

Pre-Lecture

I. You are the Provider

Time: 10 minutes

Small Group Activity/Discussion

Purpose

This activity is designed to help introduce your students to the content of this chapter.

Instructor Directions

1. Direct students to read the “You are the Provider” scenario found throughout Chapter 31.
2. You may wish to assign students to a partner or a group. Direct them to review the discussion questions at the end of the scenario and prepare a response to each question. Facilitate a class dialogue centered on the discussion questions.
3. You may also assign this as an activity and ask students to hand in their comments on a separate piece of paper.

Lecture

I. Introduction

Time: 10 minutes

Slides: 2–5

Lecture

A. Gastrointestinal (GI) Problems

1. Rarely life-threatening
 - a. Systemic problems can erupt if left untreated or undertreated.
 - b. Appendix
 - i. No known function
 - ii. Removal places the patient at no great health risk.
 - iii. If infected, the consequences can be deadly.
2. Common
 - a. Abdominal pain
 - b. Diarrhea, nausea, and vomiting
 - c. Discomfort and unpleasant
 - d. Signs of an underlying condition
 - e. See Table 31-1 Incidence and Prevalence of Gastrointestinal Disorders.

3. Predisposed to GI disorders
 - a. Certain behaviors or characteristics
 - b. Alcohol consumption and smoking increase a person's risk for developing stomach disorders. (Chronic consumption or smoking increases the acidity within the stomach beyond the limits of the protective mucosal layer.)
 - c. See Table 31-2 Behaviors and Corresponding Risk Factors for GI Disease.

II. Anatomy and Physiology

Time: 10 minutes

Slides: 6–12

Lecture

A. Overview

1. Journey from intake to elimination
 - a. Mastication: chewing food; mechanical activity prepares food to be swallowed
 - b. Saliva is secreted into the mouth to lubricate the food; contains enzymes that begin the chemical breakdown of foods (starches).
 - c. Esophagus: muscular tube; typically collapsed
 - d. Portal vein: formed by a complex series of veins intertwined around the esophagus; transports venous blood from the GI tract directly to the liver
 - e. Peristalsis: rhythmic contractions of the esophagus to push the food through the esophagus
 - f. Stomach: capable of stretching many times beyond its normal size
 - g. Hydrochloric acid is secreted by the stomach to help break down the food.
 - h. The stomach contracts, churning the acid and the food mixture together.
 - i. Pyloric sphincter: doorway at the inferior portion of the stomach
 - j. Chyme: substance leaving the stomach and entering the small intestine
 - k. Duodenum: portion of the small intestine that begins the active stage of absorption
 - l. Water and fat-soluble substances are absorbed by the stomach.
 - m. The pancreas, liver, and gallbladder connect to the digestive system at the duodenum.
 - n. The pancreas secretes several enzymes to assist with digestion of fats, proteins, and carbohydrates (neutralizes gastric acids).
 - o. The liver creates bile (stored in the gallbladder).
 - p. Bile: enzyme used by the body to help break down fats
 - q. Small intestine: where 90% of all absorption occurs; 22-foot-long structure (duodenum, jejunum, and ileum)
 - r. Blood filled with these nutrients exits the intestinal circulation and heads to the liver (additional metabolism of fats and proteins).
 - s. Large intestine (colon): primary role is to complete reabsorption of water (failure results in diarrhea)
 - t. Feces: substance entering the large intestine
 - u. Cecum: valve between the ileum and the first portion of the large intestine
 - v. Appendix: blind pouch able to hold small amounts of material

- w. The ascending colon attaches to the transverse colon.
 - x. Descending colon
 - y. Sigmoid colon
 - z. Rectum: last part of the colon
 - aa. Anus: sphincter where the colon terminates
2. Entire digestion process
- a. Takes 8 to 72 hours
 - b. See Table 31-3 Abdominal Organs, Locations, and Functions.
 - c. Bowel movements range from three per day to one every three days.
 - d. The number varies based on the types of food you eat, the amount of water consumed, your exercise level, and your stress level.

III. General Pathology

Time: 15 minutes

Slides: 13–22

Lecture

A. Hypovolemia

1. Caused by dehydration or hemorrhage
 - a. Dehydration from vomiting and/or diarrhea (both water and electrolyte levels are affected)
 - b. See Table 31-4 Electrolyte Imbalances due to Diarrhea.
 - c. Hemorrhage within the GI system typically derives from either the rupture or the destruction of a structure.
 - d. Trauma: obvious mechanism for bleeding from within the GI system
 - e. Other damaging events include erosion of the protective mucosal layers, chemical destruction of tissue, or dilation of blood vessels.
2. Absolute loss of fluid volume
 - a. Classic signs and symptoms of shock should be present.
 - b. The brain fares well initially in the compensated phase of shock.
 - c. The earliest “sign” will involve tachycardia and pale, cool, clammy skin as the body shunts blood away from the skin and muscles.

B. Infection

1. Food is alive.
 - a. Bacteria, viruses, and fungi are present throughout our food system.
 - b. Infections by ingestion of severely infectious food or a rupture of the system
2. Consumption of contaminated foods
 - a. The majority of people have stomachaches, vomiting, or diarrhea.
 - b. In the US, an estimated 76 million people get a food-borne illness each year (only 5,000 die of this cause).

- c. The immunocompromised, very old, and very young have a harder time fighting off infection of any type and are more likely to have a poor outcome from food-borne illness.
 - d. Traveling to other countries can place a person at greater risk for food intolerances or food-borne infections.
3. GI system damage
- a. A breach in the container allows the contents (filled with a variety of organisms) to move into the surrounding tissues.
4. Body's defense
- a. Fever: attempt to slow down the organisms' reproduction
 - b. White blood cells are directed to the site of infection to attack the invaders.
 - c. Malaise, weakness, chills, and a decreased ability to concentrate as the available energy is mobilized to manage the infection.

C. Inflammation

1. Natural response to injury
- a. Vasodilation, mobilization of white blood cells, and changes within cellular metabolic processes
 - b. Assists the white blood cells in either destroying the invading agents or walling them off so that they cannot spread
 - c. Redness, swelling, and tenderness due to inflammation
2. Localized within the GI system
- a. Causes localized signs and symptoms
 - b. Hepatitis and peritonitis
3. Sepsis
- a. The body responds with a more generalized inflammation.
 - b. Depletion of resources needed to manage the infection
 - c. The body does not have adequate white blood cells, histamine, blood, or energy to fight sepsis.
4. Autoimmune condition
- a. The body attacks and kills its own cells.
 - b. No conclusive cause and effect
 - c. White blood cells begin to destroy a portion of the GI system.
 - d. The body attempts to repair the damaged area.
 - e. Colitis

D. You are the Provider

Slide 23

Lecture/Discussion

1. Present the case study provided on the slide:
- a. You and your partner are dispatched to the fifth floor of an office complex. You arrive to find a 42-year-old male patient lying on the floor complaining of severe abdominal pain.

- b. The patient looks in distress and is sluggishly responsive. The office manager states that he began having pains about 35 minutes ago, but the pain became unbearable and he called 9-1-1.
- c. *What are the questions in your mind at this time?*

IV. Specific Conditions

Time: 45 minutes

Slides: 24–53

Lecture

A. See Table 31-5 Gastrointestinal Diseases by Type of Condition and Presenting Problem.

B. Gastrointestinal Bleeding

1. Symptom of another disease
 - a. Not a disease itself
 - b. See Table 31-6 Gastrointestinal Bleeding by Organ and Cause.
 - c. The differences between upper and lower bleeds are predominantly related to the consistency and characteristics of the vomit and stool that may be present.
 - d. Upper GI bleeds are far more common.

C. Esophageal Varices

1. Pressure increase in the blood vessels surrounding the esophagus
 - a. Eventually deposit their blood into the portal system
 - b. If the liver becomes damaged, blood begins to back up into these portal vessels, dilating the vessels and causing the capillary network of the esophagus to begin leaking.
2. Alcohol
 - a. Consumption is the main cause of portal hypertension in industrialized countries.
 - b. Chronic consumption damages the interior of the liver.
 - c. Leads to slower blood flow
 - d. Viral hepatitis is the main cause in developing nations.

D. Mallory-Weiss Syndrome

1. May lead to severe hemorrhage
 - a. The junction between the esophagus and the stomach tears.
 - b. Severe bleeding and potential death
 - c. During the act of vomiting, pressure within the stomach can increase so greatly as to cause a failure of the structure of the esophagus.
 - d. Affects both men and women equally
 - e. More prevalent in older adults and older children

E. Hemorrhoids

1. Swelling and inflammation of the blood vessels surrounding the rectum

- a. Common problem
- b. May result from conditions that increase pressure on the rectum or irritation of the rectum
- c. Pregnancy, straining at stool, and chronic consumption cause increased pressure.
- d. Anal intercourse and diarrhea cause irritation.

F. Peptic Ulcer Disease

1. High levels of acidity
 - a. In the stomach and duodenum
 - b. Protective layers of mucus line both organs.
 - c. The protective layer is eroded, allowing the acid to eat into the organ.
2. Causes
 - a. In the past, thought to be the types of food that people were eating
 - b. Today, variety of etiologies
 - c. The majority are a result of infection of the stomach with *Helicobacter pylori*.
 - d. Chronic use of nonsteroidal anti-inflammatory drugs
 - e. Alcohol and smoking can affect the severity by increasing gastric acidity.

G. Cholecystitis

1. Caused by
 - a. Obstruction of the cystic duct leading from the gallbladder to the duodenum
 - b. Usually by gallstones
 - c. Believed to form due to either increased production of bile or decreased emptying of the gallbladder
2. Gallbladder
 - a. Stores bile (enzyme used to break down fat)
 - b. When it contracts it releases bile.
 - c. If a blockage is present, the patient may experience severe pain, radiating to the right shoulder.
 - d. The patient may demonstrate a positive Murphy's sign.
 - e. Nausea, vomiting, fever, jaundice, and tachycardia
3. Risk factors
 - a. Females are two to three times more likely to experience blockage.
 - b. Older people are more prone to this condition.
 - c. Caucasians have a higher prevalence than African Americans.
 - d. People who are overweight or have a recent extreme weight loss are also at a greater risk.
 - e. Classic patient: fair, fat, female, and fifty

H. Appendicitis

1. Accumulation of material
 - a. Usually feces
 - b. Within the appendix

- c. Obstruction of normal flushing
 - d. Pressure may build within the appendix, decreasing the flow of blood and lymph fluid.
 - e. Ripe condition for bacterial reproduction
 - f. May eventually result in rupture, peritonitis, sepsis, and death
2. Risk factors
- a. Adolescents have the highest incidence of appendicitis.
 - b. The number of cases drops as age increases.
 - c. Elderly individuals have a higher mortality rate.
 - d. Males are slightly more prone.

I. Diverticulitis

1. Fiber
- a. The amount within the US diet plummeted as the amount of processed foods eaten increased.
 - b. The consistency of normal stool becomes more solid.
 - c. Hard stool takes more contractions and subsequently increases pressure within the colon.
 - d. Small defects in the colonic wall fail, resulting in bulges in the wall.
 - e. Eventually turn into pouches called diverticula
 - f. Feces may become trapped in these pouches.
 - g. Bacteria grows causing local infection and inflammation.
 - h. Scarring, adhesions, and fistulas
 - i. Fistula: abnormal connection between two cavities
2. Typical patient
- a. More than 40 years old
 - b. Decreased fiber increases the patient's risk for this disease.

J. Pancreatitis

1. Pancreas
- a. Produces several enzymes that help break down the food into substances that can be absorbed by the intestines
 - b. If the tube carrying these enzymes becomes blocked, the enzymes are activated and begin to do their job.
 - c. Break down protein and fat of the pancreas (autodigestion)
2. Risk factors
- a. Increased alcohol consumption
 - b. Gallstones
 - c. Medication reactions
 - d. Trauma
 - e. Cancer
 - f. Very high triglyceride levels

K. Ulcerative Colitis

1. Caused by
 - a. Generalized inflammation of the colon
 - b. Chronic inflammation
 - c. Genetics, stress, and autoimmunity have been speculated to contribute.
 - d. Thinning of the wall of the intestine
 - e. Weakened, dilated colon prone to infections by bacteria and bleeding
2. Risk factors
 - a. Disease of the young (between 15 and 30)
 - b. Equal incidence among men and women
 - c. Strong hereditary component
 - d. More prevalent in Caucasians and people of Jewish descent

L. Crohn's Disease

1. Similar to ulcerative colitis
 - a. May affect the entire GI tract
 - b. The immune system attacks the GI tract.
 - c. The most likely site of inflammation is the ileum (last portion of the small intestine before it joins the large intestine).
 - d. A scarred, narrow, stiff, and weakened portion of the small intestine is the result.
2. No definitive cause
 - a. The presence of signs and symptoms outside the GI system supports the hypothesis that some autoimmune component is operating within this disease.
3. Risk factors
 - a. Most between the ages of 20 and 30
 - b. Men are diagnosed as often as women.
 - c. African Americans tend not to suffer from this condition.
 - d. People of Jewish descent have an increased incidence.
 - e. May have a familial/genetic component

M. Acute Gastroenteritis

1. Family of conditions
 - a. Revolve around a central theme of infection combined with diarrhea, nausea, and vomiting
 - b. Bacterial and viral organisms can cause this condition.
 - c. Can run its course in 2 to 3 days or continue for several weeks
2. Cholera
 - a. Type of acute gastroenteritis
 - b. Relatively unknown in the United States
 - c. Frequently encountered in the developing world
 - d. Norwalk virus is responsible for the majority of acute viral gastroenteritis in adults.
 - e. Rotavirus causes the same condition in children.

N. Gastroenteritis

1. Not an infectious disease
 - a. Has all the hallmarks of its acute cousin
 - b. Patients suffer from nausea, vomiting, and diarrhea from a noninfectious cause (medications, toxins from shellfish, or chemotherapy).

O. Acute Hepatitis

1. Damage to the liver caused by one of several viruses
 - a. A, B, C, D, and E
 - b. In the US, the A, B, and C strains are the predominant organisms that cause this disease.
 - c. F and G are being investigated for their role in causing liver damage.
 - d. Other causes include the Epstein-Barr virus, cytomegalovirus, certain bacterial infections, and liver cancer.
2. Transmitted in a variety of ways
 - a. Types A and E move from patient to patient by the fecal-oral route.
 - b. Types B, C, and D are transmitted by person-to-person contact (either by sexual intercourse or parenterally).

P. Bowel Obstruction

1. Decreased intestinal motility
 - a. Abnormally slow movement of material through the intestines
 - b. Two major reasons for this problem are paralysis of the intestines or a change in the diameter of their lumen.
2. Paralysis
 - a. Can be caused by infection, kidney disease, impaired blood flow to the intestines, or medications
 - b. Narcotics and anesthetics can paralyze the intestinal muscle.
3. Intestinal lumen diameter compromises
 - a. Can be caused by neoplasms, objects that the patient has swallowed, or strictures
 - b. Other causes include hernia, intussusceptions, or twisting of the intestines.

Q. You are the Provider (continued)

Slide: 54

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. You question the patient about the SAMPLE history.
 - b. He states that his symptoms are pain in the right upper quadrant, radiating to the back, rated as a 6 on a 10 scale. He has also been nauseated and has vomited. He has no allergies. He takes medication for high cholesterol. He has a past medical history of gallstones and alcoholism. His last meal was lunch, an hour ago. Events are not remarkable.
 - c. *What is your initial differential diagnosis?*

V. Assessment

Time: 35 minutes

Slides: 55–76

Lecture

A. Scene Size-up

1. Scene safety
 - a. Paramount concern for all types of calls
 - b. No specific concerns related to patients with GI emergencies
 - c. Patients often need some type of assistance with hygiene.
 - d. Additional resources include extra gloves, mask, gowns, change of uniform, suction equipment, extra linens, blankets, washcloths, towels, and adult and child diapers.
2. Mechanism of injury or nature of illness
 - a. Contributes to initial impression
 - b. Most calls for GI problems will not involve multiple patients.
 - c. A call to an office building with several complaints of GI symptoms should lead you to suspect release of an agent.
3. Body substance isolation
 - a. Gloves
 - b. May need to manage vomit, diarrhea, and soiled patient clothing in these calls
 - c. Gowns can be helpful.
 - d. Masks can help with noxious odors.

B. Initial Assessment

1. Forming your general impression
 - a. Closely examine the location where the patient is found.
2. Odor
 - a. Smell of the room or location of the patient
 - b. Noxious odor from foul-smelling stool
 - c. The sense of smell is most acute for about 1 minute.
3. Airway patency
 - a. More pertinent concern
 - b. A vomiting patient may aspirate.
 - c. Open the airway, and remove or suction any obstructions.
 - d. Feculent breath: smells of stool; extremely advanced bowel obstructions
4. Breathing
 - a. Rarely affected
 - b. Severe complication
5. Circulation
 - a. Essential in understanding how the GI disease is affecting the body
 - b. Skin color, temperature, and condition
 - c. Heart rate
 - d. Peripheral pulses compared to central pulse

6. Pain or hemorrhage
 - a. Blood volume begins to drop.
 - b. Epinephrine and norepinephrine attempt to stabilize blood pressure through vasoconstriction, increased heart rate, and increased force of left ventricular contraction.
 - c. Pain stimulates similar responses.
 - d. The patient may be left with tachycardia, diminished peripheral pulses, diaphoresis, and pale, cool, clammy skin.
7. Orthostatic vital signs
 - a. Help determine the extent of bleeding
 - b. Have the patient assume a position of comfort.
 - c. Take an accurate blood pressure and heart rate.
 - d. Have the patient change positions, wait a minute or two, and take another blood pressure and heart rate measurement.
8. Gross bleeding
 - a. Not unusual to find large amounts of blood
 - b. Take note of the amount of blood lost.
 - c. Volume estimation can be difficult and should be practiced.
9. Transport decision
 - a. Positive tilt test (serial vital signs change with a change in position); consider how best to move the patient.

C. Focused History and Physical Exam

1. Unstable patient
 - a. A head-to-toe examination will provide ample opportunities to discover clues to the underlying problem.
 - b. DCAP-BTLS exam
 - c. Major effects from GI disease typically relate to the nervous, cardiovascular, and respiratory systems (pain, hypovolemia, and infection).
2. Examining the abdomen
 - a. Can be embarrassing for both the patient and the paramedic
 - b. Be professional and talk calmly.
 - c. Maintaining straight arms and legs will result in flexed abdominal muscles.
 - d. Try to distract with a casual conversation.
3. Skin
 - a. Irregularities
 - b. Scars from trauma or previous surgery
 - c. Stretch marks
4. Shape of the abdomen
 - a. Symmetry
 - b. Is it flat, round, protuberant, or scaphoid?
 - i. Round abdomen: weight localized to the abdomen

- ii. Protuberant: extreme weight; fluid buildup, pregnancy, or organ enlargement
 - iii. Scaphoid: decreased abdominal volume
5. Listen
 - a. Before palpation (can alter bowel sounds)
 - b. Listening to one location is usually all that is needed.
 - c. Normal sounds (gurgles and clicks)
 - d. See Table 31-7 Bowel Sounds.
 - e. Listen for the presence or absence.
 - f. Borborygmi: indicate strong contractions of the intestines
 - g. Hyperperistalsis: can also be heard in patients with early bowel obstruction
 - h. Decreased bowel sounds can indicate decreased peristalsis of the intestines.
 - i. Absence of bowel sounds means that the intestines are not contracting.
 6. Palpate the abdomen.
 - a. Place your hand flat on the wall of the abdomen with your fingers together.
 - b. Begin in the quadrant farthest away from the complaint.
 - c. With your hand sitting on the wall of the abdomen, raise your wrist so that you indent the abdominal wall with your fingers about 2" to 4".
 - d. Assess the abdomen for the presence of rigidity, discomfort, or masses.
 - e. Determine if the abdomen is rigid or just muscularly guarded; a rigid abdomen may indicate hemorrhage or infection.
 7. Pain
 - a. Often a finding of importance with GI patients
 - b. Can indicate trauma, hemorrhage, infection, or obstruction
 - c. Utilize OPQRST to elaborate on the chief complaint.
 - d. See Table 31-8 Types of Abdominal Pain.
 - e. Determine when the patient has pain.
 - f. Rebound tenderness: parietal pain; may sometimes accompany abdominal pain; suggestive of a serious and potentially life-threatening pathology
 - g. Peritoneum: thin layer within the abdominal cavity that contains most of the abdominal organs
 - h. The exam goal is to have the peritoneum vibrate (if infected, sudden increase in pain).
 8. Smooth
 - a. When subjected to light palpation
 - b. Deep palpation can determine some of the organs and structures within the cavity.
 - c. Note areas of increased density (engorged liver, bowel distention, aortic aneurysm, or cancerous tumors).
 9. Murphy's sign
 - a. Positive suggests the presence of cholecystitis.
 - b. Patient will suddenly stop inspiration due to a sharp increase in pain.
 10. SAMPLE history
 - a. Helps the paramedic elicit the relevant current and past medical history

- b. See Table 31-9 Body Substances from the GI Tract.

D. Ongoing Assessment

1. Monitor en route.
 - a. Heart rate, ECG, blood pressure, respiratory rate, and pulse oximetry
 - b. If GI bleed, assess for signs of shock.
 - c. Determine the effect of treatment.
 - d. Monitor pain level.

E. You are the Provider (continued)

Slide: 77

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. The patient guards the abdomen. He groans and pushes your hand away as you palpate the right upper quadrant. You note bruising discoloration on the flank area.
 - b. Vital signs are as follows: pulse 110 and regular, respirations 16 and shallow, BP 92/60. The patient has a temperature of 99.3°F. When you sit the patient up, his BP falls and his pulse increases.
 - c. *What are your concerns at this point?*

VI. Assessment of Specific Conditions

Time: 25 minutes

Slides: 78–94

Lecture

A. Gastrointestinal Bleeding

1. Presentation
 - a. Variable
 - b. Reflects the presence of a number of diseases
 - c. The progression from health to needing an ambulance can reveal a significant amount of information.
2. Medical history
 - a. May provide important information
 - b. Medications may irritate the GI tract.
3. How much bleeding has occurred
 - a. Most important component of the physical exam
 - b. Focus assessment on evaluation for shock.
 - c. Orthostatic vital signs are the key to gauging the degree of fluid loss.

B. Esophageal Varices

1. Two forms
 - a. Initially shows signs of liver disease (fatigue, weight loss, jaundice, anorexia, edema in the abdomen, pruritus, abdominal pain, nausea, and vomiting)

- b. A very gradual disease process takes months to years before the patient reaches a state of extreme discomfort.
- c. Rupture of varices is far more sudden.
- d. Sudden-onset discomfort in the throat
- e. May have severe dysphagia, vomiting of bright red blood, hypotension, and signs of shock
- f. If the bleeding is less dramatic, then hematemesis and melena are likely.

C. Mallory-Weiss Syndrome

- 1. Presentation
 - a. Linked to vomiting
 - b. In women, may be associated with hyperemesis gravidarum
 - c. The extent of bleeding can range from very minor to severe.

D. Hemorrhoids

- 1. Present
 - a. Bright red blood during defecation
 - b. Hematochezia: gross bleeding; tends to be minimal and is easily controlled
 - c. May experience itching and a small mass on the rectum

E. Peptic Ulcer Disease

- 1. Presentation
 - a. Classic sequence of burning or gnawing pain in the stomach that subsides or diminishes immediately after eating and reemerges 2 to 3 hours later
 - b. Nausea, vomiting, belching, and heartburn are common.
 - c. Gastric bleeding can occur.

F. Cholecystitis

- 1. Classic pattern
 - a. The patient originally has no pain.
 - b. Eats a fatty meal and 2 to 3 hours later develops severe upper right quadrant abdominal pain
 - c. May vary depending on the consistency of the food being eaten

G. Appendicitis

- 1. Presentation
 - a. Periumbilical pain that migrates to the right lower quadrant
 - b. Duration is usually less than 48 hours.
 - c. As the condition progresses, the pain will change characteristics.
 - d. Rebound tenderness is a sign of perforation of the appendix; often develop anorexia, nausea, and fever.

H. Diverticulitis

- 1. Presentation
 - a. Abdominal pain

- b. Tends to be localized to the left side of the lower abdomen
- c. Classic signs of infection include fever, malaise, body aches, chills, nausea, and vomiting.
- d. Bleeding is rare.
- e. Adhesions may develop.

I. Pancreatitis

1. Pain

- a. Tends to be localized to the epigastric area or right upper abdomen
- b. Can be sharp and may be quite severe
- c. Radiation of the pain to the back is not uncommon.
- d. May also experience nausea, vomiting, fever, tachycardia, hypotension, and muscle spasms in the extremities

2. Greatest cause for alarm

- a. Internal hemorrhage
- b. Advanced autodigestion may cause the blood vessels near the pancreas to be compromised.
- c. Hemodynamic instability may be present.
- d. Grey Turner's sign and Cullen's sign

J. Ulcerative Colitis

1. Presentation

- a. Gradual onset of bloody diarrhea and abdominal pain
- b. Other signs and symptoms include joint pain and skin lesions.
- c. May experience fever, fatigue, and loss of appetite

K. Crohn's Disease

1. Presentation

- a. Chronic complaint of abdominal pain (lower right area)
- b. Rectal bleeding, weight loss, diarrhea, arthritis, skin problems, and fever may also be present.
- c. May experience repeated episodes of mild to severe signs and symptoms

L. Acute and Nonacute Gastroenteritis

1. Presentation

- a. Diarrhea of various types (large dumping-type diarrhea or frequent small liquid stools)
- b. May contain blood and/or pus
- c. May have a foul odor or be odorless
- d. Abdominal cramping is frequent.
- e. Nausea, vomiting, fever, and anorexia are also present.
- f. Dehydration and hemodynamic instability if diarrhea continues.

M. Acute Hepatitis

1. All types associated with the same signs and symptoms
 - a. First phase: patient experiences joint aches, weakness, fatigue, nausea, vomiting, anorexia, urticaria, and pruritus.
 - b. Second phase: damage to the liver resulting in liver failure; characterized by acholic stools, darkening of the urine, jaundice, and icteric sclera
 - c. Abdominal pain in the right upper quadrant and an enlarged liver also become apparent.

N. Bowel Obstruction

1. Presentation
 - a. Varies according to the underlying cause
 - b. If caused by swallowing something, can occur within hours.
 - c. If caused by cancer may take months to become apparent.
 - d. Signs include abdominal pain and fullness.
 - e. Diarrhea initially
 - f. Constipation may eventually result.
 - g. Nausea and vomiting are common in later stages.

O. You are the Provider (continued)

Slide: 95

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. With all the signs and symptoms, you suspect shock.
 - b. Based on the information presented, you start the patient on supplemental oxygen. You decide to start an IV of normal saline, and infuse a fluid challenge of 300 mL.
 - c. The patient is complaining of intense abdominal pain.
 - d. You call medical control for meperidine administration for pain, and receive an order for it.
 - e. *What else should you consider in this case?*
 - f. *What is your next action?*

VII. Management

Time: 40 minutes

Slides: 96–119

Lecture

A. General Management Guidelines

1. Often little can be done.
 - a. Care for the effects of the disease.
 - b. Extreme amounts of pain, dehydration, hypotension, or extreme nausea
 - c. The main goals are to maintain BSI, manage the ABCs, and manage the patient's pain and nausea.
2. BSI

- a. Essential due to the high likelihood of coming in contact with infectious agents
- b. Be prepared to deal with large amounts of vomit, feces, and blood.
- c. Equipment
 - i. Gloves/gowns/eye protection/surgical mask
 - ii. Towels and washcloths
 - iii. Extra linen
 - iv. Absorbent pads (Chux)
 - v. Emesis basin
 - vi. Disposable basin
 - vii. Biohazard bags
 - viii. Sterile water for irrigation
3. Airway
 - a. The only real concern is the potential for aspiration or obstruction of the airway due to vomit or blood.
 - b. These complications are rare.
 - c. Effective positioning
 - d. Portable suctioning
4. Breathing
 - a. Often associated with decreased hemoglobin due to bleeding
 - b. Be liberal in delivering oxygen.
 - c. Oxygen masks can cause some patients to experience a sense of confinement.
 - d. Listen to lung sounds.
5. Administer fluids.
 - a. Dehydration is common (refill the cellular space).
 - b. Stable patients should receive a hypotonic solution.
 - c. More profoundly dehydrated patients should receive isotonic fluid.
6. Care for the patient with hemorrhage
 - a. Directed at maintaining perfusion of vital organs
 - b. Internal hemorrhage cannot be controlled in the prehospital setting.
 - c. Volume replacement is important, but can result in dramatic hemodilution.
 - d. Provide enough volume to keep vital organs from becoming hypoxic, but not so much volume as to increase the bleeding.
 - e. Maintaining peripheral perfusion at the radial artery should be adequate to allow for adequate perfusion to the brain, kidneys, and other vital organs.
7. Pain management
 - a. Controversial subject
 - b. System protocols should provide guidance.
 - c. The only true contraindication to pain management in the prehospital setting for the GI patient is hypotension.
 - d. Make the patient more comfortable, but don't eliminate the pain entirely.
 - e. Five medications for abdominal pain

- i. Meperidine hydrochloride
- ii. Morphine
- iii. Ketorolac
- iv. Nalbuphine
- v. Fentanyl
- f. Medications for nausea
 - i. Diphenhydramine
 - ii. Hydroxyzine
 - iii. Promethazine

B. Gastrointestinal Bleeding

1. Treatment
 - a. Follow general guidelines.
 - b. Fluid resuscitation (normal saline or lactated Ringer's)
 - c. Use macrodrip tubing.

C. Esophageal Varices

1. Treatment
 - a. Follow general guidelines.
 - b. Accurate assessment of the extent of blood loss is critical.
 - c. Volume resuscitation and aggressive suctioning of the airway

D. Mallory-Weiss Syndrome

1. Same as for esophageal varices
 - a. Directed at determining the extent of blood loss
 - b. May be dehydrated from repeated vomiting

E. Hemorrhoids

1. Prehospital management
 - a. Largely supportive
 - b. In isolation, more of an inconvenience than a life-threatening condition
 - c. A minor bleeding problem can become life-threatening.
 - d. The majority resolve without treatment in 2 to 3 days.

F. Peptic Ulcer Disease

1. Prehospital management
 - a. The major focus is to accurately assess the extent of blood loss and prepare to manage any hypotension present.
 - b. Orthostatic vital signs are critical.
 - c. In-hospital management includes acid neutralization and reduction therapies.

G. Cholecystitis

1. Prehospital treatment
 - a. Directed at making the patient comfortable

- b. Rarely life-threatening
- c. Extreme pain can make the patient suffer from vasovagal stimulation.
- d. Be cautious when transporting any patient in severe pain because syncope is a real possibility.
- e. Medications include morphine and meperidine.

H. Appendicitis

1. Prehospital management
 - a. Keep a wary eye out for septicemia.
 - b. Septic shock may occur.
 - c. Be prepared to use dopamine if crystalloids are not effective.

I. Diverticulitis

1. Management
 - a. Directed at making the patient comfortable
 - b. Examine closely for severe infection.
 - c. May need large amounts of fluids and/or dopamine

J. Pancreatitis

1. Management
 - a. Follow general guidelines.
 - b. Pay special attention to signs of severe hemorrhage.
 - c. Fluid resuscitation
 - d. Meperidine is the most appropriate choice for management of pain.

K. Ulcerative Colitis

1. Management
 - a. Determine the degree of hemodynamic instability.
 - b. Look for signs of shock.
 - c. Provide supportive care and follow general management guidelines.

L. Crohn's Disease

1. Management
 - a. Follow general management guidelines.
 - b. Volume resuscitation may be necessary.
 - c. Measures to control nausea and pain are commonly needed.

M. Acute and Nonacute Gastroenteritis

1. Prehospital management
 - a. Follow general management guidelines.
 - b. Degree of fluid deficit
 - c. Patients often feel markedly better after rehydration.
 - d. Orthostatic vital signs
 - e. Analgesic and antiemetic medications

- f. One of the most critical issues is education (food- and water-borne illness).

N. Acute Hepatitis

1. Prehospital management
 - a. Supportive
 - b. Follow general management guidelines.
 - c. Infection control and medication administration
 - d. The liver detoxifies medication.

O. Bowel Obstruction

1. Management
 - a. Follow general management guidelines.
 - b. Rarely life-threatening

P. You are the Provider Summary

Slide: 120

Lecture/Discussion

1. Continue reading the case study provided on the slide:
 - a. The history of hypercholesterolemia, nausea and vomiting, and alcohol abuse suggest pancreatitis. The presence of bruising at the flank, along with the vital signs and orthostatic hypotension, suggests bleeding, and must be treated aggressively. The fluid challenge should help gain ground on the bleed.
 - b. Pancreatitis is a disease that must be treated immediately, so prompt transport to the medical facility is imperative.
 - c. Pain relief should be considered after an IV is established, and meperidine is preferred over morphine.

Q. Summary

1. Anatomy and physiology
2. General pathology
3. Specific conditions
4. Assessment and management

Post-Lecture

I. Prep Kit Activities

Time: 55 minutes

Note: This section contains various student-centered end-of-chapter activities designed as enhancement to instructor's preparation. As time permits, these activities may be presented in class. They are also designed to be used as outside homework/activities.

A. Assessment in Action

Time: 20 minutes

Individual/Small Group Activity/Discussion

Purpose

This activity is designed to assist students in gaining a further understanding of the chapter content. This activity allows students an opportunity to analyze an emergency care scenario, develop responses, and integrate what they have learned.

Instructor Directions

1. Direct students to read the "Assessment in Action" scenario located in the Prep Kit at the end of Chapter 31.
2. Direct students to read and individually answer the quiz questions at the end of the scenario. Facilitate a class review and dialogue of the answers, allowing students to correct responses as may be needed. Use the quiz question answers noted below to assist in building this review.
3. You may also wish to assign these as individual activities and ask students to turn in their comments on a separate piece of paper.

Answers to Multiple-Choice Questions

You are dispatched to the assisted-living facility for someone who is "bleeding." When you arrive on scene you find the patient supine on the floor. The smell to you indicates lower GI bleeding and you immediately walk into the bathroom to check out the toilet bowl, where you see approximately 200 mL of a substance that resembles coffee grounds. The patient's vital signs are as follows: pulse rate, 120 beats/min; sinus tachycardia on the cardiac monitor; blood pressure, 70 mm Hg by palpation; respiratory rate, 26 breaths/min; and pulse oximetry, 97% on room air.

1. What are the three main conditions responsible for diseases of the GI tract?
 - A. Hypovolemia, infection, inflammation
 - B. Hypertension, hypovolemia, tachycardia
 - C. Hypovolemia, infection, hypertension
 - D. Hypovolemia, inflammation, gallstones

Answer: A. Most diseases of the GI tract are associated with hypovolemia, infection and inflammation. Hypovolemia may be associated with dehydration or blood loss. Infection is frequently associated with foods or a rupture within the GI tract. Inflammation is the body's response to injury.

2. From what organs does an upper GI bleed originate?
 - A. Small intestine, large intestine, rectum, stomach
 - B. Esophagus, stomach, rectum
 - C. Rectum, stomach, large intestine
 - D. Esophagus, stomach, small intestine

Answer: D. Upper GI bleeds are associated with the esophagus, stomach and upper portion of the small intestine.

3. An aspect of the general impression that is often different for the patient with GI bleeding is:
- A. patient color.
 - B. patient vital signs.
 - C. odor.
 - D. restlessness.

Answer: C. GI bleeding creates distinctive odors that can clearly be identified during the general impression.

4. _____ becomes more pertinent with the GI patient.
- A. Airway patency
 - B. Breathing
 - C. Circulation
 - D. Bleeding

Answer: A. While airway is always of crucial concern, a GI patient is likely to vomit, which significantly increases the risk for aspiration.

5. As blood volume begins to drop, the body begins to compensate by releasing:
- A. antihistamines.
 - B. ketoacidosis.
 - C. catecholamines.
 - D. insulin.

Answer: C. As volume decreases and the body begins to compensate for shock, the release of catecholamines will stimulate an increase in heart rate and vasoconstriction.

6. What is the dark red or black granular material called?
- A. Hematemesis, or coffee ground emesis
 - B. Vomit
 - C. Diarrhea
 - D. Steatorrhea

Answer: A. Vomit with the appearance of coffee grounds indicates internal bleeding. Anticipate the development of shock and treat appropriately.

7. What is the most important component of the physical exam?
- A. The length of time the patient has been having complaints
 - B. How much bleeding has occurred
 - C. Where the abdominal pain, if any, is located
 - D. Noting when the last bowel movement occurred

Answer: C. This is crucial to the possible differential diagnosis. If a patient is having pancreatitis, the pain should be in the area of the pancreas. While this may not change the treatment by the paramedic, the information is crucial to the emergency physician. Since

a patient may lose consciousness at any time, the paramedic must obtain a thorough history and physical while the patient is conscious.

8. _____ are the key to gauging the degree of fluid loss in the prehospital setting.
- A. Normal vital signs
 - B. Orthostatic vital signs
 - C. Abnormal vital signs
 - D. No vital signs

Answer: B. Orthostatic vital signs help determine when a patient is hypovolemic. Changes occur when there is a loss of 15-20% of circulating volume. Be careful when performing, as the patient may lose consciousness during positional changes.

Challenging Question

You are dispatched to a private residence for a person with abdominal pain. When you arrive on scene, the patient is doubled over in pain and complains of point tenderness to the upper right quadrant. The patient's vital signs are as follows: pulse rate, 108 beats/min with sinus tachycardia; blood pressure, 110/70 mm Hg; respiratory rate, 24 breaths/min; and pulse oximetry, 100% on room air.

9. What management is required for this patient with an acute abdomen?

Rationale: As with any patient, your initial priorities of management include addressing problems with airway, breathing, and circulation. Any acute problem related to the abdomen, chest, or nervous system warrants high-flow oxygen—regardless of room air oxygen saturation.

Your patient's presenting complaint of right upper quadrant pain is suggestive of cholecystitis—an inflamed gallbladder. However, it could also indicate other intra-abdominal problems. Further management should consist of vascular access, with isotonic crystalloid fluids given as needed to maintain adequate perfusion (ie, radial pulses, adequate mental status), and transport to the hospital. Allow the patient to assume a position of comfort—usually with his or her knees drawn into the abdomen—as this may provide some pain relief by taking pressure off of the abdominal musculature.

Pain management is an important part of prehospital care. Not only is pain psychologically distressing, it also increases oxygen demand and consumption—a potentially unhealthy situation. Analgesia not only addresses the negative psychological effects of pain and anxiety; it also addresses the potentially negative hemodynamic effects.

In the past, the use of analgesia for undiagnosed abdominal pain was discouraged in the prehospital setting for fear that it may skew the physician's evaluation. However, this is no longer necessarily the case. If a patient is in severe pain, and his or her vital signs are stable, it is not unreasonable to administer a narcotic analgesic (ie, morphine, fentanyl), regardless of the anatomic location of the pain. Remember, the care provided by the paramedic is not limited to the physical problem; the associated psychological effects of

pain and anxiety should be addressed as well. Follow your local protocols or contact medical as needed regarding the prehospital use of narcotic analgesics.

B. Points to Ponder

Time: 20 minutes

Individual/Small Group Activity/Discussion

This activity addresses the affective objectives of the chapter, allowing you to help students probe the more difficult situations that they face. Use this as an opportunity to allow them to express differences of opinion and approach, while directing them to be thorough and decisive in their answers. Encourage challenges.

Purpose

To allow students an opportunity to apply critical thinking analysis to a given case study.

Instructor Directions

1. Direct students to read the "Points to Ponder" scenario found in the Prep Kit at the end of Chapter 31.
2. You may wish to assign students to a partner or a group and direct them to review the discussion question at the end of the scenario and prepare a response. Facilitate a class dialogue centered on the discussion point.
3. You may also ask students to complete this activity on their own and hand in their comments on a separate piece of paper.
4. Personally review the scenario and discussion question based on your experience and knowledge as an emergency care worker. Develop your own key points for guiding this discussion.

Scenario

You are dispatched to the home of a 37-year-old woman. When you arrive, you find her doubled over in pain, complaining of left upper quadrant pain that radiates to the right upper quadrant. You take the following set of vital signs: pulse rate, 118 beats/min; sinus tachycardia on the cardiac monitor; blood pressure, 140/82 mm Hg; respiratory rate, 24 breaths/min; and pulse oximetry, 99% on room air. Your patient tells you that her last menstrual cycle ended 4 days ago. She also tells you that the pain has been intermittent for approximately 2 weeks. The pain is sharp, like a knife cutting away her abdomen.

You initiate IV therapy and administer 15 L of oxygen by nonrebreathing mask. You transport her to the hospital in a position of comfort and give your patient care report to the emergency department staff. Towards the end of your shift, you call the hospital and find out she was admitted with acute pancreatitis.

What are some common causes of abdominal pain?

How can pancreatitis affect other body systems?

Issues

Understanding the Importance of a Complete Abdominal Assessment, Appropriate Medical Response to Gastrointestinal Emergencies.

Discussion

There are many commonly seen causes of abdominal pain. A few of these are appendicitis, pancreatitis, cholecystitis, gastritis, diverticulitis, and bowel obstructions. Gynecological problems also frequently present with abdominal pain as the chief complaint. It is crucial to perform a complete assessment of all patients presenting with abdominal pain and rule out any possible life-threatening conditions. Be alert for signs and symptoms of shock and treat appropriately. Pancreatitis may affect other bodily systems due to the importance of pancreatic enzymes in the proper digestion of foods. If foods are not properly digested, nutrition will not be available for the body.

II. Lesson Review

Time: 10 minutes

Discussion

Note: Facilitate the review of this lesson's major topics using the review questions as direct questions or overhead transparencies. Answers are found throughout this lesson plan. Each question includes a reference to the slide where the information is covered.

1. What object in the abdomen serves no identifiable purpose? (Lecture I-A)
2. The portal vein is associated with what GI structure? (Lecture II-A)
3. What is the location where food enters the small intestine? (Lecture II-A)
4. How long does average digestion take? (Lecture II-A)
5. How many people per year are infected by food-borne illnesses? (Lecture III-B)
6. What problem is frequently caused by liver failure? (Lecture IV-C)
7. These are formed due to increased bile production. (Lecture IV-G)
8. Appendicitis is often fatal in whom? (Lecture IV-H)
9. What odor comes from advanced bowel obstructions? (Lecture IV-P)
10. What type of IV fluid is best for fluid replacement? (Lecture VII-A)

III. Assignments

Time: 5 minutes

Lecture

1. Review all materials from this lesson and be prepared for a lesson quiz to be administered (date to be determined by instructor).
2. Read Chapter 32: *Renal and Urologic Emergencies* for the next class session.