Section 1: Swallowing and Peristalsis in the Esophagus

Learning Objective: Explain how the epiglottis protects the trachea during swallowing and describe how peristalsis propels a bolus through the esophagus.

Key Vocabulary:

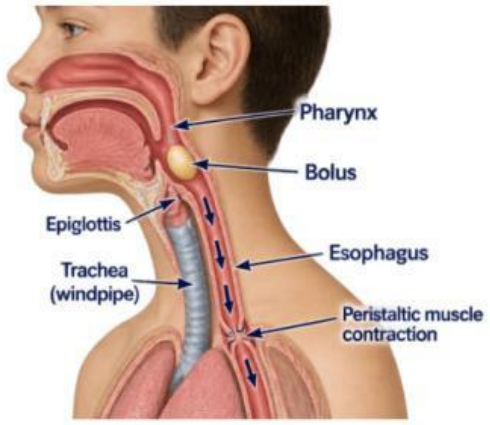
- **Bolus:** A moist, chewed ball of food formed in the mouth and prepared for swallowing.
- **Pharynx:** The throat cavity serving as a shared pathway for both food and air.
- **Epiglottis:** A flap of flexible cartilage that folds down over the windpipe during swallowing.
- **Trachea:** The airway (windpipe) that connects the larynx to the lungs.
- **Esophagus:** A muscular tube that transports food and liquids from the pharynx to the stomach.
- **Peristalsis:** Wave-like, involuntary muscular contractions that squeeze food along the digestive tract.

Concept Review: Moving Food to the Stomach

After chewing, the tongue pushes the bolus into the pharynx. Because the pharynx connects to both the digestive and respiratory systems, the body requires a protective switch. As you swallow, the epiglottis flips down to cover the entrance of the trachea, guiding food safely into the esophagus. Once inside the esophagus, food does not simply fall down due to gravity. Instead, coordinated rings of circular and longitudinal muscle contract in rhythmic waves called peristalsis, pushing the bolus steadily toward the stomach.

Part A: Tracing the Path of a Bolus

Examine the anatomical diagram below showing the swallowing reflex and the esophagus.



Match each stage with what happens to the bolus. Write the correct letter in the blank. Use each letter once.

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Stage	What happens to the bolus?
1. Mouth and pharynx: _____	**A.** Muscular waves push the bolus toward the stomach.
2. Epiglottis and trachea: _____	**B.** The tongue pushes the bolus into the pharynx.
3. Esophagus muscles: _____	**C.** The airway is covered as the bolus enters the esophagus.

4. During normal swallowing, which path does the bolus NOT travel down? Choose one answer.

☐ **A.** Through the mouth

☐ **B.** Through the pharynx

☐ **C.** Through the epiglottis

☐ **D.** Down the esophagus

5. A bolus enters someone's trachea, and the person cannot cough, speak, or breathe. What should you do? Choose one answer.

☐ **A.** Tell the person to drink water.

☐ **B.** Call 911 or ask someone to call, and get a trained adult to give choking first aid immediately.

☐ **C.** Wait quietly to see whether the person feels better.

☐ **D.** Tell the person to swallow more food.

LIVEWORKSHEETS

Part B: Peristalsis Analysis Questions

1. An astronaut in zero gravity and a gymnast holding a handstand can both swallow successfully. Which explanation best describes how food reaches the stomach?

☐ **A.** Gravity pulls the food toward the stomach in both situations.

☐ **B.** Waves of muscle contraction push food through the esophagus, so gravity is not required.

☐ **C.** The epiglottis squeezes food all the way to the stomach.

☐ **D.** Stomach acid pulls food through the esophagus.

2. What can happen if the epiglottis fails to close while a person is swallowing, and how can the respiratory tract respond?

☐ **A.** Food can enter the trachea, triggering a cough that may help clear the airway.

☐ **B.** Food enters the stomach, triggering a cough that pushes it back into the mouth.

☐ **C.** Food enters the esophagus, and the lungs push it toward the stomach.

☐ **D.** Food enters the trachea, and stomach acid immediately dissolves it.

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