ASSISTING IN GASTROENTEROLOGY

SCENARIO

Joan Rothman, CMA (AAMA), was recently hired by United Community Hospital to work for a group of internists. Joan works primarily with Dr. Raj Sahani, a physician who specializes in gastroenterology. Although Joan did very well in school, she has had to learn more advanced information about disorders of the gastrointestinal (GI) tract so that she can answer patients’ questions and understand the diagnostic procedures ordered by Dr. Sahani.

Dr. Sahani has asked Joan to research and develop educational packets for common gastrointestinal studies and to work with other staff members on understanding procedures related to the GI system. Part of the role of the medical assistant working in a gastroenterology practice is to conduct routine patient education so that patients are properly prepared for diagnostic procedures. Joan also is expected to help in the orientation of new staff members.

While studying this chapter, think about the following questions:

- What does Joan need to include in the educational packets so that patients are prepared for GI examinations?
- What are some of the GI disorders Joan can expect to see in this specialty practice?
- What information should be included in a pamphlet on infectious viral hepatitis?
- What should a new medical assistant know about the GI examination, including instructions for patients on how to collect fecal specimens?

LEARNING OBJECTIVES

1. Define, spell, and pronounce the terms listed in the vocabulary.
2. Apply critical thinking skills in performing the patient assessment and patient care.
3. Describe the primary functions of the GI system.
4. Identify the anatomic structures that make up the GI system and describe the physiology of each.
5. Differentiate among the abdominal quadrants and regions.
6. Summarize the typical symptoms and characteristics of GI complaints.
7. Perform telephone screening for patients with GI complaints.
8. Distinguish among cancers of the GI tract.
9. Describe common esophageal and gastric disorders, the signs and symptoms, diagnostic tests, and treatments.
10. Describe intestinal disorders, the signs and symptoms, diagnostic tests, and treatments.
11. Classify disorders of the liver and gallbladder and list the signs and symptoms, diagnostic tests, and treatments.
12. Describe the similarities and differences among the various forms of infectious viral hepatitis.
13. Summarize the medical assistant’s role in the GI examination.
14. Explain the common diagnostic procedures for the GI system.
15. Perform the procedural steps for assisting with the collection of a fecal specimen.
16. Describe the medical assistant’s role in the proctologic examination.
17. Demonstrate assisting with an endoscopic colon examination.
VOCABULARY

adhesions (ad-he'-zhuns) Bands of scar tissue that bind together two anatomic surfaces that normally are separate.
ana (uh-nas-tuh-mo'-suhs) The surgical joining of two normally distinct organs.
anorexia (ahn'-uh-rek'-suh) A lack or loss of appetite for food.
ascites (uh-sizh-tez) An abnormal collection of fluid containing high levels of protein and electrolytes in the peritoneal cavity.
carcinogens (kar-sizh-nuhjuns) Substances or agents that cause the development of or increase the incidence of cancer.
diaphoresis (di-uh-fuh-reh'-sis) The profuse excretion of sweat.
endemic (en-deh'-mik) A term describing a disease or microorganism that is specific to a particular geographic area.
esophageal varices (i-sah-fuh-jul/var'-uh-siz) Varicose veins of the esophagus, which occur as a result of portal hypertension; these veins can easily hemorrhage.
fecalith (feh-kahl-ith) A hard, impacted mass of feces in the colon.
fissures Narrow slits or clefs in the abdominal wall.
fistula (fis'-uh-luh) An abnormal, tube-like passage between internal organs or from an internal organ to the body's surface.
flatus Gas expelled through the anus.
gangrene The death of body tissue as a result of loss of nutritive supply, followed by bacteria invasion and putrefaction.
hematemeses (hi-muh-muh'-sih-sk) Vomiting of bright red blood, indicating rapid upper GI bleeding; associated with esophageal varices or peptic ulcer.
hematocrit The percentage by volume of packed red blood cells in a given sample of blood after centrifugation.
hemoglobin (heh-muh-gloh-buhn) A protein found in erythrocytes that transports molecular oxygen in the blood.
hepatogmally (heh-puh-toh-muh-guh-lee) Abnormal enlargement of the liver.
ileostomy The surgical formation of an opening of the ileum onto the surface of the abdomen through which fecal material is emptied.
jaundice Yellowing of the skin and mucous membranes caused by the deposition of bile pigment; jaundice is not a disease, but rather a sign of a number of diseases, especially liver disorders.
 lithotripsy (lih'-thuh-trip'-see) A procedure for eliminating a kidney stone or gallstone by crushling or dissolving it in situ through the use of high-intensity sound waves.
lymphadenopathy (lim-fuh-nuh-nuh'-puh-thuh) Any disorder of the lymph nodes or lymph vessels.
polyps (poh-lips) Tumors or outgrowths found in the mucosal lining of the colon; they are considered precancerous.
portal circulation The pathway of blood flow through the portal vein from the GI system to the liver.
portal hypertension Increased venous pressure in the portal circulation caused by cirrhosis or compression of the hepatic vascular system.
sclerotherapy (skluh-ruh-ther'-uh-pee) The treatment of hemorrhoids, varicose veins, or esophageal varices by means of injection of sclerosing solutions.
Valsalva's maneuver Occurs when a person strains to defecate or urinate, uses the arms and upper trunk muscles to move up in bed, or strains during laughing, coughing, or vomiting; causes a trapping of blood in the great veins, preventing it from entering the chest and right atrium, and may cause heart attack and death.

Internal medicine is a nonsurgical specialty with several subspecialties. Gastroenterology, one of these subspecialties, covers an extremely wide area known as the gastrointestinal (GI) system or the alimentary canal. Gastroenterologists are concerned with diseases and disorders of the stomach, small intestine, large intestine (colon), appendix, and the accessory organs of the liver, gallbladder, and pancreas. Proctology, a subspecialty of gastroenterology, is concerned with disorders of the rectum and anus. The major purpose of the GI system is to prepare, digest, and absorb the necessary nutrients to maintain homeostasis and excrete waste products through the feces.

ANATOMY AND PHYSIOLOGY

The GI system is basically a long, hollow tube with the same structural organization from its beginning to its termination (Figure 39-1). The muscles lining the GI tract are closely regulated by the autonomic nervous system, which gives the entire system its unique ability to move slowly in some locations and to have increased movement in other sections.

The GI system is divided into two parts: the upper digestive system, which includes the mouth, esophagus, and stomach, and the lower digestive system, which consists of the small and large intestines. The GI tract is rich in lymphatic tissue, which is very important for the absorption of nutrients from ingested food. Unfortunately, the lymphatic vessels also are the main route for the spread of cancer.

As mentioned, the GI organs have three primary functions: digestion, absorption, and elimination. When food is taken in through the mouth, it is chewed, or masticated, and moistened with saliva. Salivary amylase, an enzyme released by the salivary glands, mixes with the food and begins carbohydrate digestion. This mass, now called a bolus, is swallowed, and the food enters the esophagus. Contractions of the smooth muscles are activated, and the bolus is moved by peristalsis down the esophagus and into the stomach.

At the distal end of the esophagus is the gastroesophageal or cardiac sphincter, which relaxes as the bolus is swallowed so that it can pass into the stomach. The muscular walls of the stomach overlap in folds, or rugae, which permit the stomach to expand and to hold as much as 1 to 1.5 L of food and liquid. The gastric glands in the stomach mucosa secrete hydrochloric acid, pepsinogen (which begins the digestion of protein), and intrinsic factor, which is needed for the absorption of vitamin B12. The gastric contents, called chyme, are slowly emptied through the pyloric sphincter into the small intestine. The small intestine is made up
of the duodenum at the proximal end, the jejunum, and the ileum at the distal end.

The common bile duct delivers bile, which is produced in the liver and stored in the gallbladder, to the duodenum. Bile acids emulsify fat; that is, they break down large fat molecules into smaller molecules that can be chemically digested by fat enzymes. The pancreatic duct delivers digestive enzymes to the duodenum, including amylase for carbohydrate digestion, trypsin for protein breakdown, and lipase for fats. This mixture of bile and pancreatic enzymes in the duodenum completes the digestion of nutrients, converting carbohydrates into glucose, protein into amino acids, and fats into fatty acids and glycerol.

Once digestion has been completed in the duodenum, the second function of the GI tract, absorption of nutrients, begins. The small intestine is lined with transverse folds of tissue called villi. There are approximately 25,000 of these overlapping projections, which greatly increase the surface area available in the small intestine for nutrient absorption. Each villus is rich with blood vessels that absorb digested nutrients into the portal circulation system and carry them directly to the liver for processing. Lymph vessels along the villi absorb fat and deposit it into the systemic circulation. By the time the chyme reaches the terminal end of the small intestine, every nutrient the body needs should have been absorbed. This mass enters the colon, or large intestine, which is made up of the cecum (extending from it is the vermiform appendix), ascending colon, transverse colon, descending colon, sigmoid colon, rectum, and anus. The colon absorbs large amounts of fluids and electrolytes to prevent dehydration of body tissues. Once fluid has been reabsorbed, the remaining solid waste materials, called feces, are moved into the sigmoid colon and rectum, and elimination occurs through the anus. This final function is called defecation.

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**CRITICAL THINKING APPLICATION 39-1**

Dr. Sahani is concerned that some staff members do not understand the role of the GI system in digestion, absorption, and excretion. He asks Joan to prepare an in-service training program on the anatomy and physiology of the GI tract. What should Joan include in the workshop?
DISEASES OF THE GASTROINTESTINAL SYSTEM

GI disorders probably are the most common problems seen in a medical office. Most conditions of the GI system are managed by a primary care physician. About 5% to 10% of GI problems are referred to a gastroenterologist for diagnosis and treatment. It is assumed that problems that stem from dental disorders are treated by the dental professions. This chapter concentrates on the GI problems most frequently seen, diagnosed, and treated in an ambulatory care center.

CHARACTERISTICS OF THE GI SYSTEM

- The abdominal cavity can be divided into four quadrants or nine regions (see Figure 39-2).
- The peritoneum is a membrane that lines the abdominal wall and covers the organs of the abdominal cavity.

- The mesentery is a dorsal peritoneal fold that attaches the jejunum and ileum to the posterior abdominal wall.
- The omentum is a fold of fatty peritoneal tissue with multiple lymph nodes. It hangs from the stomach like an apron, covering the anterior transverse colon and the small intestine. Inflammation of the omentum results in the formation of scar tissue and adhesions.
- The GI system digests and absorbs nutrients for the entire body; if it becomes diseased, all other systems are affected.

Common Signs and Symptoms

A patient with a GI problem may complain of multiple discomforts, including nausea, vomiting, anorexia, diarrhea, constipation, and abdominal pain. The medical assistant may find it difficult to identify the exact location and quality of the patient's discomfort. When discussing abdominal pain with the patient, ask the patient to point to or touch the area where the pain is located.

<table>
<thead>
<tr>
<th>RIGHT UPPER QUADRANT (RUQ)</th>
<th>LEFT UPPER QUADRANT (LUQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver</td>
<td>Stomach</td>
</tr>
<tr>
<td>Gallbladder</td>
<td>Spleen</td>
</tr>
<tr>
<td>Duodenum</td>
<td>Left lobe of liver</td>
</tr>
<tr>
<td>Head of pancreas</td>
<td>Body of pancreas</td>
</tr>
<tr>
<td>Right kidney and adrenal</td>
<td>Left kidney and adrenal</td>
</tr>
<tr>
<td>Hepatic flexure of colon</td>
<td>Splenic flexure of colon</td>
</tr>
<tr>
<td>Part of ascending and</td>
<td>Part of transverse and</td>
</tr>
<tr>
<td>transverse colon</td>
<td>descending colon</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RIGHT LOWER QUADRANT (RLQ)</th>
<th>LEFT LOWER QUADRANT (LLQ)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cecum</td>
<td>Part of descending colon</td>
</tr>
<tr>
<td>Appendix</td>
<td>Sigmoid colon</td>
</tr>
<tr>
<td>Right ovary and tube</td>
<td>Left ovary and tube</td>
</tr>
<tr>
<td>Right ureter</td>
<td>Left ureter</td>
</tr>
<tr>
<td>Right spermatic cord</td>
<td>Left spermatic cord</td>
</tr>
</tbody>
</table>

MIDLINE

- Aorta
- Uterus (if enlarged)
- Bladder (if distended)

FIGURE 39-2 The abdominal quadrants and regions and the organs within each.
located. This is one way of making sure the correct quadrant or region is identified and the patient is properly prepared for the physician’s examination. If possible, document the location of the patient’s complaint using the abdominal regions (Figure 39-2), because this is most accurate. For example, if the patient complains of heartburn after eating, this can be charted as: Pt c/o epigastric discomfort after meals; 6 on a pain scale of 1-10.

Table 39-1 outlines the typical signs, symptoms, and characteristics seen in patients with GI complaints. Using Procedure 39-1, outline how you would respond to the scenarios in Critical Thinking Application 39-2.

**CRITICAL THINKING APPLICATION 39-2**

Two days a week Joan works in the telephone screening area of the practice, where she is responsible for the initial management of calls from Dr. Sahoni’s patients. The following problems from patients are typical of a call day. What are some questions Joan should ask and subsequently document in each patient’s chart?

**Cancers of the Gastrointestinal Tract**

Any organ of the digestive tract can develop cancer. The features of malignant tumors and their treatments were described in Chapter 38. These characteristics, including the ability to invade surrounding tissues and metastasize through the blood or lymph systems, are true of all cancerous tumors.

Table 39-2 describes some of the common malignant tumors found in the GI system. The exact cause of a malignancy may not be known, but exposure to carcinogens increases the risk of developing a cancerous tumor. Examples of carcinogens include

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**PROCEDURE 39-1**

Perform Patient Screening Using Established Protocols: Telephone Screening of a Patient with a Gastrointestinal Complaint

**GOAL:** To answer the telephone professionally and to manage patients’ phone calls according to the physician’s guidelines.

**SCENARIO:** A 22-year-old woman reports acute abdominal pain.

**EQUIPMENT and SUPPLIES**

- Telephone
- Message pac
- Pen
- Access to the appointments schedule
- Access to the patient’s record
- Physician’s policy manual for managing patients’ phone calls

**PROCEDURAL STEPS**

1. Answer the telephone by the third ring, speaking directly into the mouthpiece.
   **PURPOSE:** Answering promptly conveys interest in the caller. Proper positioning of the mouthpiece allows for an audible tone.

2. Speak distinctly, using a pleasant tone and expression, at a moderate rate and with sufficient volume.

3. Greet the caller, identify the office and/or physician as well as yourself, and offer to help the caller.
   **PURPOSE:** So that the patient knows she has reached the correct number, as well as the staff member to whom she is speaking.

4. Verify the identity of the caller and access the patient’s record.
   **PURPOSE:** To have the patient’s chart ready for reference regarding the health history and recent care.

5. Determine the caller’s needs.

6. Considering the patient’s complaint, formulate questions designed to gather the information required to make a decision about when the patient should be seen and the physician notified. Given the patient’s gender, age, and complaint of acute abdominal pain, consider the following questions:
   - What are the onset, frequency, and duration of the abdominal pain?
   - What is the exact anatomic location of the discomfort?
   - What is the quality of the pain (e.g., sharp, dull, stabbing)?
   - On a scale of 1 to 10, with 10 being the worst pain, how does she rate the pain?
   - Does the patient have a history of this occurrence? Does she have a history of gynecologic or pelvic disorders?
   - Has she taken any medication for the discomfort and has it been effective?

7. Refer to the physician’s policies for patients’ phone calls as needed.

8. Depending on the patient’s answers to your questions and the physician’s policies for the management of abdominal discomfort, refer to the appointment schedule and make an appointment or take a message for the physician to return the patient’s call.

9. Document the details of the interaction and the results in the patient’s chart.
   **PURPOSE:** All communications with a patient, including phone calls, are part of the record of care. Students should document based on role play answers to questions in the procedure.

**Documentation Practice**
<table>
<thead>
<tr>
<th>COMPLAINT</th>
<th>CHARACTERISTICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea</td>
<td>Pallor, diaphoresis, tachycardia</td>
</tr>
<tr>
<td>Vomiting (emesis)</td>
<td>Caused by:</td>
</tr>
<tr>
<td></td>
<td>- GI irritation</td>
</tr>
<tr>
<td></td>
<td>- Pain or stress</td>
</tr>
<tr>
<td></td>
<td>- Inner ear disturbance</td>
</tr>
<tr>
<td></td>
<td>- Increased intracranial pressure (ICP)</td>
</tr>
<tr>
<td></td>
<td>Important characteristics to report and record:</td>
</tr>
<tr>
<td></td>
<td>- Onset, frequency, duration of the problem</td>
</tr>
<tr>
<td></td>
<td>- Yellow or greenish color (indicates bile from the duodenum)</td>
</tr>
<tr>
<td></td>
<td>- Pyloric stenosis (causes vomiting of undigested food)</td>
</tr>
<tr>
<td></td>
<td>- Projectile vomiting (may indicate increased ICP)</td>
</tr>
<tr>
<td></td>
<td>- Hematemesis (vomitus that looks like coffee grounds)</td>
</tr>
<tr>
<td>Diarrhea</td>
<td>Caused by:</td>
</tr>
<tr>
<td></td>
<td>- Infections or inflammation</td>
</tr>
<tr>
<td></td>
<td>- Food allergies</td>
</tr>
<tr>
<td></td>
<td>- Malabsorption syndromes</td>
</tr>
<tr>
<td></td>
<td>Important characteristics to report and record:</td>
</tr>
<tr>
<td></td>
<td>- Onset, frequency, duration of the problem</td>
</tr>
<tr>
<td></td>
<td>- Dehydration (may occur if diarrhea is persistent; occurs more often in infants and older adults)</td>
</tr>
<tr>
<td></td>
<td>- Presence of blood, mucus, or pus</td>
</tr>
<tr>
<td></td>
<td>- Steatorrhea (large, foul-smelling, greasy stools)</td>
</tr>
<tr>
<td></td>
<td>- Melena (tarry stools from bleeding higher in the digestive tract)</td>
</tr>
<tr>
<td>Constipation</td>
<td>Caused by:</td>
</tr>
<tr>
<td></td>
<td>- Lack of dietary fiber</td>
</tr>
<tr>
<td></td>
<td>- Inadequate intake of fluids</td>
</tr>
<tr>
<td></td>
<td>- Lack of exercise</td>
</tr>
<tr>
<td></td>
<td>- Neurologic disorders, including spinal cord injuries and multiple sclerosis</td>
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<tr>
<td></td>
<td>- Side effect of medications (e.g., codeine, iron, antacids)</td>
</tr>
<tr>
<td></td>
<td>- Bowel obstruction or tumor</td>
</tr>
<tr>
<td></td>
<td>Important characteristics to report and record:</td>
</tr>
<tr>
<td></td>
<td>- Onset, frequency, duration of the problem</td>
</tr>
<tr>
<td></td>
<td>- Treatment and effectiveness of over-the-counter medications</td>
</tr>
<tr>
<td></td>
<td>- Diet and fluid intake</td>
</tr>
<tr>
<td></td>
<td>- Presence of watery diarrhea (may indicate fecal impaction)</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>Caused by:</td>
</tr>
<tr>
<td></td>
<td>- Ulcerative diseases</td>
</tr>
<tr>
<td></td>
<td>- Tumors</td>
</tr>
<tr>
<td></td>
<td>- Appendicitis</td>
</tr>
<tr>
<td></td>
<td>- Bowel obstruction</td>
</tr>
<tr>
<td></td>
<td>- Food poisoning</td>
</tr>
<tr>
<td></td>
<td>- Inflections or inflammatory process</td>
</tr>
<tr>
<td></td>
<td>Important characteristics to report and record:</td>
</tr>
<tr>
<td></td>
<td>- Onset, frequency, duration</td>
</tr>
<tr>
<td></td>
<td>- Exact location (using either quadrants or abdominal regions)</td>
</tr>
<tr>
<td></td>
<td>- Quality of the pain (e.g., burning, cramping, sharp, dull)</td>
</tr>
<tr>
<td></td>
<td>- Degree of pain (on a scale of 1 to 10)</td>
</tr>
</tbody>
</table>
TABLE 39-2 Cancers of the Gastrointestinal Tract

<table>
<thead>
<tr>
<th>TUMOR</th>
<th>CHARACTERISTICS</th>
<th>CAUSE OR CONTRIBUTING FACTORS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral tumors</td>
<td>White mass in or on the mouth that bleeds easily; ulcer or fissure that does not heal; the mass usually is not painful</td>
<td>Cancer of the lip (pipe smoking), cancer of the tongue or gums (chewing tobacco)</td>
</tr>
<tr>
<td>Esophageal cancer</td>
<td>Typically found in the distal esophagus; initial sign is dysphagia (difficulty swallowing)</td>
<td>Associated with chronic irritation resulting from chronic esophagitis, alcohol abuse, or smoking</td>
</tr>
<tr>
<td>Gastric cancer</td>
<td>Asymptomatic in early stages; usually not diagnosed until well advanced; poor prognosis; marked by anorexia, indigestion, weight loss, fatigue; tests positive for occult blood in the stool</td>
<td>Food preservatives, chronic use of nitrates, smoked foods, genetic association, chronic gastritis</td>
</tr>
<tr>
<td>Liver cancer</td>
<td>Primary malignant tumors rare, usually a metastasized secondary tumor; initial symptoms mild; anorexia, vomiting, weight loss, fatigue, hepatomegaly, splenomegaly, portal hypertension; usually advanced when diagnosed</td>
<td>Primary tumor caused by cirrhosis from hepatitis or chemical exposure</td>
</tr>
<tr>
<td>Pancreatic cancer</td>
<td>Weight loss, jaundice; usually advanced when diagnosed; metastasis occurs early; no effective treatment</td>
<td>Cigarette smoking</td>
</tr>
<tr>
<td>Colorectal cancer</td>
<td>Usually develops from polyps in the colon; metastasis to the liver common; initial signs depend on location of tumor, may include changes in the character of stool, iron-deficiency anemia, fatigue, weight loss, frank bleeding, or melena</td>
<td>Genetic or familial link; diet high in fat, sugar, and red meat and low in fiber; usually occurs in patients over age 55</td>
</tr>
</tbody>
</table>

Tobacco and alcohol, as well as exposure to chemicals and radiation. The family history and lifestyle factors, such as consuming a diet high in fat and low in fiber, also can increase a person’s risk of developing certain types of cancer.

Disorders of the Esophagus and Stomach

Hiatal Hernia

A hernia is the abnormal protrusion of part of an organ or tissue through the structures that normally contain it. These protrusions can develop in various parts of the body but most frequently are seen in the abdominal region. Causes of herniation include congenital weakness of the structures, trauma, relaxation of ligaments and skeletal muscles, and increased upward pressure from the abdomen. Herniation most often is found in middle-aged or older individuals.

The location of the hernia determines the term by which the protrusion is identified. In patients with a hiatal hernia, the upper part of the stomach protrudes through the esophageal opening, the hiatal sphincter of the diaphragm (Figure 39-3). With a sliding hiatal hernia, part of the stomach moves above the diaphragm when the individual is supine and slides back down into the abdominal cavity when the person stands. Part of the fundus of the stomach moves through the weakened hiatus in a paraesophageal hiatal hernia. Food may lodge in the herniated part of the stomach, causing reflux of highly acidic stomach contents into the esophagus, dysphagia, and chronic esophagitis, which may cause fibrosis and stricture. Patients complain of heartburn, frequent belching, and increased discomfort when they cough, bend over, or lie down after eating. Patients with hiatal hernias are treated medically with Prilosec, Nexium, Pepcid, Tagamet, or Zantac. The treatment may include dietary modifications, such as avoiding caffeine, cigarettes, and alcohol; eating six small meals a day; weight loss; avoiding lying down after meals; and raising the head of the bed 6 to 8 inches.

Gastroesophageal Reflux Disease

Gastroesophageal reflux disease (GERD) occurs when the gastroesophageal sphincter (cardiac sphincter) at the distal end of the esophagus does not close properly, allowing acidic stomach contents to leak back, or reflux, into the esophagus. The regurgitated acidic contents of the stomach irritate the esophageal lining, causing heartburn symptoms. Occasional heartburn is not a problem, but a patient who experiences heartburn more than twice a week is diagnosed with GERD. All age groups can be diagnosed with GERD; however, it is seen most frequently in adults and is associated with alcohol use, pregnancy, and smoking and is very common in overweight patients. Besides persistent heartburn, patients may report chest pain, soarseness in the morning, difficulty swallowing, a feeling of tightness in the throat or a choking sensation, dry cough, and bad breath from the reflux of partly digested food. GERD frequently is seen in patients with hiatal hernias, and treatment protocols are similar in the two conditions.

Laparoscopic repair of the gastroesophageal sphincter may be recommended if lifestyle changes and medication are not effective in curing the problem. The U.S. Food and Drug Administration (FDA) has approved an Enteryx implant, which is placed laparoscopically next to the sphincter. This device releases a solution that helps strengthen the muscle. The most important concern with chronic GERD is the potential for developing Barrett’s esophagus, a precancerous condition caused by long-term exposure of esophageal cells to gastric contents. Patients diagnosed with GERD are followed regularly by a gastroenterologist so that these abnormal cells can be detected early and removed before cancerous changes occur.
Gastric and Duodenal Ulcers

Peptic ulcers occur most frequently in the proximal duodenum (duodenal ulcer) but may also be found in the stomach (gastric ulcer). Both types are characterized by an area of breakdown of the mucosal membrane, which leads to ulceration of the epithelial lining of the duodenum or stomach (Figure 39-4).

The first sign of a peptic ulcer may be iron-deficiency anemia or a positive stool test for occult blood, which results from erosion of blood vessels in the organ wall. Patients typically complain of gnawing or burning pain in the epigastric area between meals. Gastric ulcers may cause weight loss, whereas duodenal lesions often cause nausea and vomiting. If the ulcerative area is bleeding internally, the patient may have hematemesis (blood in the vomitus) or melena (coffee ground–like vomitus and/or tarry black stools).

The description of the patient’s pain gives the physician a suspicion of the disorder. The examination often shows that the patient is guarding the painful area, characterized by clutching of the upper abdominal area and drawing the knees up toward the chest. A definitive diagnosis is based on an upper GI series (x-ray evaluation) or endoscopy (visualization) of the upper GI tract (Figure 39-5). A biopsy sample of the affected area may be taken during the endoscopy to rule out cancer. A stool test may be ordered to check for occult (hidden) blood. Blood tests also are ordered to establish the hemoglobin and hematocrit levels.

Peptic ulcers can appear under a variety of predisposing circumstances, including the use of alcohol, smoking, use of non-steroidal antinflammatory drugs (NSAIDs) or corticosteroids (e.g., prednisone), and genetic predisposition. However, research indicates that 80% of gastric ulcers and 90% of duodenal ulcers are caused by the Helicobacter pylori bacterium. H. pylori can be diagnosed either by a blood test that measures the presence of antibodies to the bacteria or by a breath test that is done after the patient swallows a drink containing urea and carbon. Expired air is examined to detect the bacteria. The diagnosis is confirmed with biopsy samples of the gastric and duodenal mucosa obtained during an endoscopic examination.

Peptic ulcers caused by H. pylori are treated with a combination of medications, including antibiotics to kill the bacteria and drugs to reduce the production of hydrochloric acid and protect the stomach lining. The most effective treatment is a triple therapy method that lasts 2 weeks and includes two antibiotics (e.g., amoxicillin, Flagyl, or Biaxin) and either a histamine blocker (e.g., Tagamet or Zantac) or a proton pump inhibitor (Prilosec or Pepcid). Surgery may be indicated in severe cases, such as with perforation of the gastric wall. Any ulcer that does not heal is re-evaluated periodically through gastroscopy to rule out cancer.

GI System Medications

- Histamine stimulates acid-secreting cells to release hydrochloric acid; histamine (H2) blockers reduce the amount of hydrochloric acid released into the stomach. Prescription and over-the-counter (OTC) H2-blockers include ranitidine (Zantac), famotidine (Pepcid), cimetidine (Tagamet) and nizatidine (Axid).
**Pyloric Stenosis**

Pyloric stenosis, which is narrowing and hardening of the pyloric sphincter at the distal end of the stomach, can be caused by scar tissue produced by chronic conditions but typically is seen as a congenital defect in infants. The difficulty becomes apparent in newborns within 2 to 6 weeks of birth, because the infant has projectile vomiting immediately after feeding as a result of the stomach’s inability to empty effectively. Consequently, the baby displays symptoms of failure to thrive, becomes dehydrated, has small and infrequent stools, and is very irritable. Congenital pyloric stenosis typically occurs in first-born males and can be corrected by surgery.

**Intestinal Disorders**

**Food Poisoning**

Food poisoning occurs when food that contains bacteria or toxic material is eaten. This includes poisoning from eating mushrooms, foods that contain poisonous insecticides, and foods that have been contaminated with bacteria or have partly decomposed. The condition usually is self-limiting and subsides within 48 hours. Occasionally, it can be much more severe and even life threatening. The more severe cases usually are seen in young children and individuals in a weakened state of health. Food poisoning causes generalized gastroenteritis with sudden, intense symptoms (Table 39-3).

A complete patient history is crucial in determining the diagnosis. Stool and blood cultures must be performed to verify the causative pathogen. If the patient has a remaining portion of the suspected ingested food, it should be sent to the laboratory for analysis. In severe cases, the physician may order an endoscopic examination of the GI system to determine the extent of the damage or the condition of the mucosal lining of the system.

The patient is stabilized and symptoms are treated so that dehydration is minimized and electrolyte balance is maintained. Antiemetics, such as prochlorperazine (Compazine) and tri-methobenzamide (Tigan) rectal suppositories, may be prescribed to control vomiting. Other medications, such as cimetidine (Tagamet), loperamide (Imodium), or diphenoxylate with atropine (Lomotil) may be used to control diarrhea. If vomiting and diarrhea cannot be corrected within a reasonable time (as determined by age, body size, and health condition), the patient may be hospitalized so that intravenous (IV) fluid replacement can be administered.

**Dumping Syndrome**

A postsurgical complication of weight loss surgery is rapid gastric emptying, or dumping syndrome. This occurs when the jejunum fills too quickly with undigested food, resulting in intestinal distention and increased intestinal motility. Signs and symptoms include nausea, abdominal cramps, diarrhea, vertigo, tachycardia, and diaphoresis. The condition typically occurs after the individual eats sweet or high-fat foods. Patients undergoing weight loss surgery should be instructed to eat frequent small meals that are high in protein and low in simple sugars and to drink fluids between meals rather than with meals. These dietary modifications usually can prevent dumping syndrome.

**Irritable Bowel Syndrome**

Irritable bowel syndrome (IBS) is a recurrent functional bowel disorder; this means that the bowel does not work as it should, but diagnostic studies fail to show an organic cause for the symptoms. The diagnosis of IBS is made if the patient complains of recurrent abdominal discomfort of at least 3 months; abdominal pain that is relieved by defecation; feeling bloated; a change in bowel habits with constipation, diarrhea, and mucous discharge; and increased flatulence. The most common site of abdominal pain is the left lower quadrant. Diagnostic studies, such as a

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**TABLE 39-3 Food-Related Gastrointestinal Disorders**

<table>
<thead>
<tr>
<th>MICROORGANISM</th>
<th>CAUSE</th>
<th>INCUBATION PERIOD</th>
<th>SIGNS AND SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Staphylococcus aureus</em></td>
<td>Improper hand washing by food handlers; insufficient refrigeration of salads or improper cooking of meats</td>
<td>4-6 hr</td>
<td>Low body temperature; hypotension; acute, severe nausea, vomiting, cramps</td>
</tr>
<tr>
<td><em>Escherichia coli</em></td>
<td>Fecal contamination of food or water; improper cooking of meat or washing of fruits and vegetables</td>
<td>24-72 hr</td>
<td>Vomiting; abdominal cramps; diarrhea, may contain blood or mucus</td>
</tr>
<tr>
<td><em>Salmonella sp.</em></td>
<td>Fecal contamination of food; contaminated work areas; undercooked or raw poultry, eggs, or shellfish</td>
<td>8-48 hr</td>
<td>Acute diarrhea; sometimes vomiting; abdominal cramping and pain; fever</td>
</tr>
<tr>
<td><em>Campylobacter jejuni</em></td>
<td>Consumption of contaminated food or water; often raw poultry, fresh produce, or unpasteurized milk</td>
<td>2-4 days</td>
<td>Cramping abdominal pain; watery diarrhea; fever</td>
</tr>
<tr>
<td><em>Clostridium botulinum</em></td>
<td>Bacterial spores in improperly canned or prepared food</td>
<td>12-36 hr</td>
<td>Vomiting or diarrhea possible; neurologic complication (e.g., vision problems, paralysis, respiratory failure)</td>
</tr>
</tbody>
</table>
complete blood count, stool testing for occult blood, urinalysis, a barium enema, and colonoscopy, are performed to rule out other GI diseases that have an organic cause.

IBS is more common in women. Symptoms usually appear in late adolescence or early adulthood. The condition seems to have a familial pattern, and IBS may account for up to 50% of referrals to gastroenterologists because of concern about possible organic disease. IBS is quite common; an estimated 9% to 20% of the adult population is affected. The syndrome is associated with food intolerances, menstruation, and stress levels.

Treatment is primarily pharmaceutical, with bulk-forming agents (Metamucil) for constipation; loperamide (Imodium) or diphenoxylate and atropine (Lomotil) for diarrhea episodes; Lactaid if the patient is lactose intolerant; antispasmodic agents (e.g., dicyclomine [Bentyl]) for cramping; and anticholinergic agents (hyoscumine [Levsin]); and simethicone (Mylicon) for bloating and flatulence. A new drug, lubiprostone (Amitiza), recently was approved by the FDA for women who have IBS with constipation. It increases fluid secretion in the small intestine to help relieve constipation.

Some alternative therapies for IBS include acupuncture to relieve cramping and improve bowel function; the herb peppermint to relax intestinal smooth muscles; and probiotic foods, such as yogurt, to provide bacteria that make up the natural flora of the intestinal tract to help relieve symptoms. The patient should be encouraged to keep a food diary in an effort to identify foods that exacerbate the symptoms; to increase the fluid and fiber intake; and to avoid spicy and fatty foods and caffeine. Routine exercise also can be very helpful in relieving symptoms.

Patients with IBS can become very frustrated and need confirmation that this is a real problem, even though no organic or anatomic changes are apparent. Patients should be encouraged to follow lifestyle recommendations, including actively working to reduce stress. The medical assistant plays an important role in providing understanding and support to the patient with IBS.

**Critical Thinking Application** 39-3

Dr. Sahoni frequently sees patients with IBS. He asks Joan to prepare a handout for patients describing the disorder, making sure to include possible treatments. What should Joan include?

**Weight Loss Surgery**

Bariatric, or weight loss, surgery creates a smaller stomach pouch (about the size of an egg) and bypasses the duodenum, where most of digestion is completed. After the surgery, patients can eat only small amounts of food at one time, which reduces the number of calories consumed. Because the duodenum is bypassed, fewer nutrients are absorbed. The most common gastric bypass surgery is the Roux-en-Y procedure, in which surgical staples or a plastic band is used to create a small pouch at the top of the stomach. The smaller stomach then is anastomosed to the jejunum. This surgery can be done either as an open procedure or with a laparoscope, although the laparoscopic procedure is preferred because it is associated with fewer surgical risks and complications.

**Acute Appendicitis**

The vermiform appendix is a narrow pouch approximately 3½ inches long that extends off the cecum of the large intestine. It has no known function but can become inflamed and ultimately infected because of obstruction by a fecalith or by foreign material. As bacteria multiply, the appendix becomes inflamed and swollen, causing ischemia and necrosis of the appendix wall. If the infectious material leaks out or bursts from the appendix, a localized infection forms that may become regional if the abdominal peritoneum becomes involved, resulting in peritonitis. Peritonitis is a serious infection that may become life threatening.

Classic signs of appendicitis include right lower quadrant pain; nausea and vomiting; tenderness at McBurney's point, which is located between the umbilicus and the right anterior superior iliac spine; low-grade fever; and leukocytosis (an increase in the white blood cell count). Other conditions that might cause similar symptoms include ectopic pregnancy or ovarian cyst, a kidney stone lodged in a ureter, or Crohn's disease. Appendicitis is confirmed with computed tomography (CT) or ultrasound. The infected appendix is removed surgically (appendectomy), typically in a laparoscopic procedure, in which a pencil-thin tube with its own lighting system and miniature video camera is inserted through a small incision in the abdomen to visualize the area. The surgeon removes the appendix with tiny instruments that are inserted through one or two other small abdominal incisions. However, if the appendix has ruptured, a larger incision is needed to clean the abdominal cavity. After surgery, the patient is treated with broad-spectrum antibiotics to prevent or treat infection at the site.

**Crohn's Disease**

Crohn's disease, also called regional ileitis or regional enteritis, is an inflammation that may be located anywhere in the alimentary
tract but most commonly is found in the ileum. The inflammation begins with a localized area of ulcer development, with healthy tissue interspersed with areas of affected tissue. Inflammation results in the formation of ulcers that eventually invade deeper into the walls of the intestine, creating scar tissue and partial or complete obstruction at the affected site. If this occurs in the small intestine, the damaged wall reduces the intestine’s ability to digest and absorb nutrients; if it occurs in the colon, increased motility prevents reabsorption of fluids. Scar tissue from the localized ulceration ultimately can lead to a bowel obstruction, or the ulcer may completely invade the intestinal wall, resulting in perforation and leakage of intestinal contents into the abdominal cavity. Adhesions may develop from chronic inflammation, or fistulas may form between two loops of the intestine or between the intestine and adjacent organs.

Signs and symptoms of Crohn’s disease include loose, semi-formed stool; melena if the ulcers break through blood vessels; pain or tenderness in the right lower quadrant; anorexia; weight loss; anemia; and fatigue. Most patients cycle through periods of remission and relapse. The cause of the disease is unknown, although some theories associate the disease with either a viral or bacterial immune response or a genetic predisposition. Risk factors include age (most cases are diagnosed between 15 and 35 years of age), smoking, Jewish or European descent, a family history of the disorder, and residence in a developed country or urban area. The diagnosis is made from a barium enema, small bowel series, abdominal CT scan, and colonoscopy and is confirmed with a biopsy.

The goals of treatment are to reduce inflammation, manage symptoms, and provide nutritional support. Anti-inflammatory drug therapy includes sulfasalazine (Azulfidine), mesalamine (Asacol), and corticosteroids (e.g., prednisone or budesonide [Entocort]), which are used during the acute phases. Immune system suppressors, including azathioprine (Imuran) and infliximab (Remicade), are also recommended to control the immune system’s reaction to the inflammatory process. Metronidazole (Flagyl) and ciprofloxacin (Cipro) are antibiotics prescribed for fistulas, and antidiarrheal agents (e.g., Imodium or Lomotil) may provide symptomatic relief. Surgical intervention that involves resection of the diseased bowel and anastomosis may be necessary if an intestinal obstruction occurs, a fistula is present, or abscess formation is seen. Unfortunately, the disease usually recurs at the site of the anastomosis. The patient may require dietary supplements with a high-protein, high-calorie diet to maintain a normal weight and vitamin B12 shots if ulcerations occur in the distal ileum, where the vitamin is absorbed.

**Ulcerative Colitis**

Ulcerative colitis causes inflammation that usually starts in the rectum and moves proximally through the colon, affecting the lining of the colon in a continuous pattern. The disease causes the formation of ulcers that invade the mucosal and submucosal layers but do not advance through the entire wall of the colon (Figure 39-6). Ulcerative colitis can affect people of any age; although a familial tendency exists, the cause is unknown. The patient complains of abdominal pain, mucoid stools, and intermittent episodes of bloody diarrhea. As the disease progresses, the patient may experience as many as 10 to 20 stools a day, along with weight loss, fever, and general malaise.

Drug therapy is similar to that for Crohn’s disease, but surgical removal of the colon with an ileostomy is considered curative for ulcerative colitis. A new surgical procedure, the ileal anal anastomosis, has been developed. In this procedure, a pouch is formed out of the ileum and then connected directly to the anus. This results in multiple watery bowel movements a day, because the colon is not there to absorb fluid; however, the patient has a continuous GI tract and does not need to wear a collection bag on the abdomen. Patients with ulcerative colitis must be screened annually with a colonoscopy because they have an increased risk of colon cancer.

**Celiac Disease**

Celiac disease, also known as celiac sprue, is a malabsorption syndrome caused by a genetic defect in the intestinal enzyme that metabolizes gluten. Celiac disease can occur at any age once gluten is present in the diet, or it may develop after some form of traumatic event, such as infection, injury, pregnancy, severe stress, or surgery. Gluten is found in all grains, including any products made from wheat, barley, rye, and possibly oats. If the affected individual eats a product that contains gluten, even in small amounts, an antigen-antibody reaction occurs that causes destruction of the villi in the small intestine. The intestine is unable to absorb nutrients, and the result is malnutrition. The patient has steatorrhea, abdominal pain, and weight loss. Celiac disease can be treated with strict adherence to a gluten-free diet; rice, soy, corn, and potato flours can be substituted for gluten products. Although oats may not be harmful, oat products frequently are contaminated with wheat, so these should be avoided as well. Gluten-free products, identified by food label claims, are becoming more widely available.

**Diverticular Disease**

Diverticula are outpouchings or herniations of the muscular lining of the colon, usually the sigmoid colon. Diverticula develop because of chronic constipation and muscular hypertrophy in the colon and become more common as people age. Diverticulosis is an asymptomatic diverticular disease in which
multiple diverticula are present in the colon, but the patient has no complaints other than mild discomfort, diarrhea, constipation, or flatulence. However, if the herniations become blocked with feces and inflammation develops, diverticulitis occurs. The patient’s signs and symptoms include lower left quadrant cramping, tenderness, or pain; nausea and vomiting; low-grade fever; and leukocytosis. A barium enema or colonoscopy may be done to confirm the presence of diverticula.

Patients with diverticulosis are encouraged to eat a diet high in roughage, to drink plenty of fluids, and to avoid foods with kernels or seeds such as nuts, popcorn, and sunflower, pumpkin, and sesame seeds. Keeping a food diary may help the patient identify problem foods. The goals of dietary management are to prevent the collection of waste in the herniations and to encourage regular, soft bowel movements. The physician may recommend that the patient take a daily fiber product (e.g., Citrucel or Metamucil) to increase the amount of fiber regularly consumed. If diverticula become inflamed, antibiotics are prescribed to treat the infection. An acute attack with severe pain and infection may require hospitalization, IV antibiotic therapy, and pain management. Surgery may be necessary if the colon perforates.

**Hernias of the Abdomen**

Hernias can develop in various parts of the body but most frequently are seen in the abdomen when an organ or part of an organ protrudes through a weakened area in the abdominal muscle wall. The causes of herniation include congenital weakness of the structures, trauma, relaxation of ligaments and skeletal muscles, and increased upward pressure from the abdomen. They most often are found in middle-aged or older individuals. The location of the hernia establishes the term by which the protrusion is identified. The types of hernias include umbilical hernias; incisional hernias at the site of a previous surgery; and inguinal hernias, in which a loop of the bowel protrudes into the inguinal canal (Figure 39-7).

The usual sign of an abdominal hernia is an abnormal lump or bulge that the patient finds while bathing. This bulge is tender, but the pain is mild. The patient also may discover that the bulge can be pushed back into the abdomen, where it remains until some type of moving activity is performed and it reappears. If severe pain is present, the hernia may be trapped or strangulated if blood flow has been compromised. If immediate surgical intervention is not performed, the tissue may die, and gangrene will set in.

The physician uses palpation to assess an abdominal or inguinal hernia for size and inspects the area with the patient standing and lying down. An inguinal hernia can be detected in a male by having him perform Valsalva’s maneuver. The most common treatment is surgical repair in the form of a herniorrhaphy or hernioplasty.

**Hemorrhoids**

Hemorrhoids are varicose veins of the anus and rectum. They affect approximately 5% of all adults. The disorder has a familial, hereditary predisposition, and it is common in people with varicose veins of the lower extremities and inguinal hernias. Hemorrhoid formation is related to increased pressure in the rectum, often caused by constipation. If the swollen veins are within the rectal wall, they are considered internal hemorrhoids, which usually do not cause uncomfortable symptoms; if they are firm and protruding and can be felt and/or seen, they are external hemorrhoids, which usually prompt complaints of pain and itching.

Some patients experience no pain, and other patients experience rectal irritation and discomfort. Frequently, the patient reports that anal itching and burning occur immediately after a bowel movement. If the patient must strain to defecate, bleeding, and a protrusion of the swollen mass can occur. Patients often state that the anal area must be bathed or even soaked in warm water after every bowel movement to relieve the itching and pain.

A proctologic examination and inspection of the anal area reveals external hemorrhoids. Proctoscopy is performed to detect internal hemorrhoids of the rectum. A hemoglobin level and red blood cell count may be ordered to determine whether any significant blood loss has occurred. Hemorrhoids are treated with stool softeners (e.g., docusate sodium [Colace]); fiber supplements (e.g., Metamucil or Citrucel); a high-fiber diet; increased fluid intake; and an analgesic ointment applied locally or by suppository to relieve swelling. If these measures do not correct the problem, the next step may be sclerotherapy with a chemical injection, cryosurgery, infrared coagulation to burn hemorrhoidal tissue, ligation, or hemorrhoidectomy.

**DISEASES OF THE LIVER AND GALLBLADDER**

**Cirrhosis**

The liver is located in the right upper quadrant of the abdomen. Its primary functions are to metabolize nutrients and detoxify drugs or other harmful substances. The liver also excretes proteins that aid in blood clotting and produces bile for fat metabolism. Cirrhosis is a chronic liver disease in which the lobes of the liver become fibrous and hard, and liver cells degenerate, causing deterioration of liver function. Cirrhosis is the twelfth leading cause of death by disease and the fourth most common cause of death in men 40 to 60 years of age. The primary causes of the disease in the United States are chronic alcoholism and hepatitis C. Cirrhosis also can be
caused by chronic hepatitis B; nonalcoholic steatohepatitis (NASH), which is characterized by a buildup of fat in the liver, which eventually causes scar formation and loss of function; blocked bile ducts; and severe reactions to prescription drugs or exposure to environmental toxins.

The patient is asymptomatic in the early stages of cirrhosis, but as scar tissue replaces normal hepatocytes, the liver begins to fail and the patient has fatigue, anorexia, weight loss, and abdominal pain. Complications associated with advanced cases of liver failure include dependent edema (fluid retention in the legs); ascites (Figure 39-8); bleeding abnormalities; jaundice; pruritus from deposits of bile salts on the skin; sensitivity to medication, because the liver is unable to metabolize drugs; portal hypertension; esophageal varices; insulin resistance, with the development of diabetes mellitus type 2; and cancer of the liver. Treatment is based on the cause of the problem, but avoiding alcohol and eating a nutritious diet are key factors. With advanced cases, the only cure is a liver transplant.

**NONALCOHOLIC FATTY LIVER DISEASE**

- The accumulation of fat in the liver causes inflammation, which may lead to scar formation, cirrhosis, and liver cancer.
- The condition affects all age groups, including children, but is seen most often in middle-aged people who are overweight or obese and may be diabetic.
- Symptoms are rare in the early stages; the disease often is detected because of abnormal liver blood test results.
- Treatment includes weight loss, exercise, improved diabetes control, and anticholesterol medications.
- The disease can be life threatening; approximately 25% of patients develop serious liver disease that requires a transplant.

### Hepatitis

Inflammation of the liver, called hepatitis, may be caused by a localized infection (viral hepatitis), a systemic infection, chemical exposure, or a complication of drug metabolism. Mild inflammation temporarily impairs function, but severe inflammation may lead to necrosis and serious complications.

**Viral Hepatitis**

Acute viral hepatitis is an infection of the liver that causes a sudden onset of hepatocyte inflammation. There are several forms of the hepatitis virus, categorized as hepatitides A, B, C, D, E, and G (Table 39-4). Hepatic cells can regenerate; therefore, depending on the degree of liver involvement, the patient may recover completely or could develop widespread necrosis, cirrhosis, and liver failure. Chronic inflammation, defined as the presence of the disease for longer than 6 months, can occur with hepatitis B, C, or D. This usually results in permanent liver damage and an associated increased risk of liver cancer. Individuals infected with hepatitis B, C, or D also may become lifelong carriers of the disease. Hepatitis carriers are asymptomatic but can transmit the virus to others.

The hepatitis A virus (HAV) is transmitted through contaminated water or shellfish. Some parts of the world are endemic for the disease, and a vaccine is available. The hepatitis B virus (HBV) has a relatively long incubation period, which makes tracking the source of the infection more difficult. Because the virus is found in all blood and body fluids, it can be transmitted in many ways, including needle sticks, human bites from individuals infected with the virus, sexual contact, and fetal transmission. Immunization of individuals at increased risk is highly recommended. All healthcare personnel are included in this group, because they are at increased risk for infection through exposure to body fluids. HBV immunization is included as part of the pediatric immunizations (see Chapter 42).

As a healthcare professional, the medical assistant cares for sick people on a daily basis who may be carriers of the hepatitis virus. Changing dressings, collecting specimens, holding a patient's hand that was just used to cover the mouth, and discarding a wet baby diaper all are possible ways that exposure can occur. The first line of defense, regardless of whether the medical
TABLE 39-4 Characteristics of the Types of Viral Hepatitis

<table>
<thead>
<tr>
<th>HEPATITIS TYPE</th>
<th>MODE OF TRANSMISSION</th>
<th>INCUBATION PERIOD</th>
<th>SYMPTOMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Fecal-oral (food or water contaminated by feces from infected person); contaminated raw shellfish; infected household members or sexual partners</td>
<td>2-7 weeks</td>
<td>Fatigue, weakness, anorexia; some patients have joint pain, hepatomegaly, lymphadenopathy, jaundice</td>
</tr>
<tr>
<td>B (serum hepatitis)</td>
<td>Blood and body fluids; placental transfer</td>
<td>1-6 months</td>
<td>General malaise, joint swelling, pruritic rash, hepatomegaly, anorexia, nausea, vomiting, dark yellowish-brown urine, jaundice; may become chronic</td>
</tr>
<tr>
<td>C (non-A non-B)</td>
<td>Blood and body fluids; most frequent type of posttransfusion hepatitis</td>
<td>2 weeks-6 months</td>
<td>Acute onset of fever, chills malaise, nausea, vomiting; frequently becomes chronic</td>
</tr>
<tr>
<td>D (delta virus)</td>
<td>Blood and body fluids</td>
<td>Seen only in patients with hepatitis B</td>
<td>Similar to those of hepatitis B; increases the severity of hepatitis B</td>
</tr>
<tr>
<td>E</td>
<td>Fecal-oral</td>
<td>2-9 weeks</td>
<td>Similar to those in hepatitis A; seen in India, Asia, Africa, Central America; mild form but can cause death in pregnant women</td>
</tr>
<tr>
<td>G</td>
<td>Blood and blood products</td>
<td>Not known</td>
<td>Similar to those for hepatitis HCV; may become chronic but does not appear to be an important cause of clinical liver disease</td>
</tr>
</tbody>
</table>

**Diagnosis and Treatment**

Hepatitis A, B, and C are diagnosed through identification of the virus or antibodies to the virus in the blood. Another useful diagnostic test is a liver biopsy. Once the infection has been diagnosed, liver function tests are done periodically throughout the course of the disease to determine the degree of liver damage. Patients with hepatitis B, C, or D must be monitored for possible chronic hepatitis and the development of a carrier state. Prescription medications include interferon, which stimulates the immune response, and antiviral drugs (e.g., telbivudine [Tyzeka] and entecavir [Baraclude]) to prevent viral cell replication. Otherwise, the treatment for all forms of hepatitis generally consists of bed rest and a high-protein diet.

The best form of treatment for hepatitis B is prevention through vaccination against the disease. The vaccine is given intramuscularly in three doses. The first two are given 30 days apart, and the third is given 6 months after the first. As discussed in Chapter 27, the Occupational Safety and Health Administration (OSHA) requires healthcare employers to make the vaccine available to employees free of charge. Medical assistant programs encourage students to be vaccinated, because they also are at risk for acquiring the disease.

**GROUPS AT RISK FOR HEPATITIS A, B, AND C**

- **Hepatitis A**: Day care workers and clients, institutionalized residents, individuals traveling to infected areas

**CRITICAL THINKING APPLICATION 39-4**

As a healthcare worker who may be exposed to blood and body fluids, Joan is quite concerned about contracting viral hepatitis. For what types of hepatitis is she at risk in Dr. Sahini's office? What can she do to reduce her risk and protect herself from contracting these diseases?

**Cholelithiasis (Gallstones)**

The gallbladder is an accessory organ of the GI system that stores the bile excreted by the liver. Cholelithiasis, or gallstones, form in the gallbladder from insoluble cholesterol and bile salt. These stones vary in size and number. The reasons for formation are not always clear, although gallstones are more common with a high-calorie, high-cholesterol diet and are associated with obesity (Figure 39-9). About 20% of people older than age 65 develop cholelithiasis, and the risk in three times higher for women than for men.

**Signs and Symptoms**

Most gallstones are asymptomatic and are discovered incidentally during a routine radiograph. Pain usually occurs when the stones move and obstruct the cystic or common bile ducts. The pain is felt in the epigastric region and right upper quadrant, often radiating into the right upper back area, and is worse after a high-fat meal. Nausea and vomiting may accompany the pain.
The pain hits in a wavelike pattern and is called **colicky pain** or **biliary colic**. If the obstruction is not corrected, jaundice may develop.

### Diagnosis and Treatment

The physician bases the preliminary diagnosis on the patient’s symptoms and the signs noted on palpation of the upper right quadrant. To confirm the diagnosis, blood tests may be done to detect signs of infection, obstruction, pancreatitis, or jaundice, and an abdominal sonogram is performed to visualize the stones. A CT scan may show gallstones, and magnetic resonance (MR) cholangiography may be ordered to diagnose blocked bile ducts. In addition, cholescintigraphy (a hepatobiliary iminodiacetic acid [HIDA] scan) can be ordered to diagnose biliary tract obstruction. The patient is given an IV injection of radioactive material (HIDA), which is taken up by the liver and excreted into the biliary tract. A nuclear scanner then takes pictures of the biliary tract over a 2-hour period.

The treatment is surgical removal of the gallbladder (cholecystectomy), which usually is done laparoscopically. Gallstones also may be fragmented by **lithotripsy** procedures.

#### THE MEDICAL ASSISTANT’S ROLE IN THE GASTROINTESTINAL EXAMINATION

Emotional factors play an important part in many GI problems, often making the separation of functional and organic disorders difficult. Some forms of GI disease may demand immediate attention, such as acute appendicitis or acute gastritis with possible hemorrhage. Both may require surgical therapy. Careful questioning is needed to guide the patient to a more precise description of the symptoms. The medical assistant’s role as the liaison between the patient and the physician can help the physician make the diagnosis and get the patient the treatment needed.

General abdominal discomfort (colic) is common, because abdominal pain frequently is referred pain (Figure 39-10); that is, the pain felt in the abdomen actually is generated from an organ elsewhere. The pain may not be located directly over the involved organ or the point of the disorder. In this case, the patient’s pain is referred to the site of the organ during fetal development. Even though the organ moves during fetal development, its nerves persist in referring sensations to its primitive location.

### Assisting with the Examination

When a patient describes and points to the location of the pain, the medical assistant must know the underlying organs that may be involved. Record the quadrant or region in which the pain is located so that the physician can immediately assess this area when the examination begins. The physician’s inspection of the abdomen begins with noting any change in skin color, such as...
jaundice. Striae (silver stretch marks), petechiae (small, purple hemorrhagic spots), scars, and visible masses may be seen. The contour of the abdomen may be flat, rounded, or bulging in localized areas.

The physician uses palpation and percussion to evaluate the entire abdominal area. As this is done, the medical assistant should remove the drapes from the area to be examined and redrape the patient once the physician has completed this segment of the examination. In addition, the physician may want findings noted as the examination progresses. If the physician wants to examine the anal area, have the patient turn onto his or her left side and then assist the patient into the Sims’ position. As this is done, make sure the patient remains draped. After the patient is in the Sims’ position, adjust the drapes on the angle so that it can be easily lifted for the final part of the examination.

**CRITICAL THINKING APPLICATION 39-5**

Joan is responsible for initially questioning patients about complaints and clearly documenting this information in the patient’s chart. What information should Joan include that details each patient’s problem and would be helpful in determining the patient’s diagnosis?

## TABLE 39-5 Common Diagnostic Procedures for the Gastrointestinal System

<table>
<thead>
<tr>
<th>TEST</th>
<th>DESCRIPTION AND PURPOSE</th>
<th>PATIENT PREPARATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barium swallow</td>
<td>X-ray or fluoroscopic examination of the pharynx and esophagus after the patient swallows barium sulfate; to diagnose hiatal hernia, esophageal varices, strictures, and tumors; takes 15-20 minutes.</td>
<td>NPO after midnight; remove all metal objects; do not take medication for GERD. Cathartics given after examination to help with excetration of barium.</td>
</tr>
<tr>
<td>Upper gastrointestinal and small bowel series (UGI)</td>
<td>X-ray and fluoroscopic examination of esophagus, stomach, and small intestine after patient swallows barium sulfate; to diagnose ulcers, tumors, regional enteritis, and malabsorption syndrome; takes approximately 30 minutes.</td>
<td>Low-fiber diet 2-3 days before, NPO after midnight, no smoking before test. No medications after midnight unless approved by physician. Remove all metal objects. Stool will be chalky and light colored 24-72 hr after the test. Cathartics given after examination to help with excetration of barium. Explain to patient that he or she will swallow a carbonated powder that creates carbon dioxide in the stomach, which helps in visualizing the stomach mucosa.</td>
</tr>
<tr>
<td>Air-contrast UGI</td>
<td></td>
<td></td>
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<tr>
<td>Barium enema</td>
<td>X-ray evaluation of large intestine after rectal instillation of barium sulfate; to diagnose colorectal cancer, inflammatory disease of the colon; to detect polyps, diverticula, or obstructions; takes approximately 45 minutes.</td>
<td>No dairy products and liquid diet 24 hr before the test. Take bowel preparation as supplied by radiology department; enemas until clear in the morning. No breakfast; mild laxative or enema after procedure to remove barium. Light-colored stool for 24-72 hr after test. Expain to patient that air is insufflated into the colon after instillation of the barium to help visualize the colonic mucosa.</td>
</tr>
<tr>
<td>Air-contrast barium enema (ACBE)</td>
<td></td>
<td></td>
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<tr>
<td>Cholescintigraphy (HIDA scan)</td>
<td>Nuclear scan following IV injection of radioactive material. Pictures of biliary tract are taken over a 2-hr period to determine whether an obstruction caused by cholelithiasis exists. Best tool for diagnosing acute cholecystitis in patients with acute RUQ pain. Gallbladder visualized 60 minutes after injection of radionuclide; takes 4 hr to get all images. IV morphine during nuclear scanning speeds up bile movement to reduce scanning time to 1 hr.</td>
<td>NPO 2 hr before the test; assure patient exposure to radioactivity during the procedure is minute. Patient may be given a fatty meal during scanning to determine gallbladder ejection fraction (measures percentage of isotope ejected when gallbladder empties).</td>
</tr>
</tbody>
</table>
TABLE 39-5 Common Diagnostic Procedures for the Gastrointestinal System—cont’d

<table>
<thead>
<tr>
<th>TEST</th>
<th>DESCRIPTION AND PURPOSE</th>
<th>PATIENT PREPARATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ultrasonography of the liver, gallbladder, biliary system, pancreas</td>
<td>High-frequency sound waves from a transducer penetrate the organ, bounce back to the transducer, and are electronically converted into an image that is recorded on film. Used to diagnose neoplasms of the liver; cholelithiasis in the gallbladder or ducts; pancreatic tumors, abscesses, or inflammation.</td>
<td>Does not use contrast or radiation; useful in patients who are allergic to contrast media or are pregnant. Must be performed before barium contrast studies because barium and gas distort sound waves and alter test results. Patient must fast before gallbladder and biliary ultrasound tests.</td>
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<tr>
<td>Sigmoidoscopy</td>
<td>Endoscopic examination of distal sigmoid colon, rectum, and anal canal. Used to diagnose inflammatory, infectious, and ulcerative bowel disease and tumors; and to detect hemorrhoids, polyps, fissures, fistulas, abscesses in the rectum and anal canal. Air instilled to distend and visualize the lower intestinal tract. Biopsy specimens may be collected and polyps removed; takes 15-20 minutes.</td>
<td>Light breakfast the morning of the examination; oral cathartic and 2 Fleet enemas. Usually done without sedation in the physician’s office or outpatient clinic. May experience gas pains after procedure from air instillation. May have slight rectal bleeding if specimen is collected.</td>
</tr>
<tr>
<td>Colonoscopy</td>
<td>Endoscopic examination of the large intestine to detect or monitor inflammatory or ulcerative diseases; to locate the site of GI bleeding; and to diagnose tumors or strictures. Air insufflated for better visualization. Biopsy samples collected and polyps removed. Recommended for patients with positive Hemocult test result and those at high risk for colon cancer; takes 30-60 minutes.</td>
<td>Clear liquid diet for 48 hr before the test; laxatives; enemas until clear or 1 gallon of Colyde the day before. Large intestine must be completely cleansed. Monitor vital signs before and during procedure. Done with IV sedation in a hospital or outpatient clinic. May have preprocedure injection of Demerol and Versed. Must drink large amount of fluids to prevent dehydration from test preparation. Patients with valvular heart disease should have prophylactic antibiotics.</td>
</tr>
<tr>
<td>Endoscopy</td>
<td>Fiberoptic view of the esophagus and upper GI tract to diagnose or monitor cancer, Barrett’s esophagus, peptic ulcers, polyps. Biopsy samples collected and polyps removed; takes 45-60 minutes.</td>
<td>No food or fluids for 8 hours before test; back of throat sprayed with local anesthesia to reduce gag reflex as tube is passed.</td>
</tr>
</tbody>
</table>

GERD, Gastroesophageal reflux disease; HIDA, hepatobiliary iminodiacetic acid; IV, intravenous; NPO, nothing by mouth; RUQ, right upper quadrant.

Endoscopy allows the examiner to view the tissues, take images, and collect laboratory samples (e.g., biopsied tissue, gastric fluid, pathogens, bile crystals, and cytology samples) during the procedure with only minor discomfort to the patient.

Endoscopic procedures are performed to observe the function of the gallbladder, biliary ducts, and pancreatic ducts. A dye is injected directly into the ducts of the gallbladder and the pancreas, and the examination confirms ductal patency and functioning of the organs.

**Sigmoidoscopy and Colonoscopy Examinations**

Sigmoidoscopy is used to diagnose hemorrhoids, polyps, and diverticular disorders. Examination with a flexible sigmoidoscope can be performed in the physician's office, because the patient does not undergo anesthesia for the procedure. The patient is positioned in the left-lying Sims' position and draped appropriately. The physician inserts a short, flexible, lighted tube into the rectum and slowly guides it into the sigmoid colon. The scope transmits an image of the inside of the rectum and colon, allowing the physician to examine the lining of these organs carefully. The scope also blows air into the colon to inflate the organ and improve visualization. The physician may remove polyps or biopsy tissue samples during the procedure. The procedure takes 10 to 20 minutes, during which the patient may complain of pressure and slight cramping in the lower abdomen (Procedure 39-2).

A colonoscope is used to examine the entire length of the large intestine (Figure 39-11). The American Cancer Society recommends that all patients over age 50 have a colonoscopy to screen for colorectal cancer. This procedure usually is performed in a hospital outpatient area, because it requires the use of an IV sedative.

**Laboratory Tests**

Many of the diagnostic tests for GI disorders are noninvasive. The physician may order a variety of radiographs taken of the digestive system (see Table 39-5). The urine is tested for bilirubin and urinary amylase levels. The stool is tested for occult blood, intestinal ova and parasites, fat excretion, and color.
Occult Blood Screening

Fecal examination is one means of evaluating patients with GI bleeding, obstruction, parasites, dysentery, colitis, or increased fat excretion. The test for ova and parasites is described in Chapter 55. The American Cancer Society recommends that all patients over age 50 be screened for occult blood in the stool. This test may be performed on younger patients if a family history indicates a need. Blood is not found in the stool of healthy individuals. If the person is experiencing bleeding of the intestinal wall, the blood is likely to be occult, or hidden, which means it cannot be seen with the naked eye. A Hemoccult test is done to screen for microscopic bleeding that might occur because of precancerous or cancerous changes in the bowel.

The physician may collect a random stool sample during a routine examination. However, if GI bleeding is suspected, the recommendation is to test three different samples for occult blood. Seven days before the test, the patient should stop taking aspirin and NSAIDs, such as ibuprofen and naproxen (Naprosyn). Starting 72 hours before the stool collections, the patient should not take any more than 250 mg of vitamin C a day; should not

### PROCEDURE 39-2

**Prepare a Patient for Procedures and/or Treatments: Assist with an Endoscopic Examination of the Colon**

**GOAL:** To assist the physician with the examination, to prepare collected specimens as requested, and to ensure the patient’s comfort and safety.

### EQUIPMENT and SUPPLIES

- Nonsterile gloves (for the medical assistant and the physician)
- Appropriate instrument: sigmoidoscope or proctoscope
- Water-soluble lubricant
- Drape and patient gown
- Long cotton-tipped swabs
- Suction source
- Sterile biopsy forceps
- Rectal speculum
- Specimen containers with appropriate preservative added
- Laboratory requisition forms
- Tissue wipes
- Biohazard container
- Patient’s record

### PROCEDURAL STEPS

1. Sanitize your hands and assemble all required equipment and supplies.
   **PURPOSE:** To ensure infection control.
2. Identify the patient and explain the procedure. Make sure the patient has completed the proper preparation procedures.
3. Ask the patient to empty the bladder.
   **PURPOSE:** To aid patient comfort during the examination.
4. Give the patient an examination gown and instruct him or her to remove all clothing below the waist and put on the gown with the opening to the back. Provide a drape for additional privacy.
5. Obtain and record the patient’s vital signs.
   **PURPOSE:** Baseline vital signs allow detection of variations that might occur during the examination.
6. Assist the patient onto the table. When the physician is ready, place the patient in the Sims’ position.
7. Drape the patient so that only the anus is exposed. A fenestrated drape (a drape with a circular opening placed over the anus) may be used in place of the rectangular drape.
8. Put on gloves and assist the physician as requested during the examination, including:
   - Lubricating the physician’s gloved index finger for the digital examination
   - Lubricating the obturator tip of the instrument before insertion
   - Plugging in the scope’s light source when the physician is ready
   - Handing supplies to the physician
   - Collecting specimens by holding the container to accept the sample
   - Labeling specimens immediately, because several specimens may be taken from different areas
   - Disposing of contaminated supplies as you are given them by the physician
9. Throughout the examination, observe the patient for any undue reactions. Encourage the patient to breathe slowly through pursed lips to facilitate relaxation.
10. On completion of the examination, provide the patient with tissues to cleanse the anal area. Remove your gloves, sanitize your hands, and assist the patient into a resting position. Allow the patient time to recover from the procedure. Monitor the patient’s blood pressure if indicated.
   **PURPOSE:** A drop in blood pressure, which often occurs after an invasive procedure, may cause fainting.
11. Once the patient’s condition has stabilized, assist the patient off the table and instruct him or her to get dressed. Show the patient where the sink, towels, and tissues are and provide assistance if needed.
12. Complete all laboratory request forms and specimen container labels and place specimens in the appropriate location for laboratory pickup.
13. Put on gloves and clean the work area and all equipment used. The endoscope is first sanitized and then sterilized according to the manufacturer’s recommendations. Dispose of gloves in a biohazard waste container and sanitize your hands.
   **PURPOSE:** To ensure infection control.
14. Record the procedure and any pertinent information in the patient’s record.
   **PURPOSE:** Procedures that are not recorded are considered not done.
eat red meat, including processed meats and cold cuts; and should not eat raw fruits and vegetables, especially melons, radishes, turnips, and horseradish. These restrictions should continue throughout the time the patient is collecting the ordered fecal samples (Procedure 39-3). Failure to follow the dietary guidelines or the use of identified medications can cause false-positive test results.

**CRITICAL THINKING APPLICATION 39-6**

Dr. Sohani wants to update patient handouts on the preparations necessary for common GI tract diagnostic procedures. He asks Joan to do the initial research and gather pertinent information that should be included. What should Joan include regarding patient preparation for these examinations?

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**PROCEDURE 39-3**

**Instruct Patients According to Their Needs to Promote Health Maintenance and Disease Prevention:**

**Instruct Patients in the Collection of a Fecal Specimen**

**GOAL:** To assist the physician with the collection of a fecal sample, to process the sample for Hemocult screening, and to instruct the patient in hemocult screening at home.

**EQUIPMENT and SUPPLIES**

- Hemocult slides
- Hemocult developer
- Applicator sticks
- Disposable examination gloves
- Biohazard waste container
- Patient’s record

**PROCEDURAL STEPS**

1. Sanitize your hands and assemble all required equipment and supplies.
   **PURPOSE:** To ensure infection control.
2. Identify the patient and explain the procedure.
3. Give the patient an examination gown and instruct him or her to remove all clothing below the waist and put on the gown with the opening to the back. Provide a drape for additional privacy.
4. Assist the patient onto the table. When the physician is ready, place the patient in the appropriate position for the type of examination ordered.
5. Drape the patient so that only the anus is exposed. A fenestrated drape (drape with a circular opening placed over the anus) may be used in place of the rectangular drape.
6. Put on gloves and assist the physician as requested during the examination, including:
   - Handing the physician supplies
   - Collecting specimens by holding the Hemocult slide to accept the sample
   - Placing a thin smear of fecal material inside Box A
   - Applying a second sample from a different part of the stool inside Box B
   - Closing the cover and disposing of contaminated supplies as you are given them by the physician
7. On completion of the examination, remove your gloves, sanitize your hands, and assist the patient into a sitting position.
8. Wait 3 to 5 minutes before developing the sample.
9. Put on gloves and open the flap in the back of the slides. Apply 2 drops of Hemocult Developer directly over the smear.
10. Interpret the results in 60 seconds.
11. The Hemocult test is negative if no trace of color is detectable on or at the edge of the smear; it is positive if any trace of blue is seen on or at the edge of the smear.
12. Put on gloves and clean the work area and all equipment used. Dispose of the gloves in biohazard waste container and sanitize your hands.
   **PURPOSE:** To ensure infection control.
13. Record the procedure and any pertinent information in the patient’s record.
   **PURPOSE:** Procedures that are not recorded are considered not done.

**Patient Instructions for Home Collection of Hemocult Samples**

1. Give the patient a kit for collecting stool samples as ordered by the physician. Typically the physician orders a sample from three different bowel movements. The patient must follow the recommended medication restrictions and dietary guidelines throughout the testing period, because false-positive results can occur if the recommended medication and dietary restrictions are not followed. These include:
   - No aspirin or nonsteroidal antiinflammatory drugs (NSAIDs) for 7 days before the test
   - No more than 250 mg of vitamin C per day; avoid eating red meats, including processed meats or cold cuts; and avoid raw fruits and vegetables, especially melons, radishes, turnips, and horseradish, for 72 hours before the stool collections.
PROCEDURE 39-3—cont’d

The patient then is instructed as follows:
2. Store the kit in the bathroom at home or carry it with you while you are away from home until the three different stool samples have been collected.
3. Write your name and other required information on the front of the collection slides.
4. Flush the toilet twice before your bowel movement or cover the toilet with plastic wrap to collect the stool specimen.
5. Use one of the applicator sticks to collect a small fecal sample. Place a smear of stool on the designated area in the first slide.
6. Close the slide and store it away from heat, light, and strong chemicals such as bleach. Do not place it in a plastic bag.

PURPOSE: Strong chemicals will affect the slide. The stool sample must air dry to be processed properly.
7. Repeat this procedure for 2 more days or two more bowel movements as ordered by the physician, using a different card for each sample.

PURPOSE: To test multiple stool samples for minute amounts of bleeding.
8. After collecting all samples as ordered, seal the test envelope and return the kit to the physician’s office. Do not send stool samples in the mail unless you have a special envelope from the physician.

PURPOSE: To prevent contamination of the mail.

Proctologic Examination

Proctology is the branch of internal medicine concerned with the diseases and disorders of the colon, rectum, and anus. The anal area is examined with a proctoscope, which allows detection of hemorrhoids, polyps, fissures, fistulas, and abscesses. The rectum and the sigmoid colon are examined with a flexible sigmoidoscope, and the descending, transverse, and ascending colon sections (or the entire colon) are examined with a colonoscope.

Many people are apprehensive about colorectal examinations. To alleviate this anxiety, instruct the patient in exactly what to do before the examination and provide support during the procedure. Let the patient know that some discomfort may be experienced, such as cramping. Furthermore, the sensations of expelling flatus or of an impending bowel movement may be felt. These sensations are caused by the instrument and the procedure.

The patient must be given specific instructions on how to prepare the colon for any endoscopic examination (see Table 39-5). You should refer to your employer’s procedures manual to determine the preferred method of patient preparation for each test, because physicians’ orders may vary.

Closing Comments

Patient Education

The GI system is responsible for the nourishment of the entire body. When disease interferes with this process, the individual may become ill and develop serious pathologic disorders. Listen for patients’ concerns that may indicate a problem within the system and its accessory organs. Report these concerns to the physician or note them on the patient’s medical record for the physician to read. If the office has information that may assist the patient in dealing with a particular problem, lay out the information for the patient to give to the patient; or with the physician’s authorization, talk to the patient and offer suggestions that might help the person deal with a particular concern. Learning to perform and assist with diagnostic procedures allows the medical assistant to aid the physician in the diagnostic sequence and assist the patient in maintaining a healthy GI system.

Legal and Ethical Issues

Legally and ethically, the medical assistant’s responsibility is to assist the physician and act as the patient’s advocate. All information discussed between the patient and the physician, as well as all testing procedures ordered and done, must remain confidential. Confidentiality and trust are very closely linked, and these two issues form the basis of a sound patient-physician relationship. The medical assistant is an important part of that relationship and can strengthen it through ethical professional conduct.

Summary of Scenario

Joan enjoys working with Dr. Sahani and his GI patients but is constantly challenged to maintain and update information about diseases and disorders of the GI system, as well as their diagnosis and medical management. Joan must consistently work at applying correct medical terminology when documenting patient complaints and use her knowledge of GI disorders to ask pertinent, detailed questions when gathering patient information.

Joan has also had to update her knowledge of patient preparation for diagnostic procedures so that patients are adequately educated and prepared for scheduled examinations. She participates in workshops offered by her local professional organization to stay up-to-date on medications and treatments for GI diseases, especially current research on infectious hepatitis. Joan is looking forward to active involvement in patient care as she continues to prepare patient education materials and to assist Dr. Sahani as needed to provide high-quality patient care.
SUMMARY OF LEARNING OBJECTIVE

1. Define, spell, and pronounce the terms listed in the vocabulary.
   Spelling and pronouncing medical terms correctly bolster the medical assistant’s credibility. Knowing the definition of these terms promotes confidence in communication with patients and co-workers.

2. Apply critical thinking skills in performing the patient assessment and patient care.
   Completing the Critical Thinking Application exercises throughout the chapter can help the student medical assistant become more adept at critical analysis of real-life situations.

3. Describe the primary functions of the GI system.
   The GI system is responsible for the digestion of food, the absorption of nutrients, and the excretion of waste materials.

4. Identify the anatomic structures that make up the GI system and describe the physiology of each.
   The GI system begins at the mouth and ends at the anal canal. The digestive process starts in the mouth with mastication and enzyme action; the bolus of food is swallowed and passes from the esophagus into the stomach, where digestion continues with the addition of hydrochloric acid and further enzyme action. Digestion ends in the duodenum, with pancreatic juices and emulsification of fats by bile, which is excreted by the liver and stored in the gallbladder. Absorption of nutrients takes place in the ileum and jejunum, and fluids are absorbed in the large intestine. Ultimately, waste materials are excreted through the anus.

5. Differentiate among the abdominal quadrants and regions.
   The abdominal cavity can be divided into four sections, or quadrants: the right and left upper quadrants and right and left lower quadrants. More specifically, the abdominal cavity can be divided into nine regions: the right hypochondriac, epigastric, and left hypochondriac; the right lumbar, umbilical, and left lumbar; and the right inguinal, hypogastric, and left inguinal. These anatomic markers are important for clearly identifying the location of a GI problem.

6. Summarize the typical symptoms and characteristics of GI complaints.
   Patients with GI disorders may complain of nausea with pellor, diarrhea, and tachycardia; vomiting because of pain, stress, GI upset, or an inner ear or intracranial pressure disturbance; diarrhea caused by an infection, an allergy, or a malabsorption problem; constipation that occurs because of a low-fiber diet or inadequate fluids, as a side effect of medication, or because of a bowel obstruction or tumor; and abdominal pain that varies in intensity and quality. It is important for the medical assistant to identify the location of the patient’s discomfort, using either the abdominal quadrants or the abdominal regions, and to note the onset, duration, and frequency of all symptoms.

7. Perform telephone screening for patients with GI complaints.
   Telephone screening for GI complaints involves following the physician’s policy manual for management of disorders; gathering detailed information about the onset, duration, and frequency of the problem and the pertinent patient history; recording the interaction in the patient’s chart, including use of medications for relief, a pain scale, if appropriate, and the course of action based on the physician’s recommendations.

8. Distinguish among cancers of the GI tract.
   Cancers of the GI tract can occur in any of the primary or accessory organs of the system. These can include oral tumors, which manifest as either a white mass or an ulcer; esophageal tumors, which cause dysphagia; gastric tumors, which cause anorexia and weight loss but are difficult to diagnose in the early stages; liver tumors, which usually occur secondary to metastasis from another cancerous site, accompanied by hepatoenteric and portal hypertension; pancreatic cancer, which usually is advanced when diagnosed; and colorectal cancer, which causes changes in bowel function and anemia.

9. Describe common esophageal and gastric disorders, the signs and symptoms, diagnostic tests, and treatments.
   Esophageal and gastric disorders include hiatal hernias, in which part of the stomach pushes through the hiatal sphincter of the diaphragm, causing GERD; peptic ulcers, associated with H. pylori infections, which are treated with a combination of antibiotics and proton pump inhibitors; and pyloric stenosis, seen most frequently in firstborn male infants, which causes projectile vomiting and must be corrected by surgery. These disorders usually are diagnosed symptomatically and with the use of a barium swallow or upper GI series of x-ray films. Medical treatment includes the use of omeprazole (Prilosec), esomeprazole (Nexium), famotidine (Pepcid), cimetidine (Tagamet), or ranitidine (Zantac). Surgery may be indicated for repair of a hiatal hernia or gastric ulcers if perforation occurs.

10. Describe intestinal disorders, the signs and symptoms, diagnostic tests, and treatments.
    Intestinal disorders include a variety of conditions. Food poisoning causes mild to severe gastroenteritis, and the symptoms are controlled with antiemetics and antidiarrheal medications. Dipping syndrome, which may occur as a postsurgical complication of weight loss surgery, results in widespread GI complaints. IBS is a recurrent functional bowel disorder that causes alternating bouts of diarrhea, flatulence, and constipation; it is treated pharmaceutically with bulk-forming agents, antidiarrheals, antispasmodics, and anticholinergics. Acute appendicitis is diagnosed through a positive McBurney’s sign and ultrasonography or CT scan and is treated surgically. Regional enteritis, or Crohn’s disease, causes localized areas of ulceration in the intestinal tract and is treated medically to reduce inflammation, manage symptoms, and maintain nutritional status. Ulcerative colitis causes inflammatory ulcers from the anus that move proximally through the colon; it is treated as is Crohn’s disease, but surgical removal of the colon is curative. Celiac disease is a malabsorption disorder caused by a genetic defect in the ability to metabolize gluten. Diverticular disease consists of small herniations of the muscular lining of the colon and is managed with dietary changes and surgery if diverticulitis is advanced. The abdominal musculature can become weakened and hernias can develop that require surgical repair. Hemorrhoids, which are varicose veins of the anus, are treated with stool softeners, a high-fiber diet, or surgical repair.

11. Classify disorders of the liver and gallbladder and list the signs and symptoms, diagnostic tests, and treatments.
Disorders of the liver include hepatitis, either from viral infection or a chemical reaction, such as alcohol abuse or a complication of drug metabolism. Mild inflammation temporarily impairs liver function, but severe inflammation may lead to necrosis and serious complications, including jaundice, cirrhosis, and portal hypertension. The gallbladder stores bile that is excreted by the liver to aid in fat metabolism. If cholelithiasis or cholecystitis develops, the gallbladder may have to be removed surgically to relieve symptoms.

12. Describe the similarities and differences among the various forms of infectious viral hepatitis.

Viral hepatitis is an infection of the liver that causes acute inflammation of hepatocytes. Six forms of this virus exist: A, B, C, D, E, and G. Hepatic cells can regenerate; therefore, depending on the degree of liver involvement, the patient may recover or develop widespread necrosis, cirrhosis, and liver failure. Chronic inflammation can occur with hepatitis B, C, or D. This usually results in permanent liver damage and an associated increased risk of liver cancer. Vaccinations are available for hepatitis A and B.

13. Summarize the medical assistant’s role in the GI examination.

The medical assistant provides patient support and education, gathers and records specific details about the patient’s complaints, and assists the physician with the examination and diagnostic procedures performed in the ambulatory care setting.

14. Explain the common diagnostic procedures for the GI system.

Diagnostic procedures for the GI system include laboratory studies, such as liver panels and urinary tests for bilirubin and amylase, and stool tests for occult blood, intestinal parasites, and fat excretion. Radiologic and endoscopic tests include a barium swallow, upper GI series, barium enema, cholecintigraphy, sigmoidoscopy, and colonoscopy.

15. Perform the procedural steps for assisting with the collection of a fecal specimen.

Procedure 39-2 presents the steps in the procedure. Patient education includes proper dietary and drug restrictions and collecting three different stool specimens for analysis for hidden blood in the stool.

16. Describe the medical assistant’s role in the proctologic examination.

The medical assistant supports and prepares the patient; positions and drapes the patient for the procedure; monitors vital signs before and during the procedure; and assists the physician with the procedure.

17. Demonstrate assisting with an endoscopic colon examination.

The endoscopic colon examination is described in Procedure 39-3. The medical assistant prepares the room, equipment, and patient for the procedure; assists the physician throughout the procedure by positioning the patient, monitoring vital signs as indicated, helping with equipment, and labeling specimens for transport to the laboratory; assists the patient after the examination; cleans the equipment and room; and documents the procedure on the patient’s chart.

CONNECTIONS

Study Guide Connection: Go to the Chapter 39 Study Guide. Read and complete the activities.

Evolve Connection: Go to the Chapter 39 link at evolve.elsevier.com/kinn to complete the Chapter Review and Chapter Quiz. Peruse other resources listed for this chapter to increase your knowledge of Assisting in Gastroenterology.