Chapter 16

Gastrointestinal and Urologic Emergencies

Introduction (1 of 2)

- Abdominal pain is a common complaint.
  - Cause of abdominal pain is often difficult to determine.
- As an EMT:
  - You *do not* need to determine exact cause.
  - You *should* be able to recognize a life-threatening problem and act.

Table 16-1 Common Abdominal Conditions

Condition	Localization of Pain
Appendicitis	Right lower quadrant (direct); around navel (referred); rebounding pain (pain felt on the rebound after palpation)
Cholecystitis	Right upper quadrant (direct); right shoulder (referred)
Ulcer	Upper midabdomen or upper part of back
Diverticulitis	Left lower quadrant
Abdominal aortic aneurysm (ruptured or dissecting)	Low part of back and lower quadrants
Cystitis (inflammation of the bladder)	Lower midabdomen (retropubic)
Kidney infection	Costovertebral angle
Kidney stone	Right or left flank, radiating to genitalia
Pancreatitis	Upper abdomen (both quadrants); back
Pneumonia	Referred pain to the upper abdomen
Hernia	Anywhere in the abdominal area
Peritonitis	Anywhere in the abdominal area

Anatomy and Physiology (1 of 4)

- Abdominal cavity contains:
  - Gastrointestinal system
  - Genital system
  - Urinary system
- Made up of solid and hollow organs

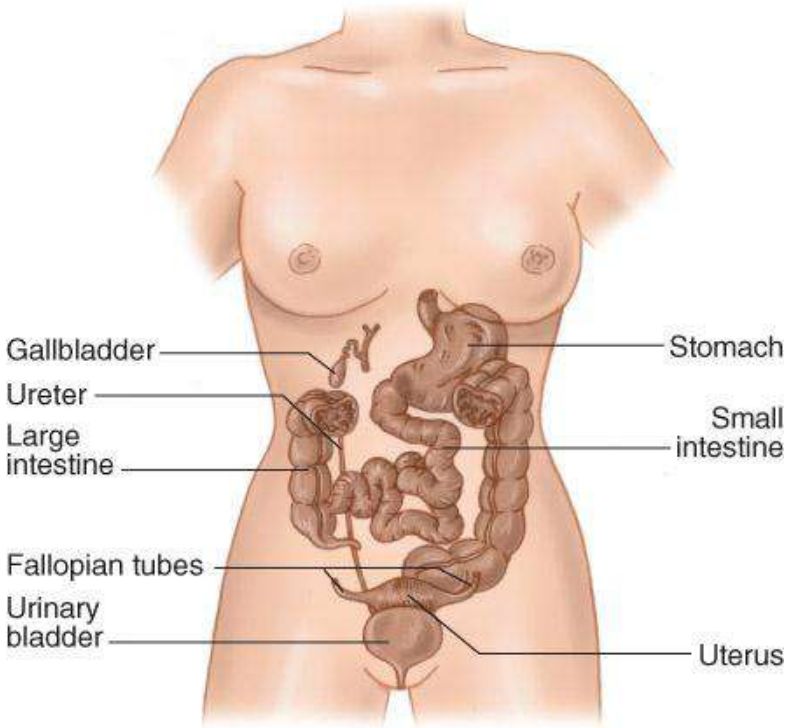
Anatomy and Physiology (2 of 4)

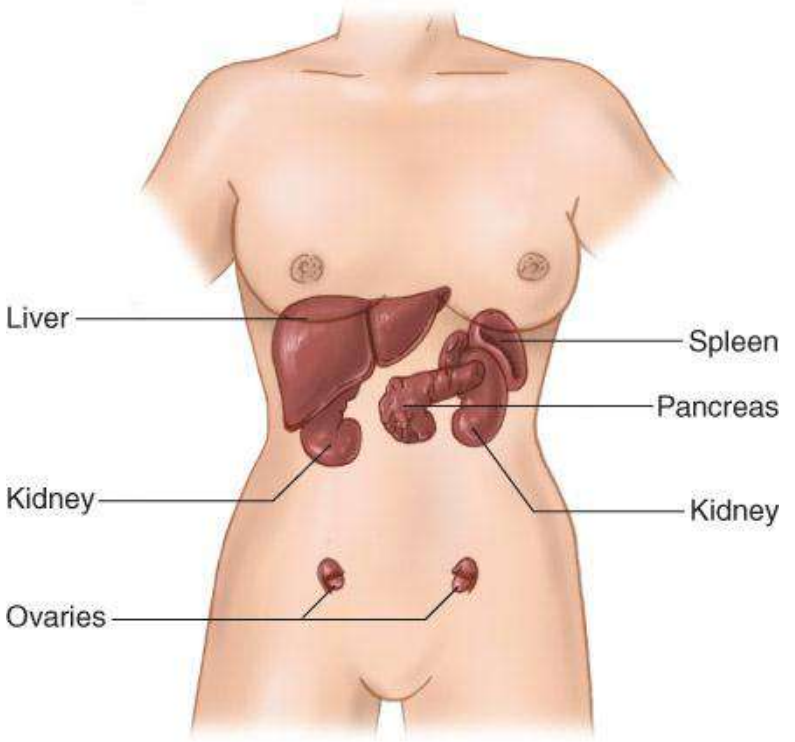
- Solid organs include:
  - Liver
  - Spleen
  - Pancreas
  - Kidneys
  - Ovaries
- Injury to a solid organ can cause shock and bleeding.

Anatomy and Physiology (3 of 4)

- Hollow organs include:
  - Gallbladder
  - Stomach
  - Small intestine
  - Large intestine
  - Urinary bladder
- Breach into hollow organs causes contents to leak and contaminate abdominal cavity.

Anatomy and Physiology (4 of 4)





Hollow organs

Solid organs

The Gastrointestinal System
(1 of 6)

- Responsible for digestion process
- Digestion begins when food is chewed.
  - Saliva breaks down food.
  - Food is swallowed.
  - Food travels to stomach.
- Stomach is main digestive organ.

The Gastrointestinal System
(2 of 6)

- Liver assists in digestion.
  - Secretes bile
    - Aids in digestion of fats
  - Filters toxic substances
  - Creates glucose stores
- Gallbladder is a reservoir for bile.

The Gastrointestinal System
(3 of 6)

- Small Intestine
  - Duodenum
    - Digestive juices from pancreas and liver mix.
      - Pancreas secretes enzymes breaking down starches, fats, protein.
      - Pancreas produces bicarbonate, insulin.
  - Jejunum
    - Absorbs digestive products
    - Does most of the work

The Gastrointestinal System
(4 of 6)

- Small intestine (cont'd)
  - Ileum
    - Soluble molecules are absorbed into blood.
    - Proteins, fats, starches reduce to amino acids, fatty acids, simple sugars.

The Gastrointestinal System
(5 of 6)

- Colon (large intestine)
  - Food that isn't used comes here.
  - A movement called peristalsis moves waste through intestines.
  - Water is absorbed.
  - Stool is formed.

The Gastrointestinal System
(6 of 6)

- Spleen
  - Located in abdomen
  - No digestive function
  - Part of lymphatic system
    - Assists in filtering blood
    - Develops red blood cells
    - Blood reservoir
    - Produces antibodies

The Genital System (1 of 2)

- Male reproductive system:
  - Testicles
  - Epididymis
  - Vasa deferentia
  - Seminal vesicles
  - Prostate gland
  - Penis

The Genital System (2 of 2)

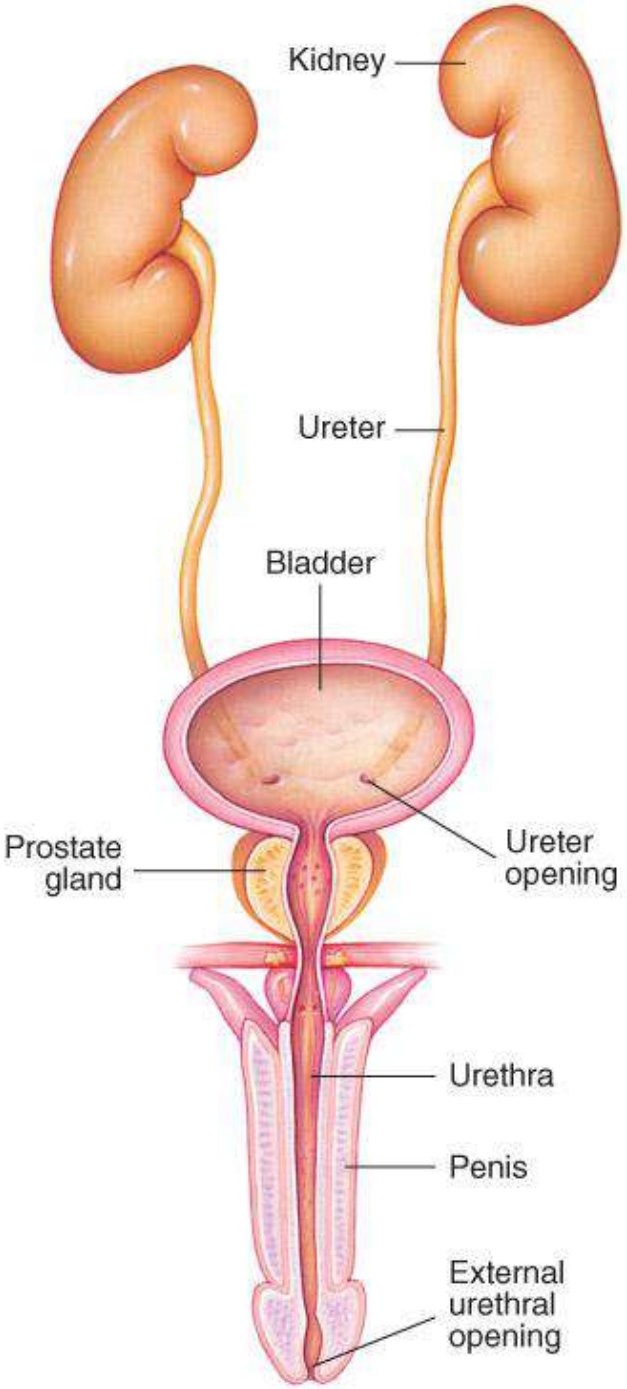
- Female reproductive system:
  - Ovaries
  - Fallopian tubes
  - Uterus
  - Cervix
  - Vagina

The Urinary System (1 of 3)

- Controls discharge of waste materials filtered from blood by kidneys
- Body has two kidneys, one on each side.
  - Lie on posterior wall of abdomen
  - Regulate acidity and blood pressure
  - Rid body of toxic waste
  - Blood flow is high in kidneys.

The Urinary System (2 of 3)

- Ureters join each kidney to the bladder.
- Bladder is located behind pubic symphysis.
- Bladder empties urine outside body through urethra.
  - 1.5 to 2 L of urine per day



The Urinary System (3 of 3)

Male urinary system

Pathophysiology (1 of 4)

- Abdominal cavity is lined by peritoneum.
  - Also covers abdominal organs
    - Parietal peritoneum lines abdominal cavity.
    - Visceral peritoneum covers organs.
- Foreign material such as blood, pus, or bile can irritate peritoneum.
  - Causing peritonitis

Pathophysiology (2 of 4)

- "Acute abdomen" refers to sudden onset of abdominal pain.
  - Often associated with severe, progressive problems

Pathophysiology (3 of 4)

- Peritonitis
  - Irritation of peritoneum
  - Typically causes ileus
- Ileus
  - Paralysis of muscular contractions
  - Retained gas and feces cause distention.
  - Stomach empties by emesis (vomiting).

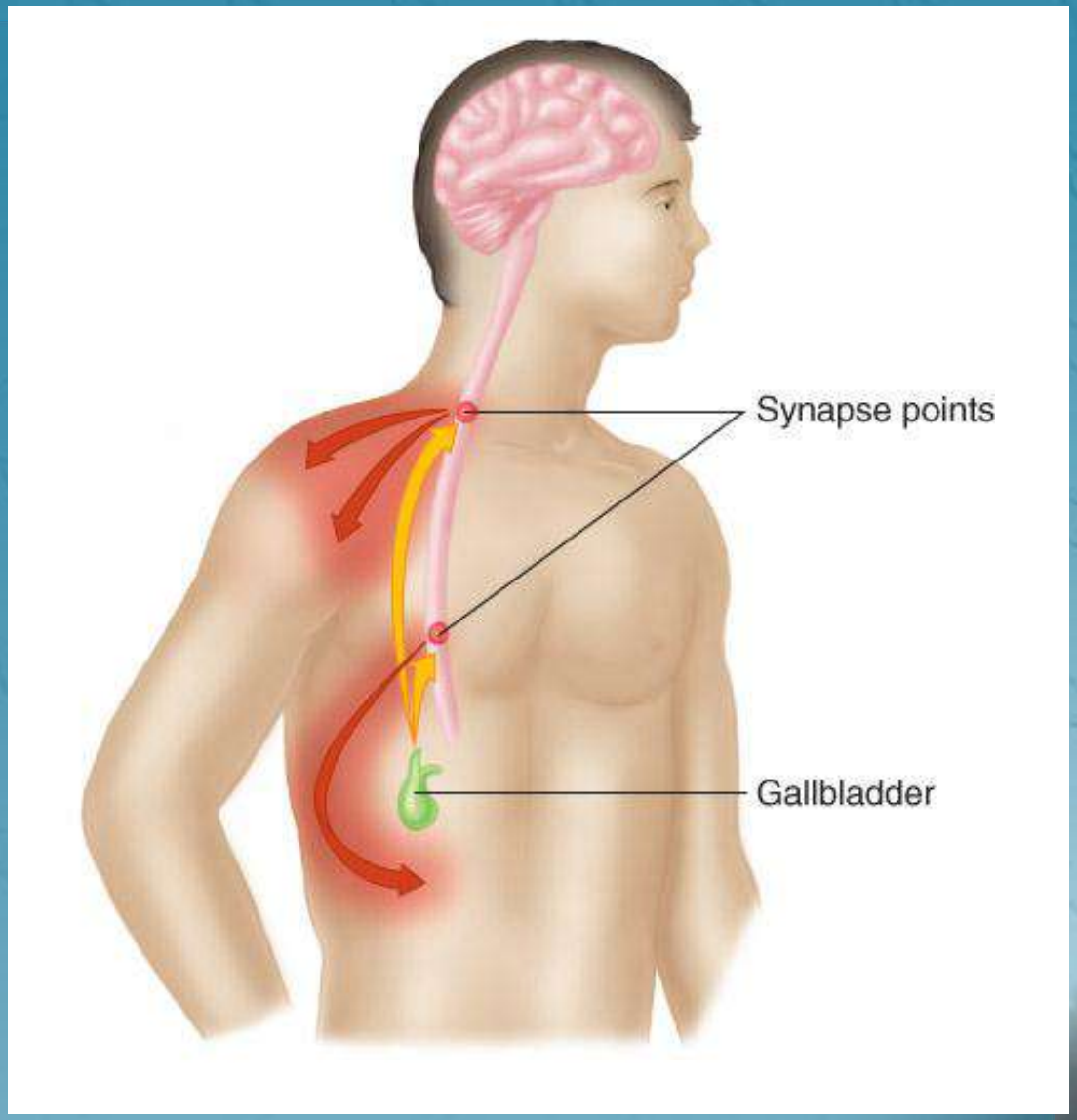
Pathophysiology (4 of 4)

- Diverticulitis
  - Inflammation of abnormal pockets at weak areas in lining of colon
- Cholecystitis
  - Inflammation of the gallbladder

Abdominal Pain (1 of 2)

- Two types of nerves supply peritoneum.
- Parietal peritoneum is supplied by same nerves that supply skin of abdomen.
  - Perceive pain, touch, pressure, heat, cold
- Visceral peritoneum is supplied by autonomic nervous system.
  - Produces referred pain

Abdominal Pain (2 of 2)

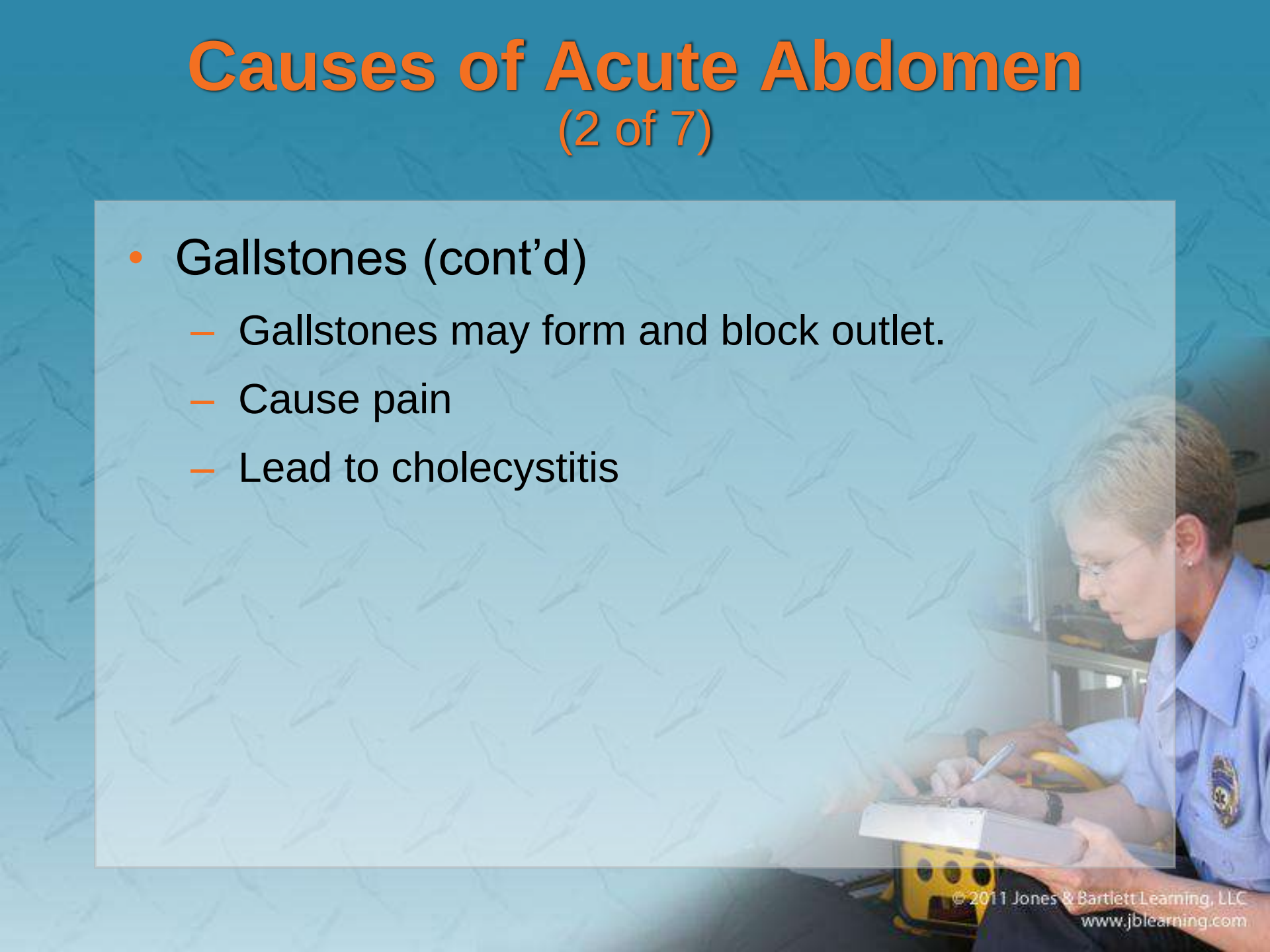


Causes of Acute Abdomen
(1 of 7)

- Ulcers
  - Protective layer of mucus lining erodes, allowing acid to eat into organ.
  - May lead to gastric bleeding
  - Some heal without intervention.
- Gallstones
  - Gallbladder stores digestive juices and waste from liver.

Causes of Acute Abdomen
(2 of 7)

- Gallstones (cont'd)
  - Gallstones may form and block outlet.
  - Cause pain
  - Lead to cholecystitis



Causes of Acute Abdomen
(3 of 7)

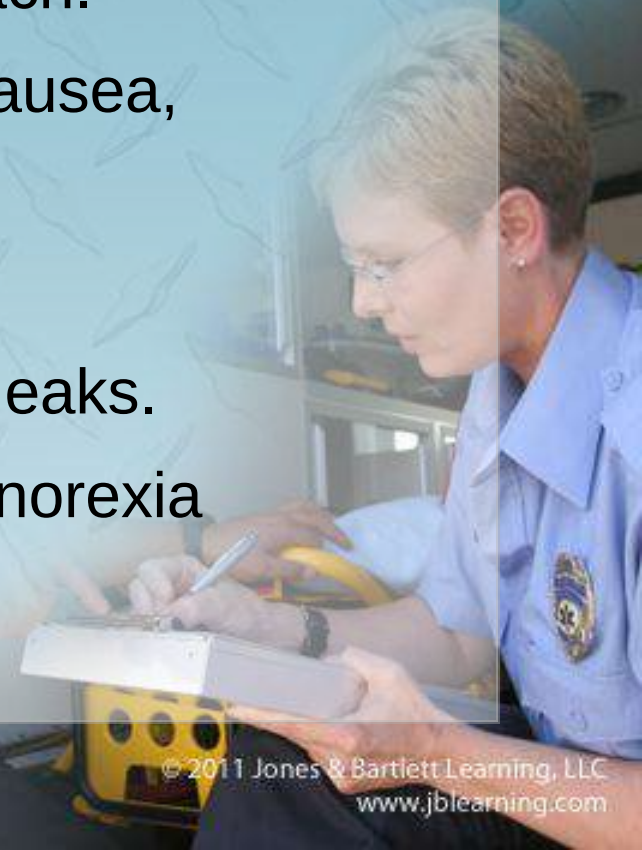
- Pancreatitis
  - Inflammation of the pancreas
    - Caused by obstructing gallstone, alcohol abuse, or other diseases
  - Signs and symptoms
    - Referred back pain, nausea, vomiting, abdominal distention
  - Sepsis or hemorrhage may occur.

Causes of Acute Abdomen
(4 of 7)

- Appendicitis
  - Inflammation or infection in the appendix
  - Nausea, vomiting, fever, chills
- Gastrointestinal hemorrhage
  - Bleeding within gastrointestinal tract
  - May be acute or chronic

Causes of Acute Abdomen
(5 of 7)

- Esophagitis
  - Lining of esophagus becomes inflamed by infection or acids from the stomach.
  - Pain in swallowing, heartburn, nausea, vomiting, sores in mouth
- Esophageal varices
  - Capillary network in esophagus leaks.
  - Fatigue, weight loss, jaundice, anorexia

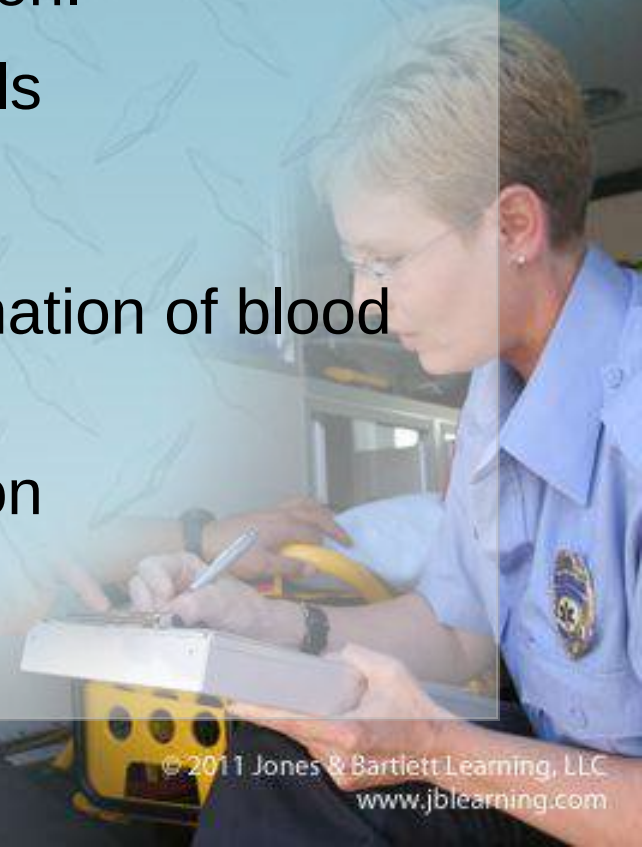


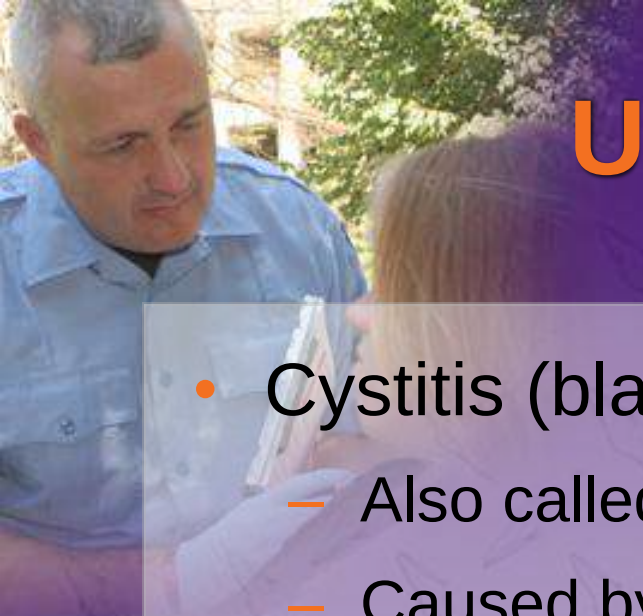
Causes of Acute Abdomen
(6 of 7)

- Mallory-Weiss syndrome
  - Junction between esophagus and stomach tears causing severe bleeding.
  - Vomiting is principal symptom.
- Gastroenteritis
  - Infection from bacterial or viral organisms in contaminated food or water
  - Diarrhea

Causes of Acute Abdomen
(7 of 7)

- Diverticulitis
  - Fecal matter becomes caught in colon walls, causing inflammation and infection.
  - Fever, malaise, body aches, chills
- Hemorrhoids
  - Created by swelling and inflammation of blood vessels surrounding rectum
  - Bright red blood during defecation





Urinary System

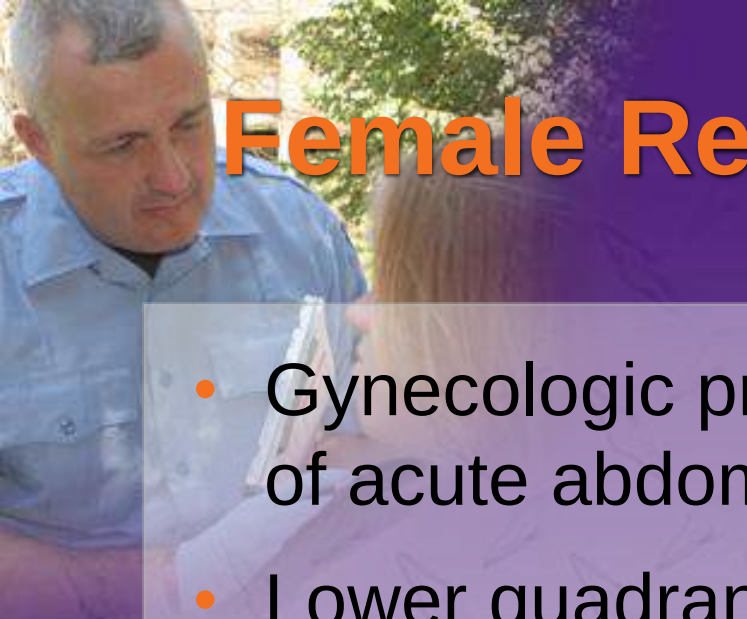
- Cystitis (bladder infection) is common.
  - Also called urinary tract infection (UTI)
  - Caused by bacterial infection
  - Becomes serious if infection spreads to kidneys
  - Reports of urgency and frequency of urination

Kidneys (1 of 2)

- Play a major role in maintaining homeostasis
  - Eliminate waste from blood
- When kidneys fail, uremia results.
  - Waste product (urea) remains in blood.
- Kidney stones can grow over time and cause blockage.

Kidneys (2 of 2)

- Acute kidney failure
  - Sudden decrease in kidney function
  - Reversible with prompt diagnosis and treatment
- Chronic kidney failure
  - Irreversible
  - Progressive, develops over months/years
  - Eventually dialysis or transplant is required.



Female Reproductive Organs

- Gynecologic problems are a common cause of acute abdominal pain.
- Lower quadrant pain may relate to ovaries, fallopian tubes, or uterus.

Other Organ Systems (1 of 3)

- Aorta lies immediately behind peritoneum.
  - Weak areas can result in abdominal aortic aneurysm (AAA).
    - AAA is difficult to detect.
    - Use extreme caution when assessing or detecting.
- Pneumonia can cause ileus and abdominal pain.

Other Organ Systems (2 of 3)

- Hernias can occur.
  - Protrusion of an organ through an opening into a body cavity where it does not belong
  - May not always produce noticeable mass or lump
  - Strangulation is a serious medical emergency.

Other Organ Systems (3 of 3)

- Serious hernia signs and symptoms:
  - A formerly reducible mass that is no longer reducible
  - Pain at the hernia site
  - Tenderness when the hernia is palpated
  - Red or blue skin discoloration

Patient Assessment

- Patient assessment steps
  - Scene size-up
  - Primary assessment
  - History taking
  - Secondary assessment
  - Reassessment

Scene Size-up

- Scene safety
  - Consider gown and disposable protective covers for shoes.
- Mechanism of injury/nature of illness
  - May be the result of violence
  - Tearing pain may lead to an AAA.
  - Patient may be pale or sweating.
  - Gastrointestinal bleeding odor

Primary Assessment (1 of 2)

- Identify and treat life threats.
  - Knees drawn up eases abdominal pain.
- Form a general impression.
- Airway and breathing
  - Abdominal pain may cause shallow, inadequate respirations.

Primary Assessment (2 of 2)

- Circulation
  - Ask about blood in vomit or black, tarry stools.
  - Shock may be detected through pulse assessment.
    - Pulse strengths should be consistent.
- Transport decision
  - Immediate if signs of significant illness

History Taking

- Investigate chief complaint.
  - Often based on previous medical problems
- SAMPLE history
  - Nausea and vomiting
  - Change in bowel habits and urination
  - Weight loss
  - Other signs/symptoms

Secondary Assessment (1 of 2)

- Physical examination
  - Normal abdomen is soft and not tender.
  - Pain/tenderness: signs of acute abdomen
  - Expose and assess abdomen.
  - Palpate gently.

Secondary Assessment (2 of 2)

- Vital signs
  - Check respiratory rate and pulse rate.
  - Monitoring devices
    - Pulse oximetry
    - Noninvasive blood pressure devices

Reassessment

- Frequent reassessment is important.
- Assess interventions, including treatment for shock and emotional support.
- Transport in comfortable position.

Emergency Medical Care (1 of 2)

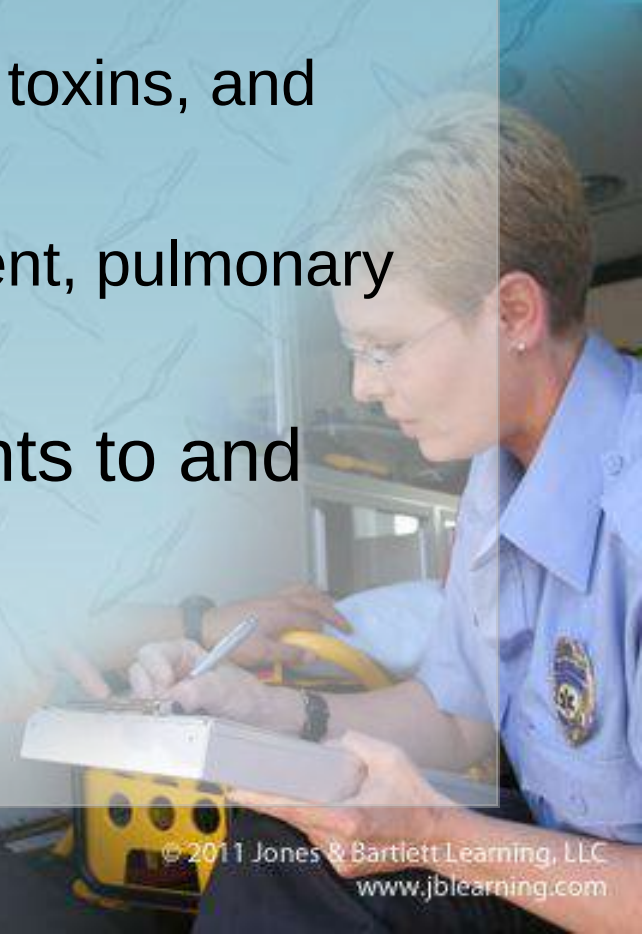
- You cannot treat causes of acute abdomen.
  - Take steps to provide comfort and lessen effects of shock.
    - Treat for shock even when obvious signs are not apparent.
    - Low-flow oxygen often decreases nausea.

Emergency Medical Care (2 of 2)

- When patient has been released to hospital staff, clean ambulance and equipment.
- Wash hands even though you were wearing gloves.

Kidney Dialysis (1 of 2)

- Only definitive treatment for chronic kidney failure
  - Dialysis filters blood, cleans it of toxins, and returns it to body.
  - If patient misses dialysis treatment, pulmonary edema can occur.
- Some services transport patients to and from dialysis centers.



Kidney Dialysis (2 of 2)

- Dialysis machine functions much like normal kidneys.
- Adverse effects of dialysis:
  - Hypotension
  - Muscle cramps
  - Nausea and vomiting
  - Hemorrhage from access site
  - Infection at access site

Summary (1 of 4)

- "Acute abdomen" is a term used to describe the sudden onset of abdominal pain not caused by a traumatic injury.
- The pain, tenderness, and abdominal distention associated with an acute abdomen may be signs of peritonitis.

Summary (2 of 4)

- In addition to abdominal disease or injury, problems in the gastrointestinal, genital, and urinary systems may also cause peritonitis.
- Signs and symptoms of acute abdomen include pain, nausea, vomiting, and a tense, distended abdomen.

Summary (3 of 4)

- Pain is common directly over the inflamed area of the peritoneum, or it may be referred to another part of the body.
- Do not give the patient with an acute abdomen anything by mouth.

Summary (4 of 4)

- A patient in shock or with any life-threatening condition should be transported without delay. Call for ALS assistance if the patient's condition deteriorates during transport.