MULTIPLE CHOICE

1. Where in the brain is the vomiting center located?
   a. Hypothalamus
   b. Medulla oblongata
   c. Pons
   d. Midbrain

   ANS: B
   The vomiting center of the brain lies in the medulla oblongata and includes the reticular formation, tractus solitarius nucleus, and the parabrachial nucleus. The other locations listed are not related to vomiting.

   PTS: 1 DIF: Cognitive Level: Remembering

2. Antiemetic agents, such as domperidone and metoclopramide, are antagonists for which receptors?
   a. 5-Hydroxytryptamine (5-HT) serotonin
   b. Histamine-2
   c. Acetylcholine
   d. Dopamine

   ANS: D
   Metoclopramide and domperidone are dopamine antagonists, making them effective antiemetic agents.

   PTS: 1 DIF: Cognitive Level: Remembering

3. A patient in the clinic reports projectile vomiting without nausea or other gastrointestinal symptoms. What action by the healthcare professional is *most* appropriate?
   a. Provide antiemetic medications.
   b. Arrange a brain scan.
   c. Administer intravenous hydration.
   d. Schedule a GI consultation.

   ANS: B
   Projectile vomiting is caused by the direct stimulation of the vomiting center by neurologic lesions such as increased intracranial pressure, tumors, or aneurysms of the brainstem. The professional should arrange a CT scan or MRI of the brain. It can also be caused by gastric outlet obstruction, but the patient does not report pain which is a common finding in that condition, so a GI consultation is not warranted at this time. Antiemetics might be helpful but are not the priority. There is no indication that the patient is dehydrated, but if that were the case, hydration would be important.

   PTS: 1 DIF: Cognitive Level: Applying

4. A patient reports feeling constipated. When assessing this patient, how often should the patient report bowel movements to be considered within the normal range?
   a. Once a day
   b. Once every 2 days
   c. Once a week
   d. Once every 2 weeks

   ANS: C
   Normal bowel habits range from two or three evacuations per day to one per week.

   PTS: 1 DIF: Cognitive Level: Remembering

5. How many stools per day are considered the upper limits of normal?
   a. Two
   b. Three
   c. Five
   d. Seven

   ANS: B
   More than three stools per day are considered abnormal.

   PTS: 1 DIF: Cognitive Level: Remembering

6. The adult intestine processes approximately how many liters of luminal content per day?
   a. 3
   b. 6
   c. 9
   d. 12

   ANS: C
   The adult intestine processes approximately 9 L of luminal content per day. Of this amount, 2 L is ingested and the remaining 7 L consists of intestinal secretions.

   PTS: 1 DIF: Cognitive Level: Remembering

7. A person who has cholera (*Vibrio cholerae*) would be expected to have which type of diarrhea?
   a. Osmotic
   b. Secretory
   c. Small volume
   d. Motility

   ANS: B
   Primary causes of secretory diarrhea are bacterial enterotoxins, particularly those released by cholera or strains of *Escherichia coli*, and neoplasms, such as gastrinoma or thyroid carcinoma. In osmotic diarrhea, a nonabsorbable substance in the intestine draws water into the lumen by osmosis and increases stool weight and volume, producing large-volume diarrhea. Small-volume diarrhea usually is caused by an inflammatory disorder of the intestine, such as ulcerative colitis, Crohn disease, or microscopic colitis. Excessive motility decreases transit time, mucosal surface contact, and opportunities for fluid absorption, resulting in diarrhea.

   PTS: 1 DIF: Cognitive Level: Remembering

8. What type of diarrhea is a result of lactase deficiency?
   a. Motility
   b. Osmotic
   c. Secretory
   d. Small-volume

   ANS: B
   Malabsorption related to lactase deficiency, pancreatic enzyme or bile salt deficiency, small intestine bacterial overgrowth, and celiac disease cause osmotic diarrhea. Excessive motility decreases transit time, mucosal surface contact, and opportunities for fluid absorption, resulting in diarrhea. Primary causes of secretory diarrhea are bacterial enterotoxins, particularly those released by cholera or strains of *Escherichia coli*, and neoplasms, such as gastrinoma or thyroid carcinoma. Small-volume diarrhea usually is caused by an inflammatory disorder of the intestine, such as ulcerative colitis, Crohn disease, or microscopic colitis.

   PTS: 1 DIF: Cognitive Level: Remembering

9. A professor has taught the students about the pathogenesis of abdominal pain. Which statement by a student indicates the professor needs to review the material?
   a. Chemical mediators, such as histamine, bradykinin, and serotonin, produce abdominal pain.
   b. Edema and vascular congestion produce abdominal pain by stretching.
   c. Ischemia, caused by distention of bowel obstruction or mesenteric vessel thrombosis, produces abdominal pain.
   d. Low concentrations of anaerobes, such as *Streptococci*, *Lactobacilli*, *Staphylococci*, *Enterobacteria*, and *Bacteroides*, produce abdominal pain.

   ANS: D
   Low concentrations of anaerobes are not typically a cause of abdominal pain. The professor would need to review this content if a student made that statement. The other statements are correct.

   PTS: 1 DIF: Cognitive Level: Evaluating

10. How can abdominal pain that is visceral in nature *best* be described?
    a. Diffuse, vague, poorly localized, and dull
    b. It travels from a specific organ to the spinal cord.
    c. The pain lateralizes from only one side of the nervous system.
    d. Associated with the peristalsis of the gastrointestinal tract

    ANS: A
    Visceral pain arises from a stimulus (distention, inflammation, ischemia) acting on mechanical and chemical nociceptors of abdominal organs. Pain is usually felt near the midline in the epigastrium (upper midabdomen), midabdomen, or lower abdomen. The pain is poorly localized, is dull rather than sharp, and is difficult to describe.

    PTS: 1 DIF: Cognitive Level: Remembering

11. A patient asks the healthcare professional to describe the cause of gastroesophageal reflux disease (GERD). What response by the professional is *best*?
    a. Excessive production of hydrochloric acid
    b. Zone of low pressure of the lower esophageal sphincter
    c. Presence of *Helicobacter pylori* in the esophagus
    d. Reverse muscular peristalsis of the esophagus

    ANS: B
    Normally, the resting tone of the lower esophageal sphincter maintains a zone of high pressure that prevents gastroesophageal reflux. In individuals who develop reflux esophagitis, this pressure tends to be lower than normal from either transient relaxation or a weakness of the sphincter. Excessive hydrochloric acid and *H. pylori* can lead to gastritis. Reverse peristalsis is associated with vomiting.

    PTS: 1 DIF: Cognitive Level: Understanding

12. A patient has frank bleeding of the rectum. How does the healthcare professional document this finding?
    a. Melena
    b. Hematochezia
    c. Occult bleeding
    d. Hematemesis

    ANS: B
    Hematochezia is term for frank bright red or burgundy blood from the rectum. Melena describes dark, tarry stools. Occult bleeding cannot be visualized with the naked eye. Hematemesis is vomiting blood.

    PTS: 1 DIF: Cognitive Level: Remembering

13. What is the cause of functional dysphagia?
    a. Intrinsic mechanical obstruction
    b. Extrinsic mechanical obstruction
    c. Tumor
    d. Neural or muscular disorders

    ANS: D
    Neural or muscular disorders that interfere with voluntary swallowing or peristalsis cause functional dysphagia. It is not related to intrinsic or extrinsic mechanical obstruction or tumors.

    PTS: 1 DIF: Cognitive Level: Remembering

14. A patient has been diagnosed with reflux esophagitis (GERD). What instruction by the healthcare professional is *most* appropriate?
    a. Exercise soon after eating to increase gastric emptying.
    b. Try these proton-pump inhibitors for 2 weeks.
    c. You need to schedule an upper GI endoscopy soon.
    d. Over-the-counter antiemetics work well for this condition.

    ANS: B
    Abnormalities in lower esophageal sphincter function, esophageal motility, and gastric motility or emptying can cause GERD. Delayed gastric emptying contributes to reflux esophagitis by (1) lengthening the period during which reflux is possible and (2) increasing the acid content of chyme. A treatment of choice for this condition is proton-pump inhibitors, so the healthcare professional would educate the patient on taking these medications. Increasing gastric motility may help GERD, but exercising soon after eating may promote vomiting and other GI distress. If GERD cannot be controlled, an endoscopy may be needed to refine the diagnosis and assess for cancerous changes. Antiemetics will not help in this condition.

    PTS: 1 DIF: Cognitive Level: Understanding

15. By what mechanism does intussusception cause an intestinal obstruction?
    a. Telescoping of part of the intestine into another section of intestine
    b. Twisting the intestine on its mesenteric pedicle
    c. Loss of peristaltic motor activity in the intestine
    d. Fibrin and scar tissue that attaches to the intestinal omentum

    ANS: A
    Intussusception is the telescoping of part of the intestine into another section of intestine, usually causing strangulation of the blood supply. Torsion is twisting of the intestine on its mesenteric pedicle. A paralytic ileus is caused by loss of peristaltic motor activity. Adhesions are caused by fibrin scar tissue.

    PTS: 1 DIF: Cognitive Level: Remembering

16. A patient has been admitted for a possible small intestinal obstruction. What is the first sign the healthcare professional assesses for that would indicate the presence of this condition?
    a. Vomiting
    b. Dehydration
    c. Electrolyte imbalances
    d. Distention

    ANS: D
    Abdominal distention begins almost immediately with a small bowel obstruction, as gases and fluids accumulate proximal to the obstruction. The first sign the professional assesses for is distention. Within 24 hours, up to 8 L of fluid and electrolytes enters the lumen in the form of saliva, gastric juice, bile, pancreatic juice, and intestinal secretions. Copious vomiting or sequestration of fluids in the intestinal lumen prevents their reabsorption and produces severe fluid and electrolyte disturbances.

    PTS: 1 DIF: Cognitive Level: Understanding

17. An intestinal obstruction at the pylorus or high in the small intestine causes metabolic alkalosis by causing which outcome?
    a. Gain of bicarbonate from pancreatic secretions that cannot be absorbed
    b. Excessive loss of hydrogen ions normally absorbed from gastric juices
    c. Excessive loss of potassium, promoting atony of the intestinal wall
    d. Loss of bile acid secretions that cannot be absorbed

    ANS: B
    If the obstruction is at the pylorus or high in the small intestine, then metabolic alkalosis initially develops as a result of excessive loss of hydrogen ions that normally would be reabsorbed from the gastric juices. The alkalotic condition is not created by gain of bicarbonate, loss of potassium, or loss of bile acid secretions.

    PTS: 1 DIF: Cognitive Level: Remembering