

The Digestive System

Functions of the Digestive System:

Aka - the alimentary system

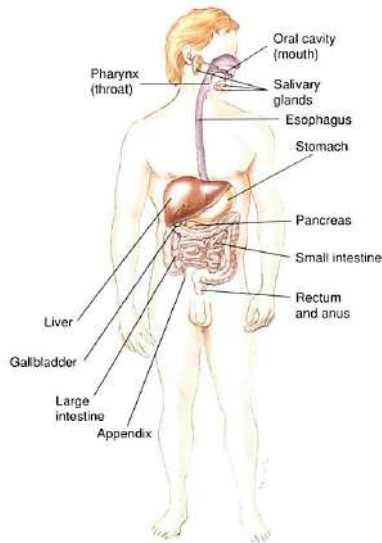
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Structures of the Digestive System:

The Gastrointestinal Tract - (GI Tract)

- Upper GI tract -

- Lower GI tract -



The Oral Cavity - Mouth

- The Lips: (labia)

- cheil/o = lips

- The Palate:

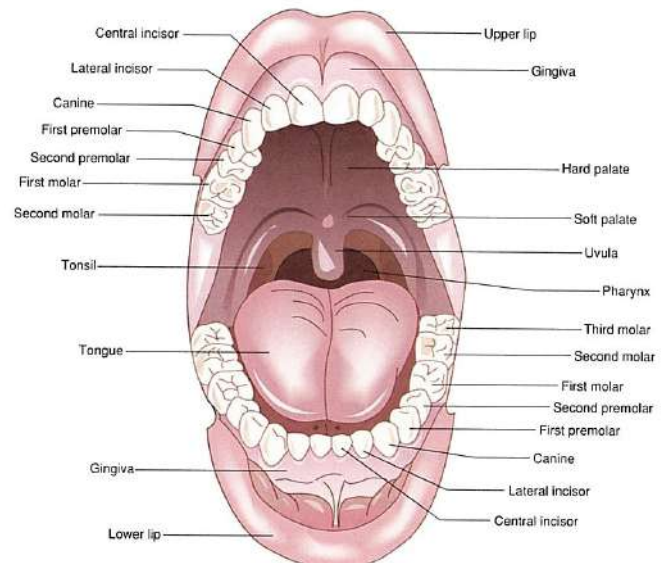
- Hard Palate - bony anterior portion of the roof the mouth
- Rugae -

- Soft Palate - flexible posterior portion of the palate

■

- Uvula -

- The Tongue: very strong and flexible; aids in speech and moves food during chewing and swallowing
 - Papillae - (taste buds)



The Digestive System

- Underside of the tongue

- Terms Related to the Teeth:

- Dentition - natural teeth arrangement in the _____
- Endentulous - _____
- 4 types of teeth -
 - incisors and canines (cuspids):
 - premolars (bicuspid) and molars:
- Primary dentition (deciduous dentition/baby teeth) - _____
- Permanent dentition - consists of _____
- Occlusion - contact between the chewing surfaces of the maxillary and mandibular teeth
- Malocclusion - deviation from a normal occlusion

- Structures and Tissues of the Teeth:

Crown - portion of the tooth that is visible

- _____

Root - holds the tooth securely in place within the dental arch

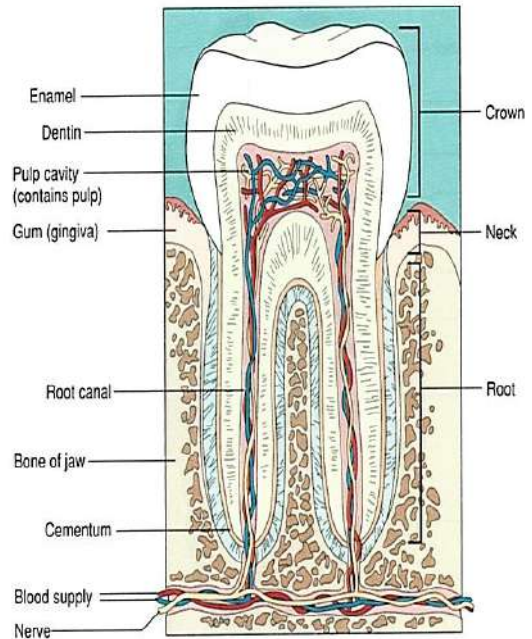
- protected by _____
- crown and root meet at the _____ of the tooth

Dentin - makes up the bulk of the tooth

- _____

Pulp Chamber - inner area of the crown and runs downward to form the _____

- _____ is made up of a rich supply of blood vessels and nerves

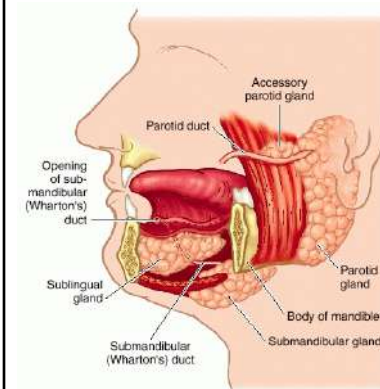


- The Periodontium: consists of the bone and soft tissues that surround and support the teeth
 - **Gingiva** (gums) -

- The Salivary Glands: secrete _____ that moistens food, begins the digestive process and cleanses the mouth
 - 3 pairs

The Digestive System

1. Parotid -
2. Sublingual -
3. Submandibular -



The Pharynx - the throat

- common passageway for both respiration and digestion
 - **Epiglottis:**



The Esophagus - gullet

- - **Lower Esophageal Sphincter** (cardiac sphincter) :

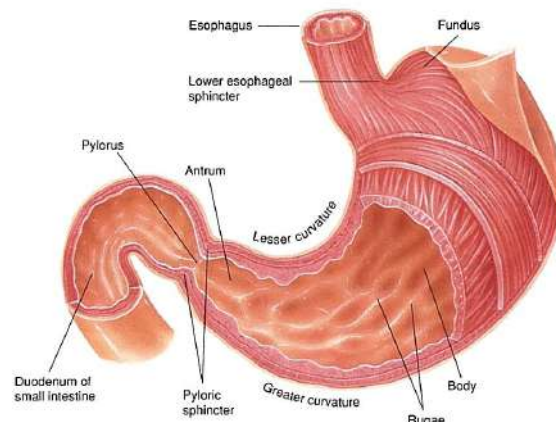
The Stomach -

- sac-like organ composed of 3 parts: **fundus, body, antrum**

- **rugae** - folds in mucosa lining the stomach
 -

- **pylorus** -

- **pyloric sphincter** -

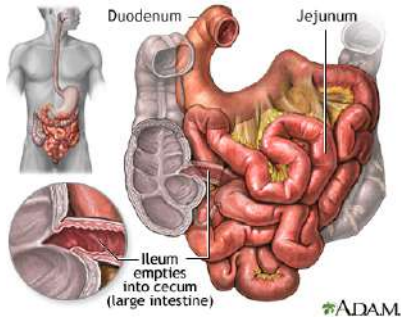


The Small Intestine -

1. extends from the pyloric sphincter to the first part of the large intestine
2. nutrients from food are absorbed into the bloodstream
3. coiled organ up to 20 feet in length
4. named due to diameter

The Digestive System

• Parts of the Small Intestine:

| | |
|-------------------------|--|
| • Duodenum - |  |
| • Jejunum - | |
| • Ileum - | |
| • Ileocecal sphincter - | |

The Large Intestine -

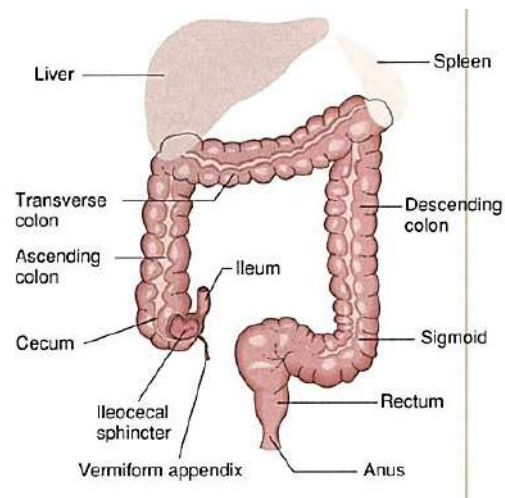
1. extends from the small intestine to the anus
2. waste products of digestion are processed and excreted through the anus

The Cecum:

- **vermiform appendix** - hangs from the lower portion of the cecum
 -
 -

The Colon:

- 4 parts -
 - **ascending colon**
 - **transverse colon**
 - **descending colon**
 - **sigmoid colon** - S-shaped structure



The Rectum and Anus:

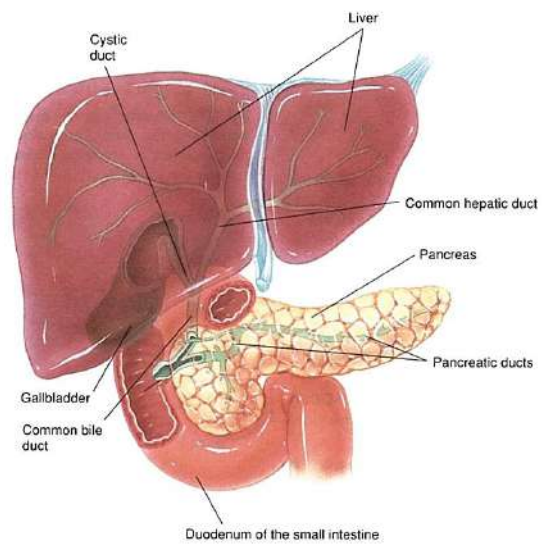
- **rectum** -
- **anus** -
 - **anal sphincter muscles**-
 - **Anorectal** -

Accessory Digestive Organs -

The Digestive System

The Liver: (**hepatic**) located in the right upper quadrant

- Responsible for:
 - **Glucose**
 - **Glycogen**
- Low blood sugar:
- Destroys:
- Removes:
- Manufactures some proteins
- Release:
 - **bilirubin**
- **Bile:**
- **Common Hepatic Duct:**
 - **cystic duct**



The Gallbladder: (**cholecystic**) located under the liver

- Stores and concentrates:
- When needed:

The Pancreas: feather-shaped organ located posterior to the stomach

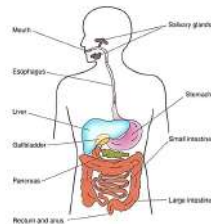
- Synthesizes and secretes:
- Leaves the pancreas:

Digestion:

The process by which complex foods are broken down into nutrients in a form the body can use.

- Enzymes:

- Nutrient:



Metabolism -

- the sum of anabolism and catabolism
- Includes all of the process involved in the body's use of these nutrients
- **Anabolism:**
- **Catabolism:**

Absorption -

The Digestive System

-
- Villi -

The Role of the Mouth, Salivary Glands and Esophagus -

- **Mastication** (chewing):
 - Saliva contains an enzyme that begins the chemical breakdown to convert starches into sugars
- Food travels through the pharynx and down into the esophagus
- **Peristalsis**

The Role of the Stomach -

- **Gastric juices:** _____ **hydrochloric acid** _____
- Few nutrients enter the bloodstream through the stomach
- It is responsible for churning the food with the gastric juices and digestive enzymes to convert to _____
- Chyme:

The Role of the Small Intestines -

- Peristalsis:
- Digestion:
- Bile breaks down fat globules so enzymes in pancreatic juices can digest them _____
- **Emulsification -**


The Role of the Large Intestines -

- Job is to receive and store digestive waste until it can be eliminated
- Also absorbs excess water forming _____
- **Defecation (bowel movement) -**
- **flatulence or flatus -**
- **Borborygmus -**


Pathology of the Digestive System:

Tissues of the Oral Cavity -

The Digestive System

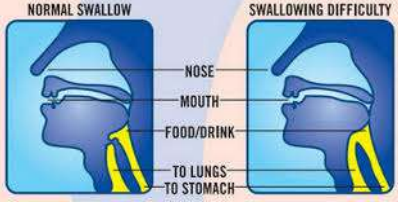

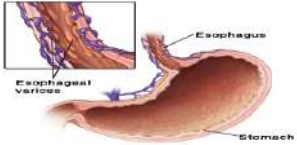


| | |
|---|--|
| <ul style="list-style-type: none"> Aphthous Ulcer (canker sore): | <ul style="list-style-type: none"> Herpes Labialis (cold sores/fever blisters): |
| <ul style="list-style-type: none"> Cleft Lip (harelip): Cleft Palate: |  <p>© Mayo Foundation for Medical Education and Research. All rights reserved.</p> |

Dental Disease -

| | |
|--|---|
| <ul style="list-style-type: none"> Bruxism: | <ul style="list-style-type: none"> Dental Calculus: |
| <ul style="list-style-type: none"> Dental Caries: | <ul style="list-style-type: none"> Dental Plaque: |
| <ul style="list-style-type: none"> Periodontal Disease (periodontitis): Gingivitis - |  |
| <ul style="list-style-type: none"> Halitosis (bad breath): | <ul style="list-style-type: none"> Temporomandibular disorders (TMD)/myofascial pain dysfunction (MPD): |

The Digestive System



Esophagus -

| | |
|--|---|
| <ul style="list-style-type: none"> Dysphagia: |  |
| <ul style="list-style-type: none"> Esophageal reflux/gastroesophageal reflux disease (GERD):  | <ul style="list-style-type: none"> Esophageal varices:  |
| <ul style="list-style-type: none"> Hiatal Hernia:  | <ul style="list-style-type: none"> Pyrosis (heartburn):  |

Stomach -

- Gastritis:**
- Gastroenteritis:**
- Gastrorrhagia:**
- Gastrorrhea:**
- Gastrorrhexis:**

Peptic Ulcers - Lesion of the mucous membrane

| | |
|---|--|
| <ul style="list-style-type: none"> Gastric ulcers Duodenal ulcers  | <ul style="list-style-type: none"> Perforating ulcer  |
|---|--|

Eating Disorders -

- Anorexia:** Lack or loss of appetite for food
 - Anorexia Nervosa:**
- Bulimia:** (bulimia nervosa)

The Digestive System

- **Dehydration:**
- **Malnutrition:**
- **Obesity:**
- **Pica:**

Digestion and Vomiting -


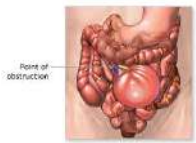


| | |
|--------------------------------|-----------------------|
| Achlorhydria: | Hematemesis: |
| Aerophagia: | Hyperemesis: |
| Eructations: | Nausea: |
| Dyspepsia:(indigestion) | Regurgitation: |

Intestinal Disorders -

- **Colorectal cancer:**
- **Diverticulitis:** _____
 _ (a pouch or sac occurring in the lining or wall of a tubular organ)
- **Inflammatory Bowel Disease (IBD):** chronic inflammatory disease of the gastrointestinal tract

| |
|--------------------------|
| Colitis - |
| Crohn's disease - |
| Enteritis - |
| Ileitis - |
| Spastic Colon |

Intestinal Obstructions:

| | |
|--|--|
| Ileus - | |
| Intestinal adhesions -  | Intestinal obstructions -  |
| Strangulating obstruction -  | Volvulus -  |

The Digestive System

Infectious Disease of the Intestines: may be transmitted through contaminated food and water through poor sanitation practices

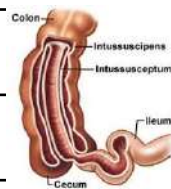
Table 8.1

| INFECTIOUS DISEASES OF THE INTESTINES | | |
|---|------------------------------|--|
| Disease | Causative Agent | Symptoms |
| Amebic dysentery (ah-MEE-bik DIS-en-ter-ee) | Entamoeba histolytica amoeba | Frequent, watery stools often with blood and mucus accompanied by pain, fever, and dehydration |
| Botulism (BOT-you-lizm) | Clostridium botulinum | Food poisoning that is characterized by paralysis and is often fatal |
| Cholera (KOL-er-ah) | Vibrio cholerae | Severe diarrhea, vomiting, and dehydration that can be fatal if not treated |
| E. coli | Escherichia coli | Watery diarrhea that becomes bloody but is not usually accompanied by fever. |
| Salmonella (sal-moh-NEL-ah), nontyphoidal | Salmonella | Severe diarrhea, nausea, and vomiting accompanied by a high fever |
| Typhoid fever (also known as enteric fever) | Salmonella typhi | Headache, delirium, cough, watery diarrhea, rash, and a high fever |

or

Anorectal Disorders -

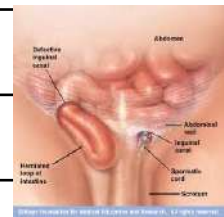
Intussusception - Bowel Incontinence:



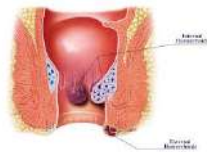
Constipation:

Diarrhea:

Inguinal hernia -



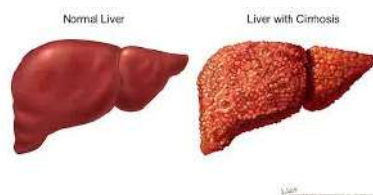
Hemorrhoids:



Melena:

Liver -

Cirrhosis:



Jaundice: (icterus)



- **Hepatomegaly:**
- **Hepatorrhexis:**
- **Hepatitis:**

The Digestive System

Table 8.2

HEPATITIS FROM A TO E

- A Hepatitis virus A (HVA)**, also known as **infectious hepatitis**, is transmitted by contaminated food and water.
- B Hepatitis virus B (HVB)**, also known as **serum hepatitis**, is bloodborne and can be prevented through vaccination. (Bloodborne means transmitted through direct contact with blood or body fluids contaminated with the virus.) Blood transfusions, sexual contact, and IV drug abuse are possible sources of contact with contaminated blood.

- C Hepatitis virus C (HVC)**, is bloodborne, and there is **no vaccine to prevent this disease**. HVC is described as a silent epidemic because it can be present in the body for years and destroy the liver before any symptoms appear. This outcome is most likely to occur among individuals who received blood transfusions before 1992, when testing began to detect this virus.
- D Hepatitis virus D (HVD)** is bloodborne, and there is **no vaccine to prevent this disease**.
- E Hepatitis virus E (HVE)** is transmitted through contaminated food and water.

Gallbladder -

- **Cholecystalgia:**
- **Cholecystitis:**

Gallstone (biliary calculus):



Cholelithiasis:

Diagnostic Procedures of the Digestive System:

- **Abdominal CT (CT Scan)** - radiographic procedure that produces a detailed cross section of the tissue structure within the abdomen
- **Abdominal Ultrasound** - noninvasive test used to visualize internal organs by using very high frequency sound waves
- **Anoscopy** - _____ (anoscope)
- **Upper GI Series (barium swallow)/Lower GI Series (barium enema)** - radiographic studies to examine the digestive system
 - **Enema:** solution placed into the rectum and colon to empty the lower intestine through bowel activity
- **Hemoccult** - (fecal occult blood test/ FOBT) laboratory test for hidden blood in the stools
- **Stool Samples** - specimens of feces that are examined for content and characteristics

Endoscopic Procedures -

- **Endoscope** - _____
- **Colonoscopy** - _____
- **GI Endoscopy** - endoscopic examination of the interior of the esophagus, stomach and duodenum
- **Proctoscopy** - _____
- **Sigmoidoscopy** - _____

Treatment Procedures of the Digestive System:

Medications -

- **Acid Blockers:** taken before eating; blocks effects of histamine that signals the stomach to produce acid
- **Antiemetic:** prevents or relieve nausea or vomiting
- **Emetic:** produces vomiting

The Digestive System

- **Laxatives:** medications or foods given to stimulate bowel movements
- **Oral Rehydration Therapy (ORT)** - treatment in which a solution of electrolytes is administered orally to counteract dehydration

Oral Cavity and Esophagus -

- **Esophagoplasty:**
- **Extraction:**
- **Gingivectomy:**
- **Maxillofacial Surgery:** specialized surgery of the face and jaws to correct deformities, treat diseases and repair injuries
- **Palatoplasty:**

Stomach -

- **Gastrectomy:**
- **Gastrotomy:**
- **Nasogastric Intubation:** placement of a tube through the nose and into the stomach

Intestines -

- **Anoplasty:**
- **Colectomy:**
- **Colotomy:**
- **Diverticulectomy:**
- **Gastroduodenostomy:** removal of the pylorus of the stomach and the establishment of an anastomosis between the upper portion of the stomach and the duodenum
 - **Anastomosis** - _____
- **Hemorrhoidectomy:**
- **Ileectomy:**
- **Ostomies:** surgical procedure to create an artificial opening between an organ and the body surface
 - Opening is referred to a **stoma**
 - **Gastrostomy** -
 - **Ileostomy** - surgical creation of an opening between the ileum, at the end of the small intestine, and the abdominal wall
 - **Colostomy** -

The Rectum and Anus -

- **Proctectomy:**
- **Proctopexy:**
- **Proctoplasty:**

Liver -

- **Hepatectomy:**
- **Hepatotomy:**
- **Hepatorrhaphy:**
- **Liver Transplant:** option for a patient whose liver has failed for a reason other than liver cancer

Gallbladder -

- **Choledocholithotomy:** incision into the common bile duct for the removal of gallstones
- **Laparoscopic Cholecystectomy: (lap choley)** surgical removal of the gallbladder using a laparoscope and other instruments while working through very small openings in the abdominal wall.

Career Opportunities

Dental hygienist
Dental Assistant
Dental Laboratory Tech
Registered Dietician (RD)

Dentist
Gastroenterologist
Internist
Orthodontist

The Digestive System

| | |
|--|--|
| Dietetic Technician, Registered (DTR) Dietetic Assistant Sanitarian | Periodontist Proctologist |
|--|--|