**ORAL HEALTH, ALIMENTARY SYSTEM AND BILIARY DISEASES/CONDITIONS**

**COURSE OUTLINE**

1. Introduction
2. Section objectives
3. Anatomy and physiology overview
4. Assessment of digestive system

**Introduction**

In this section we are going to learn about the management of diseases of the gastrointestinal system. We will start with anatomy and physiologic overview then assessment of digestive and gastrointestinal function, Management of patient with: oral and esophageal disorders, gastric and duodenal disorders, intestinal and rectal disorders, Liver and biliary system disorders and finally will discuss gastrointestinal intubation and special nutrition modalities.

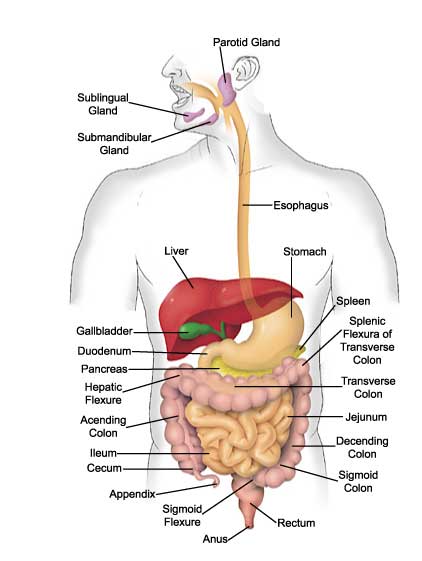
The section objectives are as follows: -

By the end of this Section, you should be able to: -

1. Describe the anatomy and physiologic of gastrointestinal system
2. Describe assessment of digestive system

**4.3 Anatomy and Physiologic Overview**

The gastrointestinal system is the body’s food processing complex. The gastrointestinal (GI) tract is basically a hollow, muscular tube through which food is digested. The GI tract is a 23- to 26-foot-long pathway that extends from the **mouth** through the esophagus, stomach, and intestines to the anus (Fig. 1). The **esophagus** is located in the mediastinum in the thoracic cavity, anterior to the spine and posterior to the trachea and heart. This collapsible tube, which is about 25 cm (10 inches) in length, becomes distended when food passes through it. It passes through the diaphragm at an opening called the diaphragmatic hiatus. The remaining portion of the GI tract is located within the peritoneal cavity. In addition, accessory organs, such as the liver, gallbladder, and pancreas, play an important role in digestion.



**Figure 1: Structure of Gastrointestinal Tract**

**Structure of gastrointestinal system**

**Mouth**

The digestive process begins in the mouth, where a mechanical (tongue and teeth) and chemical (saliva) combination starts to break down food.

**Esophagus**

The esophagus transfers food from the oropharynx (area between the soft palate in the mouth and the upper portion of the throat) to the stomach. The esophagus contains two structures, the epiglottis and the cardiac sphincter. The epiglottis closes to prevent food from entering the trachea, while the cardiac sphincter closes to prevent reflux of gastric contents.

**Stomach**

The stomach is a hollow muscular pouch that secretes pepsin, mucus, and hydrochloric acid for digestion. In the stomach, food mixes with these gastric juices to create chime, which the stomach stores before parceling it into the small intestine. The stomach also secretes the intrinsic factor necessary for absorption of vitamin B12.

**Small intestine**

The small intestine consists of the duodenum, jejunum, and ileum (proximal, central, and distal portions). Nearly all digestion takes place in the small intestine, which contains digestive agents, such as bile and pancreatic secretions. The small intestine is also lined with villi, which contain capillaries and lymphatics that transport nutrients from the small intestine to the body.

**Large intestine**

The large intestine consists of the ascending colon, transverse colon, descending colon, sigmoid colon, and rectum. It absorbs fluid and electrolytes, synthesizes vitamin K, and stores fecal material.

**Liver**

The liver is the largest organ in the body. Its many functions include:

* 1. producing and conveying bile
  2. metabolizing carbohydrates, fats, and proteins
  3. synthesizing coagulation factors VII, IX, and X, and prothrombin
  4. storing copper, iron, and vitamins A, D, E, K, and B12
  5. Detoxifying chemicals, excreting bilirubin, and producing and storing glycogen.

**Gallbladder**

The gallbladder is a hollow, pear-shaped organ that stores bile that isn’t immediately needed for digestion and concentrates it. When the bile is needed, the gallbladder contracts and expels bile into its duct, known as the cystic duct. From the cystic duct, bile flows into the common bile duct. Bile then enters the duodenum

**Pancreas**

The pancreas secretes three digestive enzymes: amylase, lipase, and trypsin into the duodenum. It also secretes the hormones insulin, glucagon, and somatostatin from the islets of Langerhans into the blood. In addition, the pancreas secretes large amounts of sodium bicarbonate, which is used to neutralize the acid in chyme.

**Before you continue, attempt the following question.**

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| --- | --- |
| Activity | ***Activity 1***  ***Explain the functions of gastrointestinal system, and state the major digestive enzymes and secretions.*** |

**Assessment of Digestive System**

**1. Health History and Clinical Manifestations for a GIT disorder**

A comprehensive health history should be obtained to elicit subjective data related to major manifestations of GI problems. As a nurse you begin by taking a complete history and focusing on symptoms common to GI dysfunction. These symptoms include;

1. pain,
2. indigestion,
3. intestinal gas,
4. Nausea and vomiting, hematemesis, and changes in bowel habits and stool characteristics.
5. Information about any previous GI disease is important. The nurse notes past and current medication use and any previous treatment or surgery. Information pertaining to medications is of particular interest because medications are a frequent cause of GI symptoms.
6. The nurse takes a dietary history to assess nutritional status. Questioning about the use of tobacco and alcohol includes details about type and amount. The nurse and patient discuss changes in appetite or eating patterns and any examples of unexplained weight gain or loss over the past year.
7. The nurse also assesses the stool characteristics. The nurse records all abnormal findings and reports them to the physician.
8. It is important to include in the history questions about psychosocial, spiritual, or cultural factors that may be affecting the patient.
9. When assessing for gastrointestinal dysfunction and caring for a patient after abdominal surgery or with any type of GI disorder you need to:
10. Make sure that adequate bowel sounds are present before allowing anything by mouth. Periodically reassess for bowel sounds, bloating, and abdominal tenderness.
11. Monitor food intake and fluid intake and output as indicated.
12. Periodically monitor weight, and watch for trend in weight loss or weight gain.
13. Assess stools for frequency, consistency, color, and amount.
14. Report increase in pain, fever, nausea and vomiting, bloating, change in stools, sign of wound infection to health care provider promptly.

This information should serve as a general guideline only. Each patient situation presents a unique set of clinical factors and requires nursing judgment to guide care, which may include additional or alternative measures and approaches.

**2. Physical Examination for a GIT disorder**

When performing a physical examination of the abdomen, include the following: inspection of the abdomen, auscultation of all four abdominal quadrants, percussion for tympany or dullness, light and deep palpation.

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| **Take note** | ***Take Note 1***  ***Auscultation should be performed before percussion and palpation, which may stimulate bowel sounds. Deep palpation in noted areas of tenderness or pain should be performed last*** |

**Significant findings to note during physical examination are as follow;**

1. Tenting of the skin when skin is rolled between thumb and index finger. Tenting may indicate dehydration.
2. Mouth lesions, missing teeth, swollen or bleeding gums may contribute to weight loss and nutritional deficiencies.
3. Body weight may indicate obesity or such problems as anorexia nervosa or malignancy.
4. Palpable mass may indicate an enlarged organ, inflammation, malignancy, hernia.
5. Rebound tenderness, guarding, and rigidity may indicate appendicitis, cholecystitis, peritonitis, pancreatitis, duodenal ulcer.
6. Protuberant or bulging abdomen or flanks can indicate ascites. Two physical assessment skills that may help to confirm the presence of ascites are testing for shifting dullness and testing for a fluid wave.
7. Distention and absence of bowel sounds may indicate intestinal obstruction.

**DIAGNOSTIC EVALUATION OF GASTROINTESTINAL TRACT**

These include important tests used to diagnose GI disorders, along with common nursing interventions associated with each test.

**1. Barium swallow test**

A barium swallow test involves fluoroscopic examination of the pharynx and esophagus.

**Nursing actions**

1. Before the procedure, withhold food and fluids for at least 8 hours and evaluate the patient’s ability to swallow.
2. After the procedure, force fluids unless contraindicated and administer laxatives, as prescribed.

**2. Upper GI series**

An upper GI series uses an X-ray to examine the esophagus, stomach, duodenum, and other portions of the small bowel after the patient swallows barium.

**Nursing actions before the procedure**

1. Withhold food and fluids for at least 8 hours.
2. Maintain I.V. fluids and administer cathartics and enemas, as prescribed.

**Nursing action after the procedure**

1. Inform the patient that stool will be light-colored for several days.
2. Administer cathartics, fluids, and enemas, as prescribed.

**3. Lower GI series,**

A lower GI series, also known as a barium enema, uses an X-ray to examine the large intestine after the instillation of barium.

**Nursing actions before the procedure**

1. Withhold food and fluids for at least 8hours.
2. Administer bowel preparation (laxatives and enemas), as prescribed.

**Nursing actions after the procedure**

1. Force fluids unless contraindicated.
2. Administer enemas and laxatives, as prescribed.
3. Monitor color and consistency of stool.

**4. Endoscopy**

Endoscopy uses an endoscope to view the esophagus and stomach.

**Nursing actions before the procedure**

1. Withhold food and fluids for at least 8hours.
2. Make sure that written, informed consent has been obtained.
3. Obtain baseline vital signs.
4. Administer sedatives, as prescribed.

**Nursing actions after the procedure**

1. Monitor gag and cough reflexes.
2. Monitor vital signs.
3. Evaluate vasovagal response.
4. Withhold food and fluids until the gag reflex returns.

5. A **fecal occult blood test** analyzes stools for the presence of blood.

**Nursing actions**

1. Instruct the patient to avoid red meat for 3days before the test.
2. Document administration of aspirin, anticoagulants, vitamin C, and anti-inflammatory drugs.

6. A **fecal fat test** analyzes stool for the presence of fat.

1. Instruct the patient to abstain from alcohol and to maintain a high-fat diet (100 g/day) for 3 days before and during the 72-hour stool collection.
2. Refrigerate the specimen.
3. Document current medications.

**7. Proctosigmoidoscopy** uses a lighted scope to view the sigmoid colon, rectum, and anal canal.

**Nursing actions before the procedure**

1. Administer bowel preparation, as prescribed.
2. Make sure that written, informed consent has been obtained.

**Nursing actions after the procedure**

1. Document iron intake.
2. Check the patient for bleeding.
3. Monitor the patient’s vital signs.
4. Monitor the patient for complications such as perforated bowel (abdominal tenderness, rigidity, and distention).

**8. Cholangiography** uses dye injection to produce a radiographic picture of the biliary duct system.

**Nursing actions before the procedure**

1. Encourage a low-residue, high-fat diet 1 day before the examination.
2. Make sure that written, informed consent has been obtained.
3. Withhold food and fluids after midnight.
4. Note the patient’s allergies to iodine, seafood, and radiopaque dyes.
5. Inform the patient about possible throat irritation and flushing of the face.

**Nursing actions after the procedure**

1. Check the injection site for bleeding.
2. Monitor the patient’s vital signs.
3. Administer fluids to flush the dye out through the kidneys.

9. A **liver scan** produces an image of blood flow in the liver using an injection of a radioisotope.

**Nursing actions before the procedure**

1. Determine the patient’s ability to lie still during the procedure.
2. Check the patient for possible allergies.
3. Make sure that written, informed consent has been obtained.

**Nursing actions after the procedure**

Monitor the patient for signs and symptoms of delayed allergic reaction to the radioisotope, such as itching and hives.

10. A **gastric analysis** is performed after the patient has fasted. Results indicate the acidity of gastric secretions aspirated through a nasogastric (NG) tube.

**Nursing actions before the procedure**

1. Withhold food and fluids after midnight.
2. Instruct the patient not to smoke for 8 to 12hours before the test.
3. Withhold medications that can affect gastric secretions for 24 hours before the procedure.

**Nursing actions after the procedure**

1. Obtain vital signs.
2. Note reactions to gastric acid stimulant, if used.

**11. Ultrasonography** uses echoes from sound waves to visualize body organs.

**Nursing actions**

1. Evaluate the patient’s ability to lie still during the procedure.
2. Explain the procedure to the patient.

**12. Blood chemistry tests** are used to analyze the patient’s blood. Samples may be obtained

to analyze potassium, sodium, calcium, phosphorus, glucose, bicarbonate, blood urea nitrogen, creatinine, protein, albumin, osmolality, amylase, lipase, alkaline phosphatase, ammonia, bilirubin, lactate dehydrogenase (LD), aspartate aminotransferase (AST), serum alanineaminotransferase (ALT), hepatitis associated antigens, and carcinoembryonicantigen (CEA).

**Nursing actions**

1. Note current drug therapy.
2. Check the venipuncture site for bleeding.

13. A **hematologic study** is used to analyze a blood sample for red blood cells (RBCs), white blood cells (WBCs), platelets, hemoglobin (Hb level), hematocrit (HCT), and erythrocyte sedimentation rate (ESR).

**Nursing actions**

1. Note current drug therapy.
2. Check the venipuncture site for bleeding.

14. A **coagulation study** is a laboratory test of a blood sample that analyzes prothrombin time (PT), international normalization ratio (INR), and partial thromboplastin time (PTT).

**Nursing actions**

1. Note current drug therapy.
2. Check the venipuncture site for bleeding.

15. A **liver biopsy**, which is used to diagnose disorders such as cirrhosis and cancer, involves percutaneous removal of liver tissue with a needle.

**Nursing actions before the procedure**

1. Withhold food and fluids after midnight.
2. Make sure that written, informed consent has been obtained.
3. Obtain baseline clotting studies and vital signs.
4. Instruct the patient to exhale and hold his breath during insertion of the needle.

**Nursing actions after the procedure**

1. Check the insertion site for bleeding.
2. Monitor the patient’s vital signs.
3. Observe the patient for signs of shock (hypotension, tachycardia, oliguria) and pneumothorax (decreased breath sounds on the affected side, tachypnea, shortness of breath).
4. Position the patient on his right lateral side for hemostasis.

16. **Colonoscopy** uses a lighted scope to directly visualize the large intestine

**Nursing actions before the procedure**

1. Make sure that written, informed consent has been obtained.
2. Provide a clear liquid diet 48 hours before the test.
3. Administer a bowel preparation the day before the test.
4. Explain that the patient will feel cramping and the sensation of needing to have a bowel movement
5. Explain the use of air to distend the bowel lumen.

**Nursing actions after the procedure**

1. Monitor for gross bleeding.
2. Monitor for signs and symptoms of colon perforation (abdominal distention, pain, and rigidity).
3. Withhold food and fluids for 2 hours.
4. Check for blood in stool if polyps were removed.
5. Monitor the patient’s vital signs.

**17. Endoscopic retrograde cholangiopancreatography** (ERCP) is radiographic examination of the hepatobiliary tree and pancreatic ducts using a contrast medium and a lighted scope.

**Nursing actions before the procedure**

1. Make sure that written, informed consent has been obtained.
2. Withhold food and fluids after midnight.
3. Check for allergies to iodine or seafood.

**Nursing actions after the procedure**

1. Check for respiratory depression.
2. Check for urine retention.
3. Monitor gag reflex and withhold food until gag reflex returns.
4. Watch for signs and symptoms of procedure-induced pancreatitis (abdominal pain, nausea, and vomiting).

**18. Percutaneous transhepatic cholangiography** is fluoroscopic examination of the biliary ducts. It involves injection of a contrast medium.

**Nursing actions before the procedure**

1. Inform the patient that the X-ray table will be tilted and rotated during the procedure.
2. Make sure that written, informed consent has been obtained.
3. Check for allergies to iodine or seafood.
4. Check PT, INR, and PTT before the procedure.
5. Type and cross-match the patient’s blood.
6. Withhold food and fluids after midnight.

**After the procedure**

1. Require the patient to rest on his side for at least 6 hours.
2. Check for bleeding at the injection site.
3. Monitor vital signs.
4. Withhold food and fluids for 2 hours.