROUP	RECOMMENDED FOODS
Cereals and grains	Wheat or oat bran; cooked cereals, such as oatmeal; dry cereals, such as bran buds or flakes, corn flakes, shredded wheat; whole-grain breads or crackers; brown rice; popcorn
Fruits	Unpeeled raw apples, peaches, and pears; blackberries, raspberries, strawberries; oranges
Vegetables	Dried beans (navy, kidney, pinto), lima beans; broccoli; peas; corn; squash; raw vegetables, such as carrots, celery, and tomatoes; potatoes (with skins)

is created and anastomosis delayed until the inflammation has subsided. A second surgery is performed 2 to 3 months later to reconnect the bowel and close the temporary colostomy.



NURSING CARE

Health Promotion

Teaching clients about the benefits of a high-fiber diet is important primary prevention for diverticular disease. Nurses working with groups and individuals in the community should emphasize the importance of a high-fiber diet and its benefits in preventing diverticular disease and other disorders. In facilities such as residential settings, the nurse can work with dietary staff and care providers to increase the amount of fiber in residents' diets, unless this is contraindicated by a preexisting condition.

Assessment

Because most clients with diverticular disease have few or no manifestations, nursing assessment focuses on manifestations of complications.

- **Health history:** Abdominal pain or cramping, chronic constipation or irregular bowel habits; nausea and vomiting; history of diverticular disease or irritable bowel syndrome.
- **Physical examination:** Bowel sounds, presence of abdominal tenderness of masses and location; stool for occult blood.

Nursing Diagnoses and Interventions

Clients with acute diverticulitis are acutely ill and have multiple nursing care needs. Priority nursing diagnoses include *Impaired Tissue Integrity*, *Acute Pain*, and *Anxiety* related to the possibility of a significant complication or possible surgery.

Impaired Tissue Integrity: Gastrointestinal

During an acute attack of diverticulitis, inflammation and mucosal ischemia place the client at risk for perforation and peritonitis. In addition to maintaining bowel rest to reduce the risk of perforation, the nurse monitors for manifestations of perforation and possible sepsis.

- Monitor vital signs including temperature at least every 4 hours. *Tachycardia and tachypnea may be early indications of increased inflammation and resulting fluid shift. Fever greater than 101°F (38.3°C) may indicate increased inflammation or spread of inflammation. Note, however, that little temperature elevation may occur in the older client. A change in behavior or increasing lethargy may be subtle indications of infection in the older adult.*
- Assess abdomen every 4 to 8 hours or more often as indicated, including measuring abdominal girth, auscultating bowel sounds, and palpating for tenderness. Promptly report significant changes to the physician. *Increasing abdominal distention, a decrease or change in the quality of bowel sounds, and/or increasing tenderness or guarding may indicate spread of the infectious process or peritonitis.*
- Assess for evidence of lower intestinal bleeding by visual examination and guaiac testing of stools for occult blood. *Perforation of a diverticulum may produce either intestinal*

or intra-abdominal bleeding and require immediate treatment such as surgery.

- Maintain intravenous fluids, TPN, and accurate intake and output records. *During acute diverticulitis, oral intake is usually prohibited or restricted. Intravenous fluids are given to maintain fluid and electrolyte balance; TPN is used to maintain nutritional status, facilitating healing and recovery.*

Acute Pain

Pain is a common manifestation of acute diverticulitis. It results from inflammation of the bowel and edema of affected tissues. If surgery is required, postoperative pain is managed with narcotic analgesics.

- Ask the client to rate pain using a 0 to 10 pain scale. Document the level of pain, and note any changes in location or character of pain. *The perception and response to pain is individual and is affected by past experiences, culture, ethnic background, and many other factors. A change in the character or intensity of the pain may indicate a complication such as perforation or abscess formation.*
- Administer prescribed analgesic or maintain PCA as ordered. Assess analgesic effectiveness. Avoid administering morphine. Provide adjunctive medications as ordered, and encourage use of adjunctive techniques, such as relaxation, positioning, and distraction. Notify the physician if pain management is inadequate. *If client has not obtained adequate pain relief, further assessment and intervention are required.*
- Maintain bowel rest and total body rest (bed rest with limited activity). *Rest helps reduce inflammation and promote healing, increasing comfort.*
- Reintroduce oral foods and fluids slowly, providing a soft, low-fiber diet with bulk-forming agents. *This allows continued healing of the affected bowel while promoting soft, easily expelled stools.*

Anxiety

The client with acute diverticulitis faces not only hospitalization, but also potential serious complications such as peritonitis and hemorrhage. Surgery and formation of a temporary colostomy may be necessary. Furthermore, episodes of acute diverticulitis are often recurrent, and the client may fear future problems.

- Assess and document level of anxiety. *Severe anxiety or panic states can interfere with the ability to respond to instructions and assist with care. Low to moderate anxiety levels enhance learning and compliance with prescribed interventions.*
- Demonstrate empathy and awareness of the perceived threat to health. *It is important to recognize and respect the client's feelings and perceptions as reality.*
- Attend to physical care needs. *This provides reassurance that these needs will be met and relieves concerns about them.*
- Spend as much time as possible with the client. *Presence of a caring nurse helps relieve fears of abandonment or that help will not be available if needed. It also enhances trust and provides opportunity for expression of fears or concerns.*
- Assess level of understanding about disease and condition. *This allows misperceptions that may contribute to anxiety to be corrected.*

- Encourage supportive family and friends to remain with the client as much as possible. *This provides a supportive environment for the client and also distracts from physical concerns.*
- Assist the client to identify and use appropriate coping mechanisms. *Coping mechanisms provide immediate relief of anxiety while the client adapts to the situation.*
- Involve the client and family (as appropriate) in care decisions. *This increases the client's sense of control over the situation.*

Community-Based Care

The client with diverticular disease is responsible for self-care. Discuss the following topics for home care:

- Prescribed high-fiber diet and the need to maintain the diet for life to reduce the incidence of complications, including ways to increase dietary fiber
- Complications of diverticular disease and its manifestations. Provide a referral to a dietitian for teaching as indicated.
 - Prior to discharge of the client with acute diverticulitis, discuss the following:
 - Food and fluid limitations, including recommendations for a low-residue diet during the initial period of healing
 - Colostomy management (if a temporary colostomy has been created), including where to obtain supplies and dietary management
 - Planned procedure to reanastomose the colon and revise the colostomy. Refer to community healthcare agencies as indicated.

ANORECTAL DISORDERS

Anorectal lesions include hemorrhoids, a normal condition common to all adults that may become enlarged and painful; anal fissure; anorectal abscess; anorectal fistulas; and pilonidal disease.

THE CLIENT WITH HEMORRHOIDS

The anus and anal canal contain two superficial venous plexuses with the hemorrhoidal veins. When pressure on these veins is increased or venous return impeded, they can develop *varices*, or varicosities, becoming weak and distended. This condition is commonly known as **hemorrhoids**, or “piles.” When asymptomatic, hemorrhoids are considered to be a normal condition found in all adults.

Pathophysiology and Manifestations

Hemorrhoids develop when venous return from the anal canal is impaired. Straining to defecate increases venous pressure and is the most common cause of distended hemorrhoids. Pregnancy increases intra-abdominal pressure, raising venous pressure, and is another cause of hemorrhoids. Other factors that may contribute to symptomatic hemorrhoids include prolonged sitting, obesity, chronic constipation, and a low-fiber diet.

Hemorrhoids are classed as either internal or external. *Internal* hemorrhoids affect the venous plexus above the mucocutaneous junction of the anus (Figure 26–15 ■). Internal hemorrhoids rarely cause pain, usually presenting with bleeding. Bleeding from internal hemorrhoids is bright red and unmixed with the stool. It can vary in quantity from streaks on toilet tissue to enough to color the water in the toilet. Recurrent bleeding of internal hemorrhoids may be sufficient to cause anemia. Mucous discharge and a feeling of incomplete evacuation of stool also may be manifestations of internal hemorrhoids.

External hemorrhoids affect the inferior hemorrhoidal plexus below the mucocutaneous junction. Bleeding is rare with external hemorrhoids. Anal irritation, a feeling of pressure, and difficulty cleaning the anal region may be manifestations of external hemorrhoids.

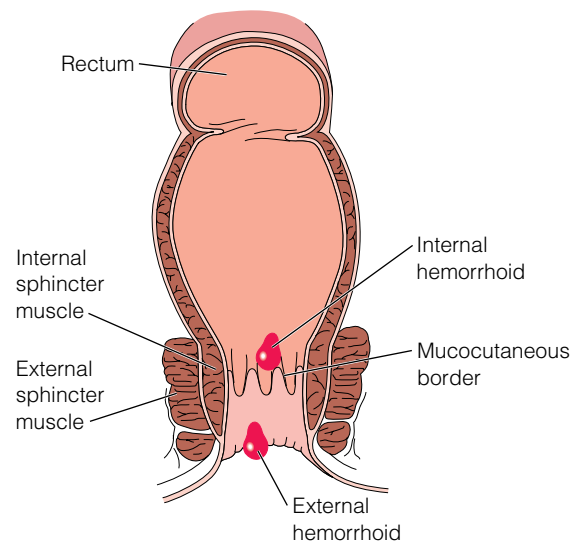


Figure 26–15 ■ The location of internal and external hemorrhoids.

As they enlarge, hemorrhoids may prolapse or protrude through the anus. Initially, prolapse occurs only with defecation and the hemorrhoids spontaneously regress back into the anal canal. Eventually, the client may need to manually replace internal hemorrhoids after defecation, or they may become permanently prolapsed, in which case replacement is not possible. Manifestations of permanently prolapsed hemorrhoids include mucous discharge and clothing soilage.

“Normal” hemorrhoids are not painful. Prolapsed hemorrhoids may become strangulated as a result of congestion and edema, leading to thrombosis. Hemorrhoidal thrombosis causes extreme pain and may lead to infarction of skin and mucosa overlying the hemorrhoid. Internal hemorrhoids associated with portal hypertension in liver disease may bleed profusely if ruptured. (See Chapter 24 ∞ for further discussion of portal hypertension.)

A *thrombosed external hemorrhoid* is a thrombosis of the subcutaneous external hemorrhoidal veins of the anal canal,

rather than a true hemorrhoid. It appears as a painful bluish hematoma beneath the skin and typically occurs following a sudden increase in venous pressure, for example, heavy lifting, coughing, or straining. Pain is significant at onset but gradually subsides. Spontaneous rupture with bleeding may occur. Thrombosed external hemorrhoids resolve without intervention.

INTERDISCIPLINARY CARE



Because hemorrhoids are a normal condition, management is conservative unless complications such as permanent prolapse or thrombosis occur.

Diagnosis

Hemorrhoids are diagnosed by the client's history and by examination of the anorectal area. External hemorrhoids can be seen on visual inspection, especially if thrombosed. The client is asked to strain (Valsalva's maneuver) during the examination to detect prolapse. Internal hemorrhoids are usually not palpable or tender on digital examination of the rectum. Anoscopic examination is used to detect and evaluate internal hemorrhoids. For this exam, a speculum or endoscope is introduced into the anus to provide visual inspection of the tissues. Additional diagnostic examinations include testing of stool for occult blood and sigmoidoscopy, performed to rule out cancer of the colon or rectum, which may aggravate hemorrhoidal manifestations or produce similar manifestations. If liver disease with portal hypertension is suspected, liver function studies are ordered.

Medications

Bulk-forming laxatives such as psyllium seed (Metamucil) or stool softeners such as docusate sodium (Colace) may be prescribed to improve constipation and reduce straining as well. Suppositories and local ointments such as Preparation H or Nupercaine have an anesthetic and astringent effect, reducing discomfort and irritation of surrounding tissues. They have little or no effect on the hemorrhoid itself. Warm sitz baths, bed rest, and local astringent compresses may be recommended to reduce the swelling of edematous prolapsed hemorrhoids after digital reduction.

Nutrition

Hemorrhoids that are not permanently prolapsed or acutely thrombosed generally are treated conservatively. A high-fiber diet and increased water intake to increase stool bulk, improve its softness, and reduce straining is effective for most clients with internal or external hemorrhoids.

Sclerotherapy

Hemorrhoids that are permanently prolapsed, are thrombosed, or produce significant manifestations may be treated more aggressively. *Sclerotherapy* involves injecting a chemical irritant into tissues surrounding the hemorrhoid to induce inflammation and eventual fibrosis and scarring. It is used to treat recurrent bleeding and early prolapse of internal hemorrhoids. The treatment produces minimal pain. Enlarged or prolapsing hemorrhoids also may be treated with rubber band ligation. A rubber band is placed snugly around the hemorrhoidal plexus and sur-

rounding mucosa, causing the tissue to necrose and slough within 7 to 10 days. Treatment is limited to one hemorrhoidal complex at a time, so repeat treatments may be necessary. Pain should be minimal if the band is placed appropriately; persistent pain following band ligation may signal an infection. Bleeding can occur as the hemorrhoid sloughs. Other procedures used to treat hemorrhoids include cryosurgery, in which hemorrhoids are necrosed by freezing with a cryoprobe; infrared photocoagulation; or electrocoagulation.

Hemorrhoidectomy

Clients with chronic manifestations, permanent prolapse, chronic bleeding and anemia, or painful thrombosed hemorrhoids may be treated surgically with a *hemorrhoidectomy*. In this procedure, hemorrhoids are surgically excised, leaving normal skin and surrounding tissues. This procedure may use conventional techniques or a laser to remove both internal and external hemorrhoids. Few complications are associated with hemorrhoidectomy.



NURSING CARE

Primary prevention of symptomatic hemorrhoids involves education of clients of all ages. Stress the importance of maintaining an adequate intake of dietary fiber, a liberal fluid intake, and regular exercise to maintain stool bulk, softness, and regularity. Discuss the need to respond to the urge to defecate rather than postponing defecation. Teach appropriate constipation management, including the use of bulk-forming laxatives.

Most clients with hemorrhoids are treated in community settings where the primary nursing focus is educational. Discuss the appropriate use of over-the-counter preparations and sitz baths for the relief of minor hemorrhoidal manifestations. If necessary, teach clients how to reduce prolapsed hemorrhoids digitally.

Teach manifestations of possible hemorrhoidal complications, such as chronic bleeding, prolapse, and thrombosis. Stress the need to seek medical evaluation if manifestations persist. Discuss the link between manifestations of hemorrhoids and colorectal cancer, and urge the client to seek medical intervention for persistent, unresolved, or progressive manifestations.

When a hemorrhoidectomy is performed, the client requires more direct nursing intervention. Postoperative care of the client with perianal surgery is outlined in Box 26-3. Anal packing may be in place for the first 24 hours following the procedure. When removed, observe the client closely for bleeding. Pain is a common postoperative problem. Although the operative procedure is minor, postoperative discomfort can be significant because the anal region is richly innervated and muscle spasms may occur. In addition to systemic analgesics, sitz baths usually are ordered. These not only help promote relaxation and reduce discomfort but also clean the anal area. Use of a rubber ring or donut device minimizes pressure on the surgical site while the client sits in the bath.

The client may remain hospitalized until after the first postoperative bowel movement. Stool softeners, adequate fluids,

BOX 26–3 Perianal Postoperative Care**Assessment**

- Monitor vital signs every 4 hours for 24 hours.
- Inspect rectal dressing every 2 to 3 hours for 24 hours.
- Monitor urinary output.

Pain Control

- Assist to position of comfort, usually side-lying.
- Provide analgesics as prescribed.
- Keep fresh ice packs over the rectal dressing as ordered.
- Assist with sitz bath three to four times per day.
- Provide a flotation pad for use when sitting.

Elimination

- Give stool softeners as prescribed.
- Give an analgesic before the first postoperative bowel movement if possible.
- When tolerated, encourage fluid intake of at least 2000 mL per day.

Client and Family Teaching

- Take sitz bath after each bowel movement for 1 to 2 weeks after surgery.
- Drink at least 2 quarts of fluid per day.
- Eat adequate dietary fiber, and exercise moderately.
- Take stool softeners as prescribed.
- Report to the physician the following symptoms: rectal bleeding, continued pain on defecation, fever greater than 101°F (38.3°C), purulent rectal drainage.

and analgesia before defecation can reduce anxiety and discomfort. Adequate cleaning following defecation, usually with a sitz bath, is vital.

Whether caring for a client with hemorrhoids or a hemorrhoidectomy, consider the following nursing diagnoses:

- *Acute or Chronic Pain* related to inflamed anal tissues
- *Constipation* related to dietary habits and/or delay of defecation
- *Risk for Infection* related to disruption of anal tissue.

THE CLIENT WITH AN ANORECTAL LESION

Unlike the rectum, which is relatively insensitive to pain, the anal canal is richly supplied with sensory nerves and highly sensitive to painful stimuli. Lesions of the anorectal area may cause significant pain, particularly with defecation. Infection is a potential complication of anorectal lesions because of contamination by fecal bacteria. The superior boundary of the anal canal (the anorectal juncture or pectinate line) contains 8 to 12 anal crypts where anorectal abscesses or fistulas can form. Lesions of the anorectal area include fissures, abscesses, fistulas, and pilonidal disease.

Anal Fissure

Anal fissures or ulcers occur when the epithelium of the anal canal over the internal sphincter becomes denuded or abraded. Irritating diarrheal stools and tightening of the anal canal with

increased sphincter tension are frequent causes of anal fissures. Other factors that may contribute to their development include childbirth trauma, habitual cathartic use, laceration by a foreign body, and anal intercourse. Chronic inflammation and infection of surrounding tissues accompanies an anal fissure.

Clients with anal fissures typically have periods of exacerbation and remission. Because they occur below the mucocutaneous line, anal fissures are painful. The pain occurs with defecation and may be described as tearing, burning, or cutting. Bright red bleeding is noted with a bowel movement. Bleeding is typically minor and noted on toilet tissue. Because of fear of defecation, the client may develop constipation, which further disrupts normal bowel habits and aggravates manifestations.

The diagnosis of anal fissure is made on gentle digital examination of the anal canal and anoscopy using a small anoscope. Treatment is usually conservative, involving dietary changes to increase fiber intake and stool bulk, increased fluid intake, and use of bulk-forming laxatives. A topical agent such as hydrocortisone cream may be prescribed. Surgical intervention with an internal sphincterotomy, an incision into the internal sphincter to increase its diameter, is considered when the fissure does not heal with medical intervention.

Anorectal Abscess

Invasion of the pararectal spaces by pathogenic bacteria can lead to an *anorectal abscess*. Commonly caused by infection that extends from the anal crypt into a pararectal space, the abscess may appear small but often contains a large amount of pus. Multiple pathogens may be present, including *Escherichia coli*, *Proteus*, streptococci, and staphylococci. Other factors that may contribute to the development of an anorectal abscess include infection of a hair follicle, sebaceous gland, or sweat gland, and abrasions, fissures, or anal trauma. The incidence of anorectal abscess is higher in men.

Pain is the primary manifestation of an anorectal abscess. Sitting or walking may aggravate the pain, but it is unrelated to defecation. External swelling, redness, heat, and tenderness are apparent on examination. With a deeper abscess, swelling may not be visible, but the abscess is palpable on digital examination.

If the abscess either does not drain spontaneously or is not drained surgically, adjacent anatomic spaces will be affected. Systemic sepsis is also a potential complication.

Incision and drainage is the treatment of choice for an anorectal abscess because it rarely resolves with antibiotic therapy alone. This treatment often leads to a persistent fistula, which is surgically closed after the infection has cleared.

Anorectal Fistula

A fistula is a tunnel or tubelike tract with openings at each end. *Anorectal fistulas* have one opening in the anal canal with the other usually found in perianal skin. Most occur spontaneously or as a result of anorectal abscess drainage. Crohn's disease is also a predisposing factor to fistula development.

The primary manifestation of an anorectal fistula is intermittent or constant drainage or discharge, which may be purulent. This may be accompanied by local itching, tenderness, and pain associated with defecation.

Digital and anoscopic examination with gentle probing of the fistula tract are used to establish the diagnosis. Although some fistulas may heal spontaneously, the treatment of choice is a fistulotomy. The primary opening of the fistula is removed, and the tract is opened to allow it to heal by secondary intention, from the inside outward. If the sphincter is involved, a two-stage operation may be done to preserve the muscle and prevent fecal incontinence.

Pilonidal Disease

The client with *pilonidal disease* has an acute abscess or chronic draining sinus in the sacrococcygeal area. Underlying the abscess or sinus is a cyst with granulation tissue, fibrosis, and, often, hair tufts. This disease usually affects young hirsute (hairy) males and is probably due to hair entrapment in deep tissues of the sacrococcygeal area. Some researchers, however, believe that it is a congenital disorder.

The lesion of pilonidal disease is generally asymptomatic unless it becomes acutely infected. Manifestations of acute inflammation accompany infection, including pain, tenderness, redness, heat, and swelling of the affected area. Purulent discharge may be noted from one or more sinuses or openings in the midline.

The preferred treatment option for pilonidal disease is incision and drainage. The sinus tract and underlying cyst are ex-

cised and closed by either primary- or secondary-intention healing. The client may be instructed to remove hair from the area routinely by shaving or using a depilatory to prevent further hair entrapment and recurrence of the problem.



NURSING CARE

Clients with anorectal disorders are often treated in the community, and the primary nursing responsibility is education. Teach the importance of maintaining a high-fiber diet and liberal fluid intake to increase stool bulk and softness and thereby decrease discomfort with defecation. Stress the importance of responding to the urge to defecate to prevent constipation.

Following surgical treatment of any of these disorders, teach the client to keep the perianal region clean and dry. If a dressing is in place, instruct to avoid soiling it with urine or feces during elimination. Following removal of the dressing, teach to clean the area gently with soap and water following a bowel movement. Discuss the use of sitz baths for cleaning and comfort. Suggest taking an analgesic if necessary prior to defecation, but caution that some analgesics may promote constipation. Teach signs and manifestations of infection or other possible complications to report to the physician. If an antibiotic has been prescribed, provide written and verbal instructions about its use, its desired and possible adverse effects, and their management.

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Crohn's Disease Teaching Sheet



CHAPTER HIGHLIGHTS

- Disorders of intestinal motility include diarrhea, constipation, irritable bowel syndrome, and fecal incontinence. Diarrhea is a manifestation of many other bowel disorders, including lactose intolerance, infections with bacteria, and inflammatory diseases of the bowel. Constipation may be a primary problem (especially for the older adult) or a manifestation of another disorder. Irritable bowel syndrome (IBS) is a functional disorder without any identifiable organic cause. Fecal incontinence is usually considered to be the manifestation of a disorder rather than a disorder itself.
- Appendicitis is an acute inflammation of the vermiform appendix, manifested by abdominal pain that localizes in the right lower quadrant of the abdomen. On palpation, localized and rebound tenderness is present at McBurney's point. It is treated most often with an appendectomy.
- Peritonitis (inflammation of the peritoneum from infection or chemical irritant) is a serious complication of a wide variety of acute abdominal disorders, including perforated ulcer, ruptured appendix, abdominal trauma or surgery, or necrotic bowel. Complications may be life threatening; without prompt and effective treatment, septicemia and septic shock may occur.
- Gastroenteritis, which may result from bacterial or viral infections, parasites, or toxins, is often the result of consuming contaminated

water or food. Manifestations include nausea and vomiting, diarrhea, and abdominal discomfort.

- Nurses provide education to help prevent protozoal infections (such as giardiasis, amebiasis, and coccidiosis) and helminthic infestations (by roundworms, flukes, or tapeworms). Both types of bowel disorders are treated with medications.
- Chronic inflammatory bowel disease (IBD) includes two separate but closely related conditions: ulcerative colitis and Crohn's disease. Ulcerative colitis affects the mucosa and submucosa of the colon and rectum. Crohn's disease can affect any part of the GI tract, but usually involves the terminal ileum and ascending colon. Diarrhea is common to both disorders. A colectomy (removal of the large colon) may be performed to treat ulcerative colitis; an ileostomy (artificial opening from the abdomen to the ileum) may be performed to treat Crohn's disease.
- Malabsorption syndromes, in which the intestinal mucosa ineffectively absorbs nutrients, may be caused by a wide variety of diseases. However, three common malabsorption disorders in adults are sprue (a primary disorder of the small intestine, there are two types: celiac and tropical), lactose intolerance of milk and milk products (resulting from a lactase deficiency), and short bowel syndrome (a condition that can develop following resection of the small bowel).
- Malignant tumors of the lower bowel are the second leading cause of death from cancer. The risk of colon cancer may be

reduced through health-related screenings and a diet high in fruits, vegetables, folic acid, and calcium. Rectal bleeding is the most common initial manifestation but may not occur until the cancer is well advanced. Surgical treatment is through surgical resection of the bowel, accompanied by a colostomy for diversion of fecal contents.

- A hernia is a defect in the abdominal wall that allows intra-abdominal contents to protrude out of the abdominal cavity. Hernias may follow trauma, surgery, and increased intra-abdominal pressure (as from pregnancy or obesity). Hernias may be congenital or acquired, and may be inguinal, umbilical, incisional, or ventral.
- Intestinal obstructions occur when intestinal contents cannot move through the lumen of the bowel. They may occur in either the large or small intestine, may be partial or complete, and are caused by many factors, ranging from surgical ileus following abdominal surgery to adhesions or tumors.
- Diverticula are saclike projections of mucosa through the muscular layer of the colon. When these sacs become inflamed, the condition is labeled diverticulitis. A diet high in fiber is recommended for self-care.
- Anorectal disorders include hemorrhoids, anorectal lesions (fissures, abscess, and fistula), and pilonidal disease. These disorders are painful and pose a risk for bleeding and infection.

TEST YOURSELF NCLEX-RN® REVIEW

- 1 A client presents at the urgent care clinic with complaints of diarrhea for the past week. The nurse should first:
 1. advise the client to abstain from all food intake until the diarrhea subsides.
 2. ask the client to describe the number and character of daily stools.
 3. question the client about possible exposure to an enterotoxin or protozoal infection.
 4. recommend an over-the-counter antidiarrheal preparation such as Pepto-Bismol.
- 2 The nurse caring for a client admitted with possible appendicitis appropriately plans which of the following?
 1. Initiate bowel preparation for a barium enema.
 2. Restrict intake to clear liquids.
 3. Prepare for possible immediate appendectomy.
 4. Insert saline lock for intravenous antibiotic therapy.
- 3 When teaching a client with inflammatory bowel disease about prescribed sulfasalazine, the nurse instructs the client to:
 1. use a sunscreen while taking the drug.
 2. take the drug on an empty stomach.
 3. limit fluid intake to 1500 mL per day or less.
 4. take vitamin C while on this drug.
- 4 A client reports frequent large, fatty, foul-smelling stools. The nurse recognizes this as:
 1. hematochezia, a manifestation of GI bleeding.
 2. characteristic of inflammatory bowel disease.
 3. a common early manifestation of colorectal cancer.
 4. steatorrhea, a manifestation of malabsorption.
- 5 A client tells the nurse that both his father and grandfather died of colon cancer, and he is worried that he is going to die from "the same horrible disease." Which of the following does the nurse include in her recommendations?
 1. There is no genetic link seen in colon cancer, so his risk is equal to that of people with no family history of the disease.
 2. He should plan for annual digital rectal exams and periodic colonoscopy for early identification of possible tumors.
 3. He should have annual CEA levels drawn to screen for early tumor development.
 4. It is imperative that he change his diet immediately, significantly increasing his intake of dietary fiber.
- 6 A client has a nasogastric tube in place to maintain gastric decompression. Which nursing actions are important in monitoring responses to *Deficient Fluid Volume* when caring for this client? (Select all that apply.)
 1. Low suction is used to decompress the stomach.
 2. Give the client as much water as he or she wants to drink.
 3. Listen to bowel sounds prior to checking the placement of the NG tube.
 4. Document the amount and color of NG tube drainage every shift.
 5. Keep an accurate record of intake and output every 2 to 4 hours.
 6. Listen to bowel sounds after palpating the stomach for tenderness.
 7. Measure abdominal girth every 4 to 8 hours.

- 7** A client has developed a paralytic ileus following a recent abdominal surgery. What is the most important nursing consideration when caring for this client?
1. Ensure that the client is able to eat a clear liquid diet.
 2. Maintain the client on strict bedrest.
 3. Monitor bowel sounds every hour.
 4. Ensure nasogastric tube is functioning.
- 8** Mrs. Jones has a history of diverticulosis and has been having abdominal pain recently. When educating Mrs. Jones about her diet prior to discharge from the hospital, what type of foods should be excluded from Mrs. Jones diet?
1. whole-wheat bread
 2. popcorn
 3. soup
 4. apples
- 9** Your 85-year-old client Mr. Allen was admitted with a diagnosis of constipation. Which of the following is important in your discharge education for this client? (Select all that apply.)
1. Eat plenty of fresh fruits and vegetables daily.
 2. Take a bisacodyl (Dulcolax) daily.
 3. Drink 6 to 8 glasses of nonalcoholic fluid daily.
 4. Take docusate (Colace) at nighttime only.
 5. Eat whole-wheat bread instead of white bread.
 6. Eat a bran cereal for breakfast.
- 10** A small-bowel obstruction can occur due to:
1. eating extra fiber in the diet.
 2. abdominal adhesions.
 3. drinking too much water.
 4. a nasogastric tube.
- See *Test Yourself answers in Appendix C.*

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UNIT 7 BUILDING CLINICAL COMPETENCE

Responses to Altered Bowel Elimination

FUNCTIONAL HEALTH PATTERN: Elimination

- Think about clients with altered bowel elimination for whom you have cared in your clinical experiences.
 - What were the clients' major medical diagnoses (e.g., irritable bowel syndrome, appendicitis, peritonitis, gastroenteritis, inflammatory bowel disorder, sprue, short bowel syndrome, polyps, colorectal cancer, hernia, intestinal obstruction, diverticular disease, or hemorrhoids)?
 - What manifestations did each of these clients have? Were these manifestations similar or different?
 - How did the clients' bowel elimination problems interfere with their elimination pattern? How often did they have a bowel movement? Had the bowel routine changed recently? If so, how? Could they describe the color and consistency of the stool? Were their bowel movements loose or did they strain excessively to have a bowel movement? Did they use laxatives? If so, how often and what type? Did they notice any bleeding with the bowel movement or on the paper after wiping? Could they describe the type of cramping or abdominal pain they were experiencing? Did they use any medications that affect bowel movements? Did they have any illnesses or surgery that affects bowel movements? Did they have any food intolerances or were they on a special diet? Had they had a colonoscopy or other diagnostic tests of the rectum or colon? Do they have any ostomy? How often did they empty the ostomy bag? How often do they irrigate the ostomy?
- The Elimination Pattern includes patterns of elimination, changes in elimination characteristics, use of laxatives or bowel routines, and use of an ostomy for bowel elimination. Bowel function can be affected by inflammation, infection, tumors, obstructions, or changes in structure. Bowel disorders affect elimination status in two primary ways:
 - Direct factors that affect the consistency of stools are food and fluid intake (e.g., constipation or diarrhea), food poisoning or bacterial infections (e.g., diarrhea), surgical procedures (e.g., diarrhea or constipation), medical conditions such as spinal cord injury (e.g., constipation), medication intake such as narcotics (e.g., constipation), or herbal preparations (e.g., diarrhea).
 - Indirect factors that affect the consistency of stools are psychologic stress (e.g., diarrhea), depression (e.g., constipation), voluntary postponement of defecation (e.g., constipation), or decreased exercise activity (e.g., constipation).
- Bowel elimination is the end process of digestion. Nutrients are absorbed during digestion and indigestible materials are eliminated from the body through the gastrointestinal tract. Bowel elimination disorders interrupt normal patterns of bowel elimination, leading to manifestations such as:
 - Diarrhea (mucosal inflammation ► causes plasma, serum protein, blood and mucus to increase fluidity and bulk of stool ► resulting in increased rate of propulsion of loose, watery stool)
 - Constipation (decreased motility, denial of urge to defecate, or decreased fluid intake ► causes hard, dry stool ► resulting in difficulty passing stool)
 - Flatus (excessive amount of air or gas in the intestines ► causes distention of the intestines with mild to moderate pain ► resulting in rectal passage of excessive air or gas).
- Priority nursing diagnoses within the Elimination Pattern that may be appropriate for clients with bowel disorders include:
 - *Bowel Incontinence* as evidenced by urgency, inability to delay defecation, or fecal staining of clothing
 - *Diarrhea* as evidenced by abdominal cramping, hyperactive bowel sounds, or at least three loose and liquid stools per day
 - *Constipation* as evidenced by hard stool, distended abdomen, or flatus.
- Two nursing diagnoses from other functional health patterns often are of high priority for clients with bowel elimination disorders because of the physiologic responses to these disorders:
 - *Acute Pain* (Cognitive-Perceptual)
 - *Imbalanced Nutrition: Less than Body Requirements* (Nutritional-Metabolic)

Directions: Read the clinical scenario below and answer the questions that follow. To complete this exercise successfully, you will use not only knowledge of the content in this unit, but also principles related to setting priorities and maintaining client safety.

CLINICAL SCENARIO

You have been assigned to work with the following four clients for the 0700 shift on a medical-surgical unit. Significant data obtained during report are as follows:

- Jason Phillips is a 23-year-old who was admitted 1 hour ago with right lower quadrant pain. On admission to the medical-surgical unit his vital signs were T 100°F, P 98, R 22 and shallow, BP 130/84. He complains of nausea and pain of 8 on a scale of 1 to 10. He calls the nurse's station stating his pain has stopped and he wants to be discharged.
- Mary Joslin, age 56 years, has been hospitalized for 2 days for treatment with antibiotics for pneumonia. Her last vital signs were T 99°F, P 88, R 16, BP 120/82. She suddenly develops severe diarrhea and abdominal cramping.

- Grace Freeman is a 36-year-old who had a temporary colostomy placed 5 days ago due to an abdominal injury from a motor vehicle crash. Vital signs at 0400 were T 98.6°F, P 78, R 14, BP 112/78. She put on her call light for assistance because her colostomy bag is full and she needs help emptying it.
- Paul Bruner, age 86 years, was admitted the previous evening with sharp lower abdominal pain. During the admission assessment, a mass was palpated in his abdomen. His vital signs on admission were T 100.4°F, P 88, R 26, BP 150/86. He is to be prepped for surgery this morning.

Questions

- 1 In what order would you visit these clients after report?
1. _____
 2. _____
 3. _____
 4. _____

- 2 What top two priority nursing diagnoses would you choose for each of the clients presented above? Can you explain, if asked, the rationale for your choices?

	Priority Nursing Diagnosis #1	Priority Nursing Diagnosis #2
Jason Phillips		
Mary Joslin		
Grace Freeman		
Paul Bruner		

- 3 Which is an appropriate nursing intervention for the client with suspected appendicitis?
1. Administer an enema to cleanse the bowel for surgery.
 2. Apply heat to the abdomen to reduce pain.
 3. Administer narcotics while diagnostic tests are being conducted.
 4. Assess the abdomen frequently for distention and bowel sounds.
- 4 Mrs. Joslin asks the nurse why she has suddenly developed diarrhea. Which response by the nurse is accurate?
1. "Diarrhea is an adverse effect from taking antibiotics because the antibiotics decrease the normal bacterial count in the intestines."
 2. "Antibiotics lower your resistance to fighting off infections while you are hospitalized."
 3. "You must have been exposed to someone with diarrhea during your hospital stay."
 4. "Have any of your visitors developed diarrhea or any other illnesses after visiting you?"
- 5 Which discharge instructions will the nurse teach Mrs. Freeman regarding how to take care of the colostomy?
1. "The types of foods you eat will not affect the colostomy output."
 2. "Empty the colostomy pouch or replace the bag when it is half full."
 3. "Irrigate the colostomy with water to stimulate the colon to empty."
 4. "Cleanse the area around the stoma with deodorant soap to decrease odor."
- 6 Which is the most common initial manifestation of malignant tumors of the lower bowel?

1. rectal bleeding
2. diarrhea
3. rectal pain
4. constipation

- 7 Teaching appropriate constipation management includes which actions? (Select all that apply.)
1. Decrease dietary fiber.
 2. Increase fluid intake.
 3. Increase exercise activity.
 4. Use bulk-forming laxatives.
 5. Use enemas daily.
- 8 Clients with celiac disease are placed on a gluten-free diet. The client understands dietary instructions when choosing which meal?
1. corned beef sandwich on rye bread
 2. tossed green salad with oatmeal raisin cookie
 3. eggs and bacon with whole wheat toast
 4. tomato soup with cornbread
- 9 Clients with severe diarrhea may develop metabolic acidosis. Which arterial blood gases indicate metabolic acidosis?
1. pH 7.45, PaCO₂ 40 mmHg, bicarbonate 25 mEq/L
 2. pH 7.28, PaCO₂ 30 mmHg, bicarbonate 19 mEq/L
 3. pH 7.55, PaCO₂ 50 mmHg, bicarbonate 30 mEq/L
 4. pH 7.33, PaCO₂ 36 mmHg, bicarbonate 24 mEq/L
- 10 To prepare a client for a colonoscopy, the nurse teaches the client to implement which interventions?
1. Maintain a liquid diet for 4 days prior to the procedure.
 2. Remain NPO for 4 hours prior to the procedure.
 3. Take prescribed bowel preparation the evening before the procedure.
 4. Administer a cleansing enema the evening before the procedure.
- 11 When assessing a client with a large bowel obstruction, which manifestations are typically noted on assessment?
1. tachycardia and diarrhea
 2. colicky abdominal pain and constipation
 3. severe abdominal cramping and vomiting
 4. dull bowel sounds and nausea
- 12 Antidiarrheal medications, such as kaolin and pectin (Kaopectate), may interfere with the absorption of other medications. What is the best way to administer Kaopectate?
1. at bedtime after other medications are administered
 2. at mealtimes to prevent stomach upset with other medications
 3. one hour before and 2 hours after taking other medications
 4. before lunch so as not to interfere with medications taken at breakfast

CASE STUDY



Janet Simpson is a 45-year-old married white female who came to the emergency department with complaints of abdominal cramping, pain, and frequent bloody diarrhea-type stools. Vital signs on admission are T 98°F, P 72, R 20, BP 104/72. Her skin is cool and pale. On the admission assessment it is noted that she has several reddened lesions on her lower legs. Her weight is 115 pounds. Blood is drawn for a CBC, serum protein, folic acid and serum vitamin levels, and liver function tests. Abnormal laboratory results are hemoglobin, 7.3; hematocrit, 23.3; and a serum protein of 4.6. A colonoscopy was performed, with findings of edema, inflammation, pus, abscesses, and bleeding.

Based on the assessment and laboratory studies, the diagnosis of ulcerative colitis is determined. The pathophysiology of ulcerative colitis begins at the rectosigmoid section of the anal canal and progresses proximally. The initial lesions are at the base of the crypts of Lieberkühn. Microscopic hemorrhages occur in the mucosa and abscesses form in the crypts. The abscesses lead to necrosis and sloughing of bowel mucosa. Further tissue damage is caused by inflammatory exudates and the release of prostaglandins and other cytokines. The mucosa is red and edematous due to vascular congestion, friable (easily damaged), and ulcerated. It bleeds easily. Chronic inflammation leads to atrophy, narrowing, and shortening of the colon. Manifestations of ulcerative colitis are diarrhea, stool with blood and mucus, fecal urgency, tenesmus, left lower quadrant cramping, fatigue, anorexia, nausea and vomiting, weakness, skin and mucous membrane lesions, uveitis, and arthritis in joints. Complications of ulcerative colitis include hemorrhage, toxic megacolon, colon perforation, and the risk for colorectal cancer.

Based on the medical diagnosis of ulcerative colitis and the manifestations she has, the nursing diagnosis of *Diarrhea* is appropriate for guiding nursing care for Mrs. Simpson.

Based on the medical diagnosis of ulcerative colitis and the manifestations she has, the nursing diagnosis of *Diarrhea* is appropriate for guiding nursing care for Mrs. Simpson.

