Movie: Inflammatory Bowel Disease
   Answer the movie questions on the worksheet.

Complete activities 1-3.

Activity #1:
   Click on activity 1 - Digestive System Guided Tour
   • Click on the English version.
   • Click on "Digestive Tract".

Activity #2:
   Click on the activity 2 Webpath link.
   • Click on Systemic Pathology
   • Click on Digestive System Pathology
   Complete the digestive tract scavenger hunt on the laboratory worksheet.

Activity #3:
   Complete the case studies on the lab worksheet using the graphics from the patho webpage as indicated.
Inflammatory Bowel Disease Movie

1. The two diseases classified as inflammatory bowel diseases are:

2. Crohn's disease is an inflammation of which layers of the intestinal wall?

3. Ulcerative colitis is an inflammation of the __________.

4. List 2 rare complications of ulcerative colitis.

5. Symptoms of Crohn's disease include:

6. A possible complication of Crohn's disease is ____________.

7. Classic symptoms of ulcerative colitis include:

8. Initial diagnosis of inflammatory bowel disease includes palpitation, stomach sound, and blood and urine testing. What tests are used to further diagnoses inflammatory bowel disease?


10. Dietary recommendations for patients with inflammatory bowel disease include:
GI Tract Scavenger Hunt

Click on Activity #2, Gastrointestinal Pathology Index. Can you find??????

1. An example of mechanical dysphagia? Explain the mechanism causing the dysphagia.

2. Possible causes of acute gastritis?

3. What cell infiltrates the wall of the appendix in acute appendicitis?

4. What contributes to the formation of diverticula in the colon? From your notes, what are symptoms of diverticulitis? What addition to the diet can help prevent diverticula formation?

5. What is a serious complication of ulcerative colitis?

6. Complications of a gastric ulcer?

7. Discontinuous areas of inflammation in the small intestine are typically caused by what inflammatory disease?

8. An infectious agent that causes chronic gastritis and peptic ulcer disease.

9. What risk factors are associated with esophageal squamous carcinoma?

10. Two causes of small intestinal obstruction?

http://chpweb.weber.edu/hthsci/labpages/
Case #1

A 55 year-old woman, with a history of epigastric pain relieved by food, complained of episodes of hematemesis (vomiting of blood) that have occurred in the past week. Upper GI endoscopy with biopsies was performed.

See slide 1a
Upper endoscopy shows a large gastric ulceration with a necrotic base penetrating well into the gastric wall.

See slide 1b
The radiographic view from an upper GI series reveals an ulcer with an edematous mounded border.

See slide 1c
The microscopic appearance of the ulcer in this partial gastrectomy is seen here at low power. Note the loss of the epithelium.

See slide 1d
Microscopy appearance of ulcer at higher power.

1. What is the diagnosis?
2. What are risk factors for this condition?

Case #2

A 27 year-old man has had recurrent attacks of abdominal pain, diarrhea, and low-grade fever for several months. He has had an unexplained weight loss within the past year. An occult blood test on his stool was positive.

See slide 2a
Colonoscopy revealed erythema and erosions of the terminal ileum.
See slide 2b

Microscopically at low power, the small intestine has extensive mucosal ulceration, transmural chronic inflammation, fibrosis, and granulomas.

1. What is your diagnosis?

2. What treatment do you recommend?

3. What is the course of this disease? What types of complications can develop?

Case #3

A 44 year-old emergency medical technician has been feeling fatigued for months. He just doesn't have the same level of energy he used to have. He remembers that he had experienced an episode of jaundice about 10 years ago, but that episode resolved and he has been healthy since. A CBC reveals that he is not anemic. A chemistry panel reveals normal serum electrolytes, but he has elevated liver enzymes.

1. What further tests would you order?

2. What results would you expect?

3. What risk factor is present?

4. Why is this patient symptomatic after 10 years?

Case #4

A 40 year-old woman developed increasingly severe abdominal pain over a two-day period. In the emergency room, physical examination demonstrated board-like rigidity of her abdomen along with extreme tenderness. A plain film radiograph of the abdomen demonstrated dilated loops of bowel with several radiopaque gallstones in the gallbladder. CBC showed an elevated WBC count with a shift to the
left. Serum chemistries were normal with the exception of an extremely elevated amylase level.

1. What is your diagnosis?

2. What is the probable etiology?

3. What dangerous complications can occur from this condition?

Case #5

Cassie’s cheerleading coach arranges a meeting with her parents and confides that she believes Cassie has lost a lot of weight in the few months since school began. She also seems extremely fatigued in practice. She recommends they make an appointment with the family physician.

1. What disorder does Cassie’s coach suspect?

2. What complications may occur from this condition?

Case #6

A 22 year-old man has just come home to his parents’ after back-packing in Indonesia for 3 1/2 months. He has been lethargic and nauseous with intermittent vomiting and diarrhea. The whites of his eyes and his skin have begun to turn yellow.

1. What laboratory tests would confirm your suspicions?

Lab results show a positive Hepatitis A IgG Ab test.

2. How was this disease likely contracted?

3. What precautions would you advise?

4. How would you treat this patient?
Case #7
Your friend confides in you that her new baby has been more of a challenge than she anticipated. She has the normal problems of diapers, no sleep, and endless crying. On top of this her baby spits up every time she feeds him. Actually, she confides, she's never seen a baby "spit-up" like this. It's more like the baby's violently vomiting. With your medical expertise, what do you advise?

Case #8
A 63 year-old man sought medical help because of increasing abdominal girth over many months along with a recent episode of vomiting blood. Serum electrolytes were normal, glucose normal, total protein decreased, total albumin decreased, total bilirubin elevated, AST and ALT elevated. The patient's protime was 18 seconds (control 12 seconds). The patient admitted to frequent drinking binges.

1. What disease do you suspect?

2. What organ is damaged in this disease? What causes the damage?

3. Correlate clinical and laboratory values in this patient.

Case #9
A 20-year-old woman presented to the emergency room with a one-day history of lower abdominal pain, nausea with anorexia, and fever. On physical examination, there was periumbilical pain. Under active observation over the next couple of hours, the pain migrated to the right-lower quadrant, with rebound tenderness. Her vital signs showed T 38.5 C, P 90, R 18, and BP 110/70 mm Hg. Her WBC count was 11,500 with 76% polys, 6% bands, 14% lymphs, and 4% monos. A pregnancy test was negative. A stool sample was negative for occult blood. A urinalysis was normal.

1. What diagnosis do you suspect?
2. What should be done next?

3. What could happen if this is not promptly treated?
ANSWERS TO INFLAMMATORY BOWEL DISEASE WORKSHEET

1. The two diseases classified as inflammatory bowel diseases are: CROHN’S DISEASE, ULCERATIVE COLITIS

2. Crohn's disease is an inflammation of which layers of the intestinal wall? ALL 3 LAYERS ARE AFFECTED: MUCOUS MEMBRANE, SUBMUCOSA, EXTERNAL MUSCLE TISSUE.

3. Ulcerative colitis is an inflammation of the __________. MUCOSA OF THE COLON AND RECTUM

4. List 2 rare complications of ulcerative colitis. ACUTE HEMORRHAGE, TOXIC MEGACOLON

5. Symptoms of Crohn's disease include: STOMACH CRAMPS, DIARRHEA, SLIGHT FEVER, NAUSEA, VOMITING, POSSIBLE WEIGHT LOSS

6. A possible complication of Crohn's disease is _____________. STENOSIS

7. Classic symptoms of ulcerative colitis include: CHRONIC DIARRHEA, BLOOD IN THE STOOLS

8. Initial diagnosis of inflammatory bowel disease includes palpitation, stomach sound, and blood and urine testing. What tests are used to further diagnoses inflammatory bowel disease? ULTRASOUND, ENDOSCOPY, X-RAYS USING CONTRASTING DYE

9. List 3 methods for treating inflammatory bowel disease. STEROIDS, NUTRITIONAL THERAPY, SURGERY

ANSWERS TO SCAVENGER HUNT WORKSHEET

1. An example of mechanical dysphagia? Explain the mechanism causing the dysphagia. **SEE SLIDE #3. EXAMPLES INCLUDE ACHALASIA, DIVERTICULA, RINGS AND WEBS, HIATEL HERNIA, PARESOPHAGEAL HERNIA. SEE SLIDE 3 FOR MECHANISMS.**

2. Possible causes of acute gastritis? **SEE SLIDES #30-33. CAUSED BY INGESTION OF ACIDS AND ALKALI, ALCOHOLISM, DRUGS SUCH AS NSAIDS, INFECTIONS SUCH AS HELICOBACTER PYLORI, STRESS**

3. What cell infiltrates the wall of the appendix in acute appendicitis? **SEE SLIDE #115. NEUTROPHILS.**

4. What contributes to the formation of diverticula in the colon? From your notes, what are symptoms of diverticulitis? What addition to the diet can help prevent diverticula formation? **SEE SLIDE #139. (ALSO 140-145). FOCAL WEAKNESSES IN THE BOWEL WALL AND INCREASED LUMENAL PRESSURE CONTRIBUTE TO THE FORMATION OF DIVERTICULA. SYMPTOMS ARE CRAMPING, DIARRHEA, CONSTIPATION, DISTENTION, FLATULENCE, AND OBSTRUCTION. ADDING FIBER TO THE DIET CAN PREVENT THE FORMATION OF DIVERTICULA**

5. What is a serious complication of ulcerative colitis? **SEE SLIDE #156. (ALSO 152-161). DILATION OF THE COLON**

7. Discontinuous areas of inflammation in the small intestine are typically caused by what inflammatory disease? CROHN'S DISEASE (SLIDE 147. ALSO 147-151.)

8. An infectious agent that causes chronic gastritis and peptic ulcer disease. HELICOBACTER PYLORI (SLIDE #41).


10. Two causes of small intestinal obstruction? SEE SLIDE 63. ADHESIONS, HERNIA, NEOPLASM, VOLVULUS, INTUSSUSCEPTION, STRicture
ANSWERS TO CASE STUDIES WORKSHEET

Case #1
A 55-year-old woman, with a history of epigastric pain relieved by food, complained of episodes of hematemesis (vomiting of blood) that have occurred in the past week. Upper GI endoscopy with biopsies was performed.

See slide 1a
Upper endoscopy shows a large gastric ulceration with a necrotic base penetrating well into the gastric wall.

See slide 1b
The radiographic view from an upper GI series reveals an ulcer with an edematous mounded border.

See slide 1c
The microscopic appearance of the ulcer in this partial gastrectomy is seen here at low power. Note the loss of the epithelium.

See slide 1d
Microscopy appearance of ulcer at higher power.

3. What is the diagnosis? PEPTIC ULCER OF THE STOMACH

4. What are risk factors for this condition? SMOKING, HELICOBACTER PYLORI INFECTION, PERSISTENT USE OF NSAIDS, STRESS, OR ALCOHOL

Case #2
A 27 year-old man has had recurrent attacks of abdominal pain, diarrhea, and low-grade fever for several months. He has had an unexplained weight loss within the past year. An occult blood test on his stool was positive.
See slide 2a
Colonoscopy revealed erythema and erosions of the terminal ileum.

See slide 2b
Microscopically at low power, the small intestine has extensive mucosal ulceration, transmural chronic inflammation, fibrosis, and granulomas.

1. What is your diagnosis? **CROHN DISEASE**

2. What treatment do you recommend? **POSSIBLE SURGERY (POSSIBLE RESECTION), COMBINATION OF STEROIDS AND SALICYLATES, ANTIBIOTICS IF INFECTION IS INDICATED**

3. What is the course of this disease? What types of complications can develop? **THE COURSE TYPICALLY INVOLVES INTERMITTENT FLAREUPS WITH INTERVENING ASYMPTOMATIC PERIODS OF WEEKS TO MONTHS. COMPLICATIONS OF THE INFLAMMATION INCLUDE FIBROSIS WITH STRicture LEADING TO OBSTRUCTION, FISTULAS TO OTHER LOOPS OF BOWEL OR TO BLADDER OR SKIN, AND MALABSORPTION THAT CAN LEAD TO ANEMIA (B12 DEFICIENCY). THERE IS A SLIGHTLY INCREASED RISK FOR SMALL OR LARGE BOWEL CARCINOMA**

**Case #3**
A 44 year-old emergency medical technician has been feeling fatigued for months. He just doesn’t have the same level of energy he used to have. He remembers that he had experienced an episode of jaundice about 10 years ago, but that episode resolved and he has been healthy since. A CBC reveals that he is not anemic. A chemistry panel reveals normal serum electrolytes, but he has elevated liver enzymes.

1. What further tests would you order? **HEPATITIS PANEL**
2. What results would you expect? POSITIVE HBsAG, HBeAG, AND HBsAB

3. What risk factor is present? HEALTH CARE WORKER

4. Why is this patient symptomatic after 10 years? CHRONIC HEPATITIS B HAS DEVELOPED WITH CHRONIC LIVER INVOLVEMENT

Case #4

A 40 year-old woman developed increasingly severe abdominal pain over a two-day period. In the emergency room, physical examination demonstrated board-like rigidity of her abdomen along with extreme tenderness. A plain film radiograph of the abdomen demonstrated dilated loops of bowel with several radiopaque gallstones in the gallbladder. CBC showed an elevated WBC count with a shift to the left. Serum chemistries were normal with the exception of an extremely elevated amylase level.

1. What is your diagnosis? ACUTE PANCREATITIS

2. What is the probable etiology? GALL STONES CAUSING REFLUX OF BILE THAT HAS DAMAGED THE PANCREATIC TISSUE

3. What dangerous complications can occur from this condition? INJURY TO VITAL ORGANS FROM TOXIC ENZYMES RELEASED IN THE BLOOD STREAM

Case #5

Cassie’s cheerleading coach arranges a meeting with her parents and confides that she believes Cassie has lost a lot of weight in the few months since school began. She also seems extremely fatigued in practice. She recommends they make an appointment with the family physician.

1. What disorder does Cassie’s coach suspect? ANOREXIA NERVOSA
2. What complications may occur from this condition? **IRON-DEFICIENCY ANEMIA, INCREASED RISK OF INFECTION, REPRODUCTIVE FUNCTION (OVARIAN FUNCTION, MENSTRUATION, FERTILITY, PREGNANCY), INCREASED ORGAN SYSTEM INVOLVEMENT, CARDIAC FAILURE, AND DEATH**

**Case #6**

A 22 year-old man has just come home to his parents' after back-packing in Indonesia for 3 1/2 months. He has been lethargic and nauseous with intermittent vomiting and diarrhea. The whites of his eyes and his skin have begun to turn yellow.

1. What laboratory tests would confirm your suspicions? **LIVER ENZYMES (AST, ALT), BILIRUBIN, HEPATITIS SCREEN.**

Lab results show a positive Hepatitis A IgG Ab test.

2. How was this disease likely contracted? **POOR SANITATION LIVING IN 3RD WORLD COUNTRY**

3. What precautions would you advise? **GOOD HANDWASHING (SPREAD BY FECAL/ORAL ROUTE), POSSIBLE IMMUNIZATION FOR PARENTS**

4. How would you treat this patient? **TREAT SYMPTOMS.** **USUALLY SELF-LIMITING WITHIN 3-6 WEEKS**

**Case #7**

Your friend confides in you that her new baby has been more of a challenge than she anticipated. She has the normal problems of diapers, no sleep, and endless crying. On top of this her baby spits up every time she feeds him. Actually, she confides, she’s never seen a baby “spit-up” like this. It’s more like the baby’s violently vomiting. With your medical expertise, what do you advise? **THE BABY MAY HAVE PYLORIC STENOSIS WHICH IS AN OBSTRUCTION OF THE PYLORUS FROM HYPTERTROPHY OF**
Alterations of Digestive Function

Case #8

A 63-year-old man sought medical help because of increasing abdominal girth over many months along with a recent episode of vomiting blood. Serum electrolytes were normal, glucose normal, total protein decreased, total albumin decreased, total bilirubin elevated, AST and ALT elevated. The patient’s protime was 18 seconds (control 12 seconds). The patient admitted to frequent drinking binges.

1. What disease do you suspect? **ALCOHOL INDUCED CIRRHOSIS**

2. What organ is damaged in this disease? What causes the damage? **OXIDATION OF ALCOHOL DAMAGES HEPATOCYTES**

3. Correlate clinical and laboratory values in this patient.
**OBSTRUCTION OF BILIARY CHANNELS LEAD TO PORTAL HYPERTENSION WHICH MAY HAVE CAUSED THE HEMATEMESIS. BILIRUBIN IS ELEVATED DUE TO LIVER DAMAGE AND OBSTRUCTION. PROTEINS, MANUFACTURED IN THE LIVER, DECREASE DUE TO HEPATOCYTE DAMAGE. PROTHROMBIN, ALSO A PROTEIN MANUFACTURED IN THE LIVER, IS INSTRUMENTAL IN THE CLOTTING CASCADE. DECREASED LEVELS OF PROTHROMBIN CAUSE AN INCREASED CLOTTING TIME**

Case #9

A 20 year-old woman presented to the emergency room with a one-day history of lower abdominal pain, nausea with anorexia, and fever. On physical examination, there was periumbilical pain. Under active observation over the next couple of hours, the pain migrated to the right lower quadrant, with rebound tenderness. Her vital signs showed T 38.5°C, P 90, R 18, and BP 110/70 mm Hg. Her WBC count was 11,500 with 76% polys, 6% bands, 14% lymphs, and 4% monos. A
pregnancy test was negative. A stool sample was negative for occult blood. A urinalysis was normal.

1. What diagnosis do you suspect? **ACUTE APPENDICITIS**

2. What should be done next? **ULTRASONOGRAPHY, LAPAROSCOPY AND COMPUTED TOMOGRAPHY (CT) CAN BE USED TO CLARIFY THE DIAGNOSIS IN PATIENTS UNDER ACTIVE OBSERVATION FOR WHOM A FIRM DIAGNOSIS OF APPENDICITIS HAS NOT BEEN MADE. IF APPENDICITIS IS SUSPECTED, THEN THE PATIENT SHOULD HAVE AN APPENDECTOMY PERFORMED.**

3. What could happen if this is not promptly treated? **THE WALL OF THE APPENDIX COULD RUPTURE, PRODUCING AN ACUTE PERITONITIS AND/OR ABSCESS. THE PATIENT COULD BECOME SEPTIC AND DIE. THE COMPLICATION OF RUPTURE IS MORE LIKELY TO OCCUR IN THE VERY YOUNG AND OLD, WHEN THE DIAGNOSIS IS NOT SUSPECTED AND/OR WHEN DIAGNOSIS IS DELAYED. SINCE THERE IS ABOUT A 2% MORTALITY ASSOCIATED WITH APPENDICEAL PERFORATION, SURGEONS ERR ON THE SIDE OF FALSE POSITIVE DIAGNOSIS WITH ACUTE APPENDICITIS (ABOUT 1 IN 5 OR 1 IN 10 REMOVED WILL BE NORMAL PATHOLOGICALLY).**