

TEACHING TOOLS FOR CHAPTER 8

THE DIGESTIVE SYSTEM

Electronic Classroom Manager teaching tools for this chapter include:

The answer key for the Learning Exercises for the chapter, located in the file entitled **Textbook Learning Exercises Answer Key**. These Learning Exercises are at the end of each chapter in *Medical Terminology for Health Professions*, Sixth Edition and in the *Student Workbook for Introduction to Medical Terminology*, Second Edition. The answer key is also in the PowerPoint presentation for the chapter.

A PowerPoint presentation for this chapter, including the Overview of this body system from the beginning of the chapter, the Textbook Learning Exercises Answer Key, and the following animations and videos:

- Digestion
- Swallowing Safeguards

In this chapter of the Instructor's Manual, you will find:

Personal Response Device questions (and answers) to engage students' interest

Classroom Quizzes and their Answer Keys

Two 25-question quizzes for the Standard Syllabus testing on key word parts and all primary terms

Two 25-question quizzes for the Simplified Syllabus testing only on the 15 word parts and 60 terms in the vocabulary list at the beginning of the chapter

Classroom Activities to help your learners enjoy their studies. This chapter includes:

Med Term Jeopardy to help learners practice the terms from this chapter

Crossword Puzzle and Answer Key

"Medical Mystery" Story and Discussion Questions emphasizing the Simplified Syllabus terms (Gastroesophageal reflux disease [GERD])

Case Study and Discussion Questions (Op Report: Open Cholecystectomy)

"Medical Mystery" Story and Case Study Discussion Question Answer Keys

There is a midterm test review activity, covering Chapters 1 through 8, in the "Review Activity" section of this manual.

PERSONAL RESPONSE DEVICE QUESTIONS AND ANSWERS

These questions are designed to engage students' interest as a unit is introduced, not to test their knowledge. Asking students to give their answers at the start of class will get them involved in the topic, and a delay in providing the correct answers will help keep them curious. The questions can be made into PowerPoint slides, or written on the board, and answers can be tallied using a personal response device (clicker) system or a show of hands.

1. The hydrochloric acid in the human stomach is strong enough to dissolve a nail. T/F
Answer: True
2. How many pounds of force can the jaw muscles can provide to bring the back teeth together for chewing?
a. 50
b. 200
c. 500
Answer: c. 200
3. If 80% of the human liver was removed, it could still function and would eventually regenerate to its original size. T/F

Answer: True

4. The body's longest internal organ is the small intestine at an average length of about:
- a. 20 feet
 - b. 10 feet
 - c. 5 feet

Answer: a. 20 feet

CLASSROOM QUIZZES

There are two quizzes for the *Standard Syllabus* and two for the *Simplified Syllabus*, each made up of 25 questions each. **Quiz A** consists entirely of multiple-choice questions. **Quiz B** has a variety of question styles. Both quizzes are of equal difficulty.

TIPS FOR USING CLASSROOM QUIZZES

These quizzes are brief so they can be used without consuming a lot of class time. They can be used effectively either as a pop quiz to evaluate student preparation or as makeup work when a learner has missed a class.

If you are concerned about learners copying each other's answers, you can alternate Quizzes A and B in the same class.

You can use Quiz A as the classroom quiz and Quiz B as the makeup or retest.

Combine the two quizzes to create a 50-question chapter test.

The **Answer Keys** are located immediately after the quizzes. You may want to have learners swap papers and take a few minutes to have them grade the quizzes in class. This is an excellent review activity, and it provides valuable insight into learner preparedness.

CHAPTER 8 STANDARD SYLLABUS QUIZ A

Name _____ Date _____ Class _____

MULTIPLE CHOICE

Write in the letter of the correct answer.

- _____ 1. Which term means a twisting of the intestine on itself that causes an obstruction?

A. ileus B. intussusception C. volvulus
- _____ 2. Which term means difficulty in swallowing?

A. dyspepsia B. dysphagia C. pyrosis
- _____ 3. Which structure manufactures bile, but does not store it?

A. gallbladder B. liver C. pancreas
- _____ 4. Which structure controls the flow from the stomach to the small intestine?

A. cardiac sphincter B. ileocecal valve C. pyloric sphincter
- _____ 5. Which term describes the act of vomiting?

A. emesis B. nausea C. regurgitation
- _____ 6. Which term means surgical repair of the rectum?

A. proctectomy B. proctopexy C. proctoplasty
- _____ 7. Which term means the surgical creation of a connection between two hollow or tubular structures?

A. anastomosis B. diverticulosis C. ostomy
- _____ 8. Which term means the excessive secretion of gastric juice or mucus in the stomach?

A. gastroesophageal reflux disease B. gastrorrhea C. gastroenteritis
- _____ 9. Which is the correct spelling of the term meaning the presence of gallstones?

A. cholelithiasis B. cholelithosis C. colelithiasis
- _____ 10. Which term describes the protrusion of a small loop of bowel through a weak place in the lower abdominal wall?

A. diverticulum B. inguinal hernia C. perforating ulcer
- _____ 11. Which is the term for blister-like sores that occur on the lip and adjacent tissue?

A. aphthous ulcers B. herpes labialis C. leukoplakia
- _____ 12. Which term means the excessive swallowing of air while eating or drinking?

A. achlorhydria B. aerophagia C. anorexia
- _____ 13. Which term means the rumbling noise caused by the movement of gas in the intestine?

A. borborygmus B. bruxism C. eructation
- _____ 14. Which term describes the visual examination of the anal canal and lower rectum?

A. anoscopy B. colonoscopy C. sigmoidoscopy
- _____ 15. Which term describes the surgical creation of an artificial opening into the stomach for the placement of a permanent feeding tube?

A. enterocolostomy B. gastrostomy C. ileostomy
- _____ 16. Which term describes all of the processes involved in the body's use of nutrients?

A. anabolism B. catabolism C. metabolism
- _____ 17. Which disorder is characterized by a refusal to eat?

A. anorexia B. bulimia C. pica
- _____ 18. Which term means the passage of black stools containing digested blood?

- | | | | |
|--|-----------------|----------------|-----------|
| | A. constipation | B. hemorrhoids | C. melena |
|--|-----------------|----------------|-----------|
- _____ 19. Which condition is a progressive degenerative disease of the liver?
- | | | |
|--------------|--------------|-------------|
| A. cirrhosis | B. hepatitis | C. jaundice |
|--------------|--------------|-------------|
- _____ 20. Which term means pain in the gallbladder?
- | | | |
|-------------------|------------------|-------------------|
| A. cholecystalgia | B. cholecystitis | C. cholelithiasis |
|-------------------|------------------|-------------------|
- _____ 21. Which term means the surgical creation of an opening between the ileum and the outside of the abdominal wall?
- | | | |
|--------------|-------------|--------------|
| A. colostomy | B. colotomy | C. ileostomy |
|--------------|-------------|--------------|
- _____ 22. Which term means vomiting blood?
- | | | |
|-----------|----------------|----------------|
| A. emesis | B. hematemesis | C. hyperemesis |
|-----------|----------------|----------------|
- _____ 23. Which condition is characterized by paralysis and is often fatal?
- | | | |
|---------------------|-------------|------------|
| A. amebic dysentery | B. botulism | C. cholera |
|---------------------|-------------|------------|
- _____ 24. Which test is used to detect hidden blood in the stool?
- | | | |
|------------------|----------------|--------------|
| A. sigmoidoscopy | B. colonoscopy | C. hemoccult |
|------------------|----------------|--------------|
- _____ 25. Which term means enlarged and swollen veins at the lower end of the esophagus?
- | | | |
|-----------------------|------------------|--------------------|
| A. esophageal varices | B. hiatal hernia | C. inguinal hernia |
|-----------------------|------------------|--------------------|

CHAPTER 8 STANDARD SYLLABUS QUIZ B

Name _____ Date _____ Class _____

FILL IN THE BLANK

Write the correct term on the line provided.

1. The condition of an excessive accumulation of fat in the body is known as _____.
2. The term meaning abnormally thin is _____.
3. The condition of physical wasting away that occurs in patients with diseases is known as _____.
4. Surgical removal of the gallbladder is known as a/an _____.
5. The term meaning an inflammation of the ileum is _____.
6. Erosions of tissue that occur on the mucosa lining the stomach are known as _____ ulcers.
7. The medication administered to produce vomiting is a/an _____.
8. _____ is transmitted by food that has been contaminated by feces.
9. An inflammation of the gums that is the beginning stage of periodontal disease is known as _____.
10. The temporary stoppage of intestinal peristalsis is known as _____.

MATCHING

Write the letter of the correct answer on the line provided.

Column A	Column B
_____ 11. colostomy	A. surgical connection between two hollow or tubular structures
_____ 12. anastomosis	B. surgical creation of a connection between the stomach and duodenum
_____ 13. gastroduodenostomy	C. surgical creation of an artificial opening into the stomach
_____ 14. gastrostomy	D. surgical creation of an opening between the colon and the body surface
_____ 15. ileostomy	E. surgical creation of an opening between the ileum and the abdominal wall

TRUE/FALSE

Write T for true or F for false.

- _____ 16. Edentulous means without teeth.
- _____ 17. The term hepatic means pertaining to the pancreas.
- _____ 18. Flatulence is the rumbling noise caused by the movement of gas in the intestine.
- _____ 19. Herpes labialis is also known as canker sores.
- _____ 20. The papillae of the tongue are also known as the taste buds.

MULTIPLE CHOICE

Write in the letter of the correct answer.

- _____ 21. Which term means lips?
 A. gingiva B. labia C. rugae
- _____ 22. Which structure is located between the esophagus and the stomach?
 A. cardiac sphincter B. fundus C. pyloric sphincter

- _____ 23. Which term means a complete stoppage or serious impairment to the passage of the intestinal contents?
A. ileus B. intestinal adhesions C. intestinal obstruction
- _____ 24. Which term describes the yellow discoloration of the skin caused by greater than normal quantities of bilirubin in the blood?
A. ascites B. cirrhosis C. jaundice
- _____ 25. Which of these is the semifluid mass of partly digested food that passes out of the stomach?
A. chyme B. feces C. bile

CHAPTER 8 SIMPLIFIED SYLLABUS QUIZ A

Name _____ Date _____ Class _____

MULTIPLE CHOICE

Write in the letter of the correct answer.

- _____ 1. Which term means a twisting of the intestine on itself that causes an obstruction?
A. ileus B. intussusception C. volvulus
- _____ 2. Which term means difficulty in swallowing?
A. dyspepsia B. dysphagia C. pyrosis
- _____ 3. Which term means is a chronic autoimmune disorder that is most often found in the ileum and in the colon?
A. ulcerative colitis B. Crohn's disease C. volvulus
- _____ 4. Which physician specializes in disorders of the colon, rectum, and anus?
A. proctologist B. periodontist C. orthodontist
- _____ 5. Which term describes the act of vomiting?
A. emesis B. nausea C. regurgitation
- _____ 6. Which term means surgical fixation of a prolapsed rectum to an adjacent tissue or organ?
A. proctectomy B. proctopexy C. proctoplasty
- _____ 7. Which term means the surgical creation of a connection between two hollow or tubular structures?
A. anastomosis B. diverticulosis C. ostomy
- _____ 8. Which term describes an abnormal accumulation of serous fluid in the peritoneal cavity?
A. peristalsis B. xerostomia C. ascites
- _____ 9. Which is the correct spelling of the term meaning the presence of gallstones?
A. cholelithiasis B. cholelithosis C. colelithiasis
- _____ 10. Which term describes the protrusion of a small loop of bowel through a weak place in the lower abdominal wall?
A. diverticulum B. inguinal hernia C. perforating ulcer
- _____ 11. Which is the term for blister-like sores that occur on the lip and adjacent tissue?
A. aphthous ulcers B. herpes labialis C. leukoplakia
- _____ 12. Which term means the excessive swallowing of air while eating or drinking?
A. achlorhydria B. aerophagia C. anorexia
- _____ 13. Which term means the rumbling noise caused by the movement of gas in the intestine?
A. borborygmus B. bruxism C. eructation
- _____ 14. Which term describes the endoscopic examination of the interior of the rectum, sigmoid colon, and possibly a portion of the descending colon?
A. anoscopy B. colonoscopy C. sigmoidoscopy
- _____ 15. Which term describes the surgically placed feeding tube from the exterior of the body into the stomach?
A. enterocolostomy tube B. gastrostomy tube C. ileostomy tube
- _____ 16. Which term describes the inflammation of one or more small pouches or sacs that may occur in the lining of the colon?
A. diverticulitis B. enteritis C. cholangitis

- _____ 17. Which disorder is characterized by a false perception of body appearance, voluntary starvation, and excessive exercising?
 A. anorexia nervosa B. bulimia nervosa C. pica
- _____ 18. Which term means the passage of black stools containing digested blood?
 A. constipation B. hemorrhoids C. melena
- _____ 19. Which condition is a progressive degenerative disease of the liver?
 A. cirrhosis B. hepatitis C. jaundice
- _____ 20. Which term means pain in the gallbladder?
 A. cholecystalgia B. cholecystitis C. cholelithiasis
- _____ 21. Which term describes any restriction to the opening of the mouth?
 A. trismus B. volvulus C. ileus
- _____ 22. Which term means vomiting blood?
 A. emesis B. hematemesis C. hyperemesis
- _____ 23. Which condition is characterized by paralysis and is often fatal?
 A. amebic dysentery B. botulism C. cholera
- _____ 24. Which test is used to detect hidden blood in the stool?
 A. sigmoidoscopy B. colonoscopy C. hemoccult
- _____ 25. Which term means enlarged and swollen veins at the lower end of the esophagus?
 A. esophageal varices B. hiatal hernia C. inguinal hernia

CHAPTER 8 SIMPLIFIED SYLLABUS QUIZ B

Name _____ Date _____ Class _____

FILL IN THE BLANK

Write the correct term on the line provided.

1. The condition of an excessive accumulation of fat in the body is known as _____.
2. Also known as canker sores, the appearance of _____ ulcers is associated with stress.
3. The condition of physical wasting away that occurs in patients with diseases is known as _____.
4. Surgical removal of the gallbladder is known as a/an _____.
5. The term for an infection of the bile duct is _____.
6. Repeated episodes of inflammation in the rectum and large intestines that cause ulcers and irritation is known as ulcerative _____.
7. The medication administered to produce vomiting is a/an _____.
8. _____ is transmitted by food that has been contaminated by feces.
9. _____ obesity is the condition of weighing more than two times the ideal weight or having a BMI greater than 39.
10. The temporary stoppage of intestinal peristalsis is known as _____.

MATCHING

Write the letter of the correct answer on the line provided.

Column A	Column B
_____ 11. regurgitation	A. belching or raising gas orally from the stomach
_____ 12. eructation	B. excessive swallowing of air while eating or drinking
_____ 13. hyperemesis	C. pain or discomfort in digestion
_____ 14. aerophagia	D. return of swallowed food into the mouth
_____ 15. dyspepsia	E. extreme, persistent vomiting

TRUE/FALSE

Write T for true or F for false.

- _____ 16. Botulism is transmitted by contact with fecal matter.
- _____ 17. The term hepatitis means inflammation of the pancreas.
- _____ 18. Cholangiography is a radiographic examination of the bile ducts using a contrast medium.
- _____ 19. Herpes labialis is also known as canker sores.
- _____ 20. Bleeding from any part of the mouth is known as stomatorrhagia.

MULTIPLE CHOICE

Write in the letter of the correct answer.

- _____ 21. Which term describes a series of wave-like contractions of the smooth muscles in a single direction?
 - A. mastication
 - B. emulsification
 - C. peristalsis
- _____ 22. Which term describes an inflammation of the small intestine?
 - A. diverticulitis
 - B. cholelithiasis
 - C. enteritis

- _____ 23. Which term means the protrusion of a small loop of bowel through a weak place in the lower abdominal wall or groin?
A. inguinal hernia B. intestinal adhesions C. ulcerative colitis
- _____ 24. Which term describes the yellow discoloration of the skin caused by greater than normal quantities of bilirubin in the blood?
A. ascites B. cirrhosis C. jaundice
- _____ 25. Which term describes the passage of black stool caused by the presence of digested blood?
A. melena B. cholera C. cachexia

CHAPTER 8 STANDARD SYLLABUS QUIZ ANSWER KEYS

QUIZ A ANSWER KEY

- | | | | | |
|------|-------|-------|-------|-------|
| 1. C | 6. C | 11. B | 16. C | 21. C |
| 2. B | 7. B | 12. B | 17. A | 22. B |
| 3. B | 8. C | 13. A | 18. C | 23. B |
| 4. C | 9. A | 14. A | 19. A | 24. C |
| 5. A | 10. B | 15. B | 20. A | 25. A |

QUIZ B ANSWER KEY

- | | | | | |
|--------------------|------------------|-------|-------|-------|
| 1. obesity | 6. gastric | 11. D | 16. T | 21. B |
| 2. emaciated | 7. emetic | 12. A | 17. F | 22. A |
| 3. cachexia | 8. salmonellosis | 13. B | 18. F | 23. C |
| 4. cholecystectomy | 9. gingivitis | 14. C | 19. F | 24. C |
| 5. ileitis | 10. ileus | 15. E | 20. T | 25. A |

CHAPTER 8 SIMPLIFIED SYLLABUS QUIZ ANSWER KEYS

QUIZ A ANSWER KEY

- | | | | | |
|------|-------|-------|-------|-------|
| 1. C | 6. B | 11. B | 16. A | 21. B |
| 2. B | 7. A | 12. B | 17. A | 22. A |
| 3. B | 8. C | 13. A | 18. C | 23. B |
| 4. A | 9. A | 14. C | 19. A | 24. C |
| 5. A | 10. B | 15. B | 20. A | 25. A |

QUIZ B ANSWER KEY

- | | | | | |
|--------------------|------------------|-------|-------|-------|
| 1. obesity | 6. colitis | 11. D | 16. F | 21. C |
| 2. aphthous | 7. emetic | 12. A | 17. F | 22. C |
| 3. cachexia | 8. salmonellosis | 13. E | 18. T | 23. A |
| 4. cholecystectomy | 9. morbid | 14. B | 19. F | 24. C |
| 5. cholangitis | 10. ileus | 15. C | 20. T | 25. A |

CLASSROOM ACTIVITIES FOR CHAPTER 8

The activities for each chapter are different; however, many of these activities can also be adapted for other chapters.

MED TERM JEOPARDY

This very popular team activity is a medical terminology version of the television quiz show *Jeopardy!*

ADVANCE PREPARATION

The grid. Make an overhead transparency of the game grid (see Figure 8.1 at the end of this chapter's Teaching Tools). During play, cross off categories and grid squares as they are used. At the end of a game, wipe the grid clean to ready it for reuse. (If an overhead projector is not available, draw the grid on the chalkboard.)

The questions. Prepare a list of questions so there is one question for each square on the grid. A sample list is shown in Figure 8.2, which can be found at the end of this chapter's Teaching Tools.

Show host. The host, usually the teacher, asks the questions and marks off the categories as they are used.

Contestants. The game can be played with three or four contestants who stand or are seated at the front of the room facing the audience, or with the entire class divided into two teams. For team play, decide whether learners will take turns answering alone, or whether other team members may give clues or suggestions.

Scorekeeper. One learner is appointed as the scorekeeper. Scores are recorded on the chalkboard.

Judges. Two learners act as judges to decide whether the response is correct.

Audience. If playing with only three or four contestants, all other learners are the audience. They should be encouraged to participate actively by applauding and trying to guess the right answers to help create more excitement.

PLAYING MED TERM JEOPARDY!

The first contestant is selected randomly and is allowed to choose the first category and value.

The host gives the "answer." The contestant responds with the appropriate "question." This format must be correct or the response is considered to be wrong.

If the response is correct, points are added to that contestant's score.

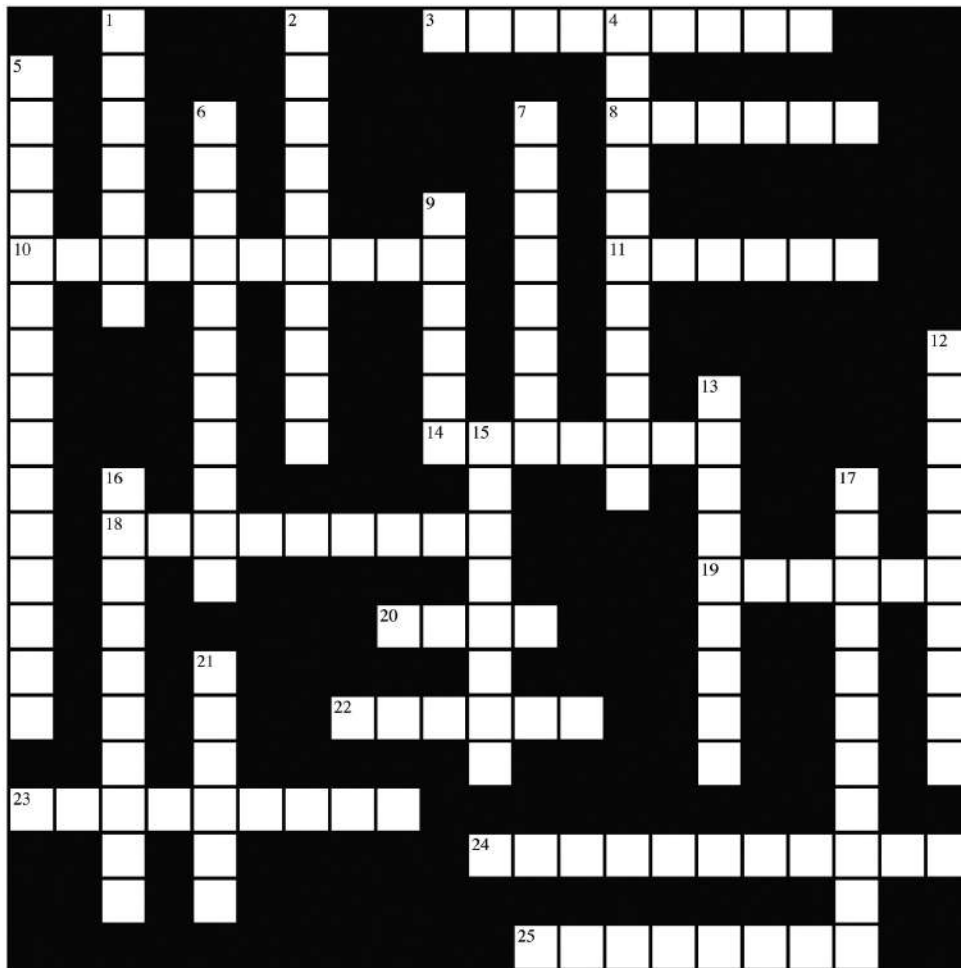
If the response is not correct, points are subtracted from the contestant's score. Then the other contestants have an opportunity to answer the question correctly and win the points.

Whoever answers correctly gets to select the next category and question value.

If no one can answer a question correctly, the host reads the correct answer and the contestant who originally chose that question chooses a new one.

The round ends when all questions in all categories have been used.

CHAPTER 8 CROSSWORD PUZZLE



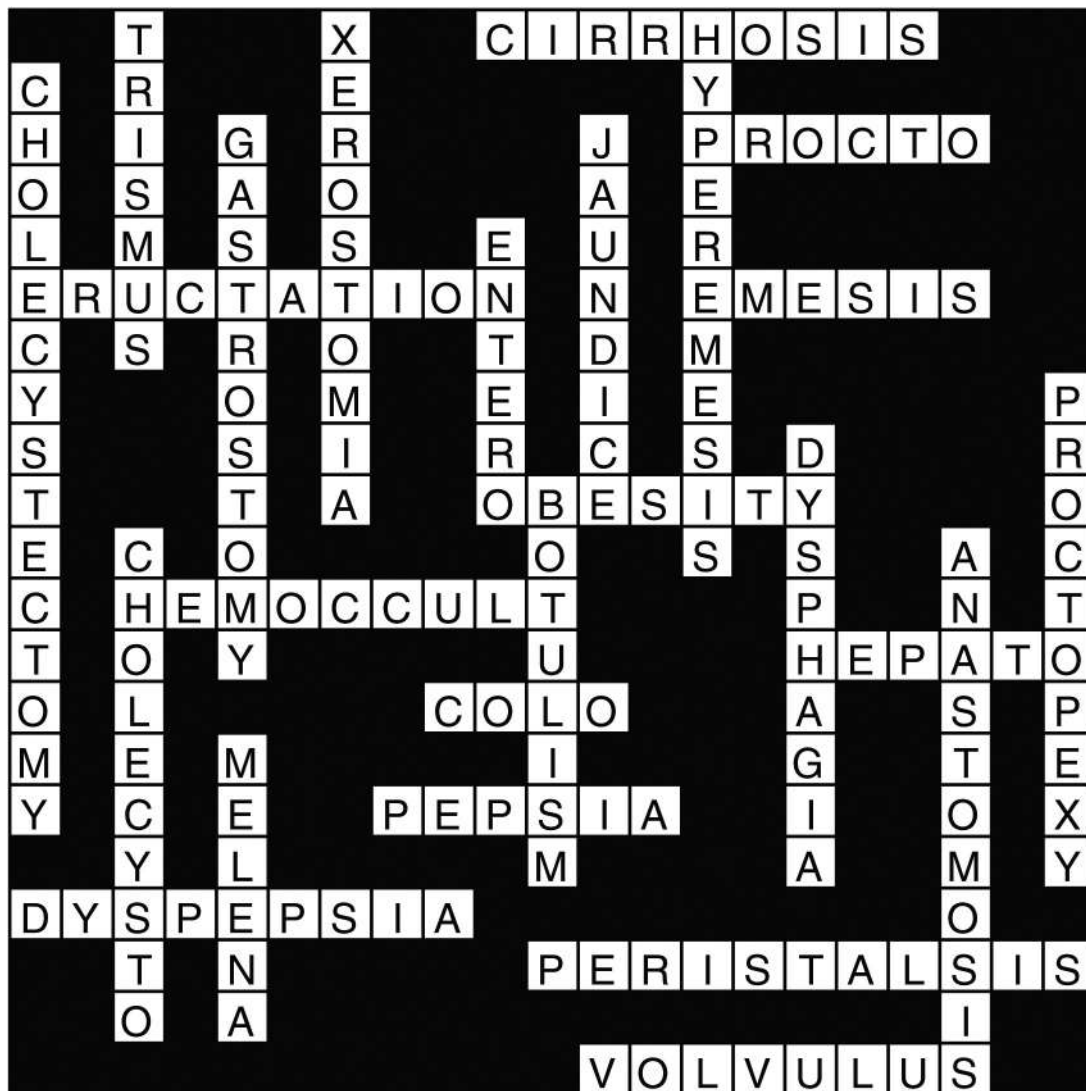
ACROSS

3. A progressive degenerative disease of the liver
8. Combining form meaning rectum
10. The act of belching
11. Also known as vomiting
14. An excessive accumulation of body fat
18. Test also known as the fecal occult blood test
19. Combining form meaning liver
20. Combining form meaning colon
22. Suffix meaning digestion
23. Also known as indigestion
24. Wavelike contractions that move food through the digestive system
25. Twisting of the intestine on itself


DOWN

1. Restriction of the opening of the mouth
2. Also known as dry mouth
4. Extreme, persistent vomiting
5. Surgical removal of the gallbladder
6. A _____ tube is an external feeding tube
7. A yellow discoloration of the skin, mucous membranes, and the eyes
9. Combining form meaning small intestine
12. Surgical fixation of a prolapsed rectum
13. Difficulty in swallowing
15. Also known as food poisoning
16. Combining form meaning gallbladder
17. A surgical connection between two hollow or tubular structures
21. The passage of black and tar-like stools

CHAPTER 8 CROSSWORD PUZZLE ANSWER KEY



MEDICAL MYSTERY FOR CHAPTER 8



IDAHO INTERNAL MEDICINE	
Name:	Michael H.
Age:	42
Height:	5' 10"
Weight:	205 lbs.
Symptoms:	Chest pain, pyrosis, dysphagia, hoarseness

HIS STORY

For months, Michael was having trouble swallowing, and he often felt as if he had a lump in his throat. His voice sounded hoarse, and he had a dry cough, which he attributed to smoking. Even more troubling, Michael was plagued by mild chest pain. He was especially worried because his dad died of heart disease. Michael managed a retail store, and on the nights when worked late, he often ate dinner right before bed. This led to indigestion and insomnia.

Taking antacids usually helped his stomach and the pyrosis—but not the pain in his chest. One night, the pain was especially severe; though it eased a short time after it started, he was still having trouble swallowing. Concerned, Michael went to see his physician's assistant the next week.

Because of Michael's concern about his heart, his PA ordered an electrocardiogram (EKG). When the results turned out to be normal, Michael wondered if his symptoms—especially the trouble swallowing—might be due to a gastrointestinal problem. His PA agreed and gave him a referral to our clinic.

THE EVALUATION

In taking Michael's medical history, I learned that he had an irregular eating schedule. I asked about his diet, and Michael told me that he had a passion for chocolate, spicy foods, and coffee. I performed a physical exam and did not find any abnormalities.

Because Michael reported having trouble swallowing, I wanted to make sure that there wasn't serious damage to his esophagus from his digestive problems. I had him undergo an esophagogastroduodenoscopy, a test that involves being sedated while an endoscope is inserted into the mouth and down the stomach. The endoscope allowed me to check for a hiatal hernia. Hiatal hernias can also cause reflux and pyrosis.

THE DIAGNOSIS

Based on Michael's description of his symptoms, I suspected that he had gastroesophageal reflux disease (GERD), which occurs when the lower esophageal sphincter at the bottom of esophagus relaxes, allowing stomach acid to leak back into the esophagus. Over time, the stomach acid can irritate and damage the delicate lining of the esophagus.

Fortunately, he did not have any significant buildup of scar tissue (in some GERD sufferers, scar tissue builds up in the esophagus, which can lead to blockages as well as cancer-causing tumors). Michael also didn't have a hiatal hernia. What he had was a classic case of GERD.

Although most people with GERD suffer from frequent pyrosis, some do not. Some patients have chest pain, a lump in the throat, a cough, or hoarseness—which is exactly what Michael had described. Most patients can be diagnosed with GERD based on symptoms alone: if they respond to treatment, then the diagnosis is confirmed.

THE TREATMENT

In order to ease his symptoms and prevent future damage, I prescribed a proton pump inhibitor (PPI) drug, which reduces the acid that is secreted in the stomach. I explained to Michael that medication was just part of the equation: He also had to make lifestyle changes. I urged Michael to limit his intake of coffee and chocolate, and fried or spicy foods, all of which can stimulate acid production in the stomach.

In addition, he had to stop smoking and lose weight. GERD occurs when stomach acid leaks back into the esophagus, and smoking weakens the sphincter that separates the esophagus from the stomach. Excess weight puts pressure on the stomach, which may cause acid to back up into the esophagus. Finally, I advised him to eat smaller meals. Not only would eating smaller meals help him lose weight, but it would also prevent his stomach from becoming too full, which puts pressure on the lower esophageal sphincter and increases the chance that the food will reflux.

CASE CLOSED

Over the next 3 months, Michael lost eight pounds. He was taking his medication, and he'd cut back his coffee consumption to one cup per day. Although he couldn't resist chocolate and Mexican cuisine, Michael started viewing these foods as occasional treats. He recently started a smoking cessation program at the local hospital. As a result, his chest pain had virtually disappeared, and he was no longer having trouble swallowing. His voice even sounded less hoarse. Now that his symptoms had eased, I was certain that I had diagnosed him correctly.

Discussion Questions

1. The esophagus is a muscular tube through which ingested food passes from the pharynx to the stomach. It is aided in this action by gravity and peristalsis. What is peristalsis?
2. GERD is an abbreviation for gastroesophageal reflux disease. Define the word parts that make up the word gastroesophageal.
3. The doctor decides that Michael does not have a hiatal hernia. What is this?
4. Michael underwent an endoscopy of his esophagus and stomach. Name two lower gastrointestinal system procedures that involve an endoscope, and why they are done.

CASE STUDY FOR CHAPTER 8

OP REPORT

Patient Name: Genevieve Hawkins

MR#: 84321

Surgeon: P. Dawson, M.D.

Room #: 202

Date of Operation: 10/25/09

Preoperative Diagnosis: Acute cholecystitis.

Postoperative Diagnosis: Acute cholecystitis with partially gangrenous gallbladder.

Operation: Laparoscopic converted to open cholecystectomy.

Anesthesia: General.

Estimated Blood Loss: 150 cc.

Urine Output: 100 cc.

Intravenous Fluids: 2,500 cc of lactated Ringer's.

Complications: None.

Findings: A partially gangrenous, but mostly inflamed, gallbladder, with up to 1-cm-thick gallbladder wall and multiple (greater than 50–100) small stones, each measuring approximately 2–4 mm.

Description of Procedure: The patient was brought into the OR and placed in the supine position on the operating table. A 2.5-cm supraumbilical transverse incision was made for placement of a Veress needle to achieve pneumoperitoneum and the intra-abdominal cavity was insufflated with CO₂ with difficulty. Three abdominal ports were placed in the abdomen to provide visualization and manipulation of the gallbladder. The gallbladder appeared to be extremely inflamed with what appeared to be a very thick peritoneal layer and significant adhesions surrounding it. The inflammation of the tissue around this region was so severe that it precluded a safe dissection of this area. The operation was therefore converted from laparoscopic to open cholecystectomy.

A skin incision was made between the epigastric site and the superior right upper quadrant 5-mm port site. A Michotte retractor was placed cephalad [*proximal*] in order to retract the superior part of the operative field. The superior portion of the wound was retracted open, and the small bowel, colon, and stomach were retracted away from the operative field. The gallbladder was then dissected off of the liver bed using electrocautery from the fundus down toward the neck. The cystic artery was identified and ligated, and divided between sutures. The cystic duct was also identified, and the duct/gallbladder neck junction was ligated with 2-0 silk tie and reinforced with a second tie. The gallbladder was then resected and opened on the back table, and sent to pathology for permanent section. No signs of hemorrhage were seen on inspection of the liver bed. The operative field was irrigated with antibiotic-soaked solution, and a JP drain was placed within the liver bed. The surgical wound was closed using PDS sutures, and the skin was approximated using a skin stapler. All the wounds were dressed with sterile gauze and secured with Tegaderm dressing. The patient tolerated the procedure well, and there were no complications. The patient was extubated and transported to the PACU [*post-anesthesia care unit*].

Discussion Questions

1. The surgery started with “a supraumbilical transverse incision.” Use your knowledge of word parts to describe where this incision was made.
2. The findings describe a partially gangrenous gallbladder. What is gangrene and why do you think this more serious than inflammation of the gallbladder?

3. The surgeon found multiple small stones in the gallbladder. What are these?
4. The report states that “The operation was therefore converted from laparoscopic to open cholecystectomy.” Discuss what the surgeon did at this point in the procedure in terms that the family could understand.

MEDICAL MYSTERY DISCUSSION QUESTIONS ANSWER KEY

1. Peristalsis is a series of wave-like contractions of the smooth muscles in a single direction.
2. *Gastr/o* means stomach, *esophag-* means esophagus, and *-eal* means pertaining to.
3. A hiatal hernia is a condition in which a portion of the stomach protrudes upward into the chest, through an opening in the diaphragm.
4. A colonoscopy is a visual exam of the inner surface of the colon from the rectum to the cecum. A sigmoidoscopy examines the interior of the rectum, sigmoid colon, and possibly a part of the descending colon. Both procedures are done to help detect polyps that may be cancerous.

CASE STUDY DISCUSSION QUESTIONS ANSWER KEY

1. An incision was made above (**supra-**) the umbilicus, or navel, in the epigastric region in a transverse (lateral to lateral) direction.
2. Gangrene is tissue necrosis, or death, caused by the loss of circulation. The tissue is unable to repair itself, and can become infected with bacteria, progressing to shock, sepsis, and death. Inflammation is a state of tissue injury, rather than tissue death.
3. Gallstones, a type of calculus, are hard deposits formed in the gallbladder and bile ducts that can block the flow of bile.
4. "Because of significant scarring and inflammation surrounding the gallbladder, the small incisions and camera we wanted to use weren't enough to do the surgery safely. We therefore ended up having to make a small cut above the navel in order to remove the gallbladder."

FIGURE 8.1 Digestive System Jeopardy Game Grid

Word Parts	Anatomy	Pathology	Procedures	Hodge Podge
100	100	100	100	100
200	200	200	200	200
300	300	300	300	300
400	400	400	400	400
500	500	500	500	500

FIGURE 8.2 Digestive System Jeopardy Questions

Word Parts	Host	Contestant
100	<i>GASTR/O</i>	What combining form means stomach?
200	<i>ENTER/O</i>	What combining form means small intestine?
300	<i>COL/O</i>	What combining form means large intestine?
400	<i>HEPAT/O</i>	What combining form means liver?
500	<i>CHOL/E</i>	What combining form means bile or gall?
Anatomy		
100	pancreas	What organ produces pancreatic juices?
200	duodenum	What is the first part of the small intestine?
300	anus	What is the lower opening of the digestive tract?
400	gallbladder	Where is bile stored until it is needed?
500	glycogen	What is the stored form of glucose?
Pathology		
100	colitis	What term means inflammation of the colon?
200	hepatomegaly	What term means abnormal enlargement of the liver?
300	gastrorrhea	What term means excessive flow of gastric juices?
400	cholecystitis	What term means inflammation of the gallbladder?
500	cirrhosis	What is a progressive degenerative disease of the liver?
Procedures		
100	appendectomy	What procedure is the surgical removal of the appendix?
200	proctoplasty	What procedure is the surgical repair of the rectum?
300	colostomy	What procedure is the creation of an opening between the colon and the surface of the body?
400	ileectomy	What procedure is the surgical removal of the ileum?
500	gastropexy	What procedure is the surgical fixation of the stomach?
Hodge Podge		
100	peristalsis	What action is responsible for the movement of food?
200	digestion	What process converts foods into nutrients for body use?
300	<i>PEPS/O</i>	What combining form means to digest or digestion?
400	enzymes	What chemicals are responsible for breaking down food?
500	Jaundice	What term means a yellow discoloration of the skin?