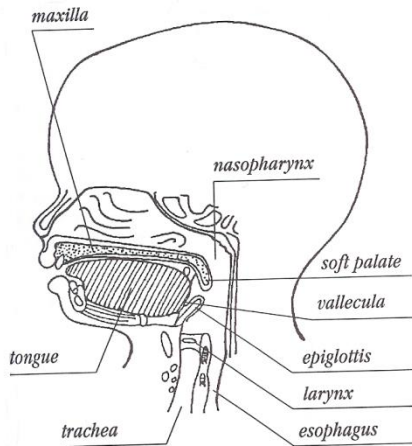


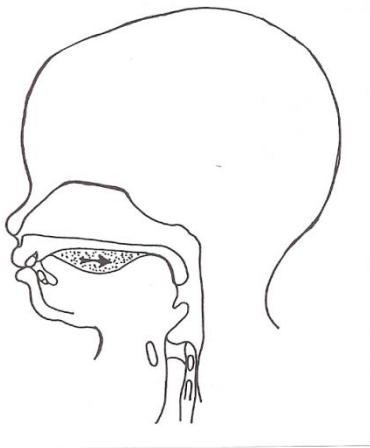
What Happens When Your Child Swallows?

Each time we swallow a delicate process is set in motion involving several parts that must work together in perfect harmony. If one or more of these parts isn't working properly, swallowing becomes a problem.



The swallowing system as a long tube from the mouth to the stomach. Food or liquid is pushed by wave-like muscle contractions along the tube and into the stomach. This tube has valves that close to prevent food from entering the nose or windpipe and to keep food from changing direction and coming back up from the stomach to the mouth.

First Phase of Swallowing



The inside of the mouth, known as the oral cavity, has several components: the upper and lower jaws, lips, cheeks, tongue, teeth, floor of the mouth, hard and soft palate, uvula, and faucial arches. In the first phase of swallowing, the oral cavity prepares the food for swallowing. The food is chewed and mixed with saliva, then made into a bolus or a collected mouthful of food ready for swallowing.

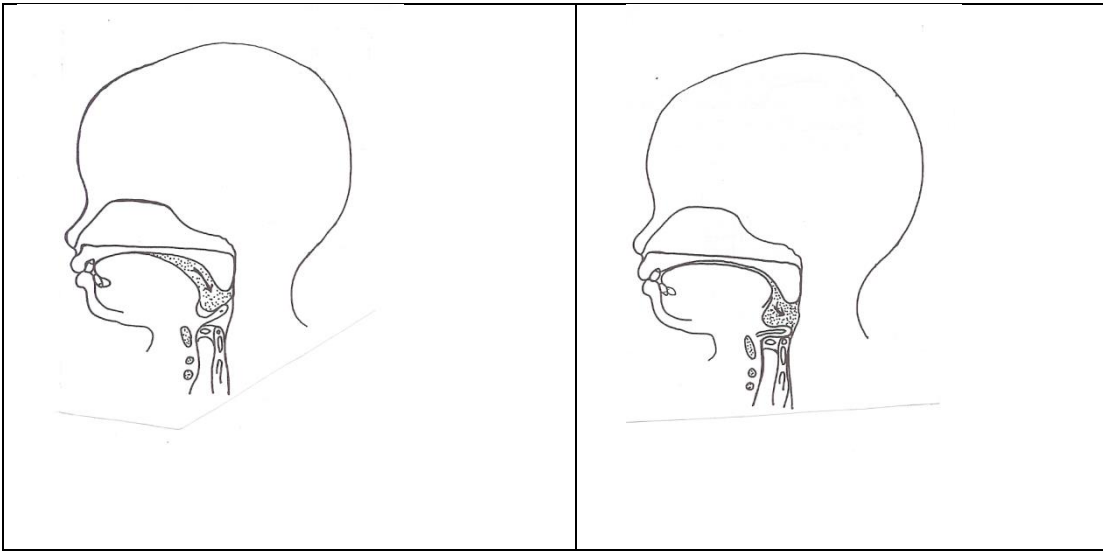
Next, the lips close, the cheeks draw in, and the tongue works a wave-like movement to push the food bolus toward the back of the tongue. There, the swallow reflex is triggered as the food moves over the back of the tongue. As valves open and close in the throat, the pressure from the mouth to the throat changes and the food bolus is moved toward the throat (pharynx).

Figure 1

Second Phase of Swallowing

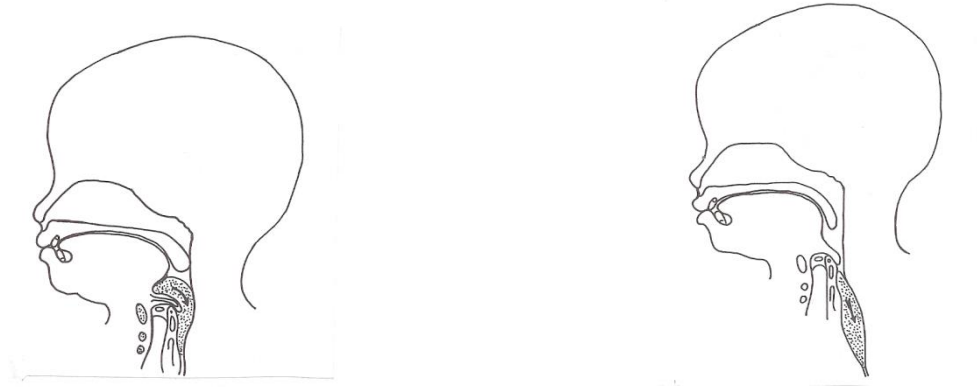
As the swallow is occurring, several things happen to make sure the food bolus goes into the stomach and not up into the nose or airway:

- The back of the tongue lifts to prevent food from returning to the mouth.
- The back portion of the roof of the mouth (velum) moves up and back to keep the contents of the mouth from going into the nose.
- Wave-like muscle action in the throat (pharynx) pushes the food toward the esophagus, the tube leading to the stomach.
- The epiglottis moves to help direct food toward the stomach and away from the airway.
- The voice box (larynx) elevates and the vocal folds close to provide more protection of the airway.



Third Phase of Swallowing

Finally, the food bolus moves past the airway. Next, the muscles at the top of the esophagus open to let it pass into the esophagus. These muscles then close immediately, to prevent the food from coming back up into the throat. Once in the esophagus, a wave-like muscle action called peristalsis moves the food downward toward the stomach. A valve at the bottom of the esophagus closes after the bolus enters the stomach to prevent food from backing up or refluxing out of the stomach.



Valving Can Work Improperly

Obviously, swallowing is a finely tuned process. Since it is done so close to the airway, there always is a risk of aspiration (taking in food or liquid to the lungs) if the valve system fails. In addition, food or liquid can be misdirected into the nose or airway if valves don't close completely and at the correct time.

Sometimes food slips down the back of the throat before the swallow reaction is triggered or if the swallow is triggered too slowly. In most cases, a child will cough to protect the airway. But sometimes the food bolus slips down without causing a cough. Then the food can rest in the pockets just above the epiglottis, in the valleculae or pyriform sinuses. These pockets should clear out with the next swallow, but if for some reason they don't, food can spill over into an unprotected airway. At other times, the vocal cords don't close completely and material from the food bolus slips into the lungs that way.

Material also can back up, or reflux, from the stomach. This material can sneak back up into the throat (pharynx) and slip into an unprotected airway.

If your child is having difficulty swallowing, the doctor may recommend a videofluoroscopic swallow study. The purpose of the study is to look at how your child swallows and to rule out the possibility of aspiration.