The word choke for me conjures up images of someone hovering over a table, unable to talk or breathe because a piece of food has lodged in their trachea or windpipe--fortunately, the Heimlich maneuver usually rectifies the situation. Choke is also used to describe a condition in horses, although it's a bit of a misnomer. The term choke in the horse refers to an esophageal obstruction, not an airway (tracheal) obstruction. Therefore, it is not an immediately life-threatening emergency. However, complications with choke include aspiration pneumonia, scarring in the esophagus, and potential rupture of the esophagus. If not corrected, it will kill the horse because the obstruction prevents the horse from eating or drinking. Unfortunately for horses, the Heimlich maneuver will not resolve the problem, but there are other treatments available. In this article, we will discuss the causes of choke, how they are treated, which horses are predisposed to choke, and what can be done to prevent it. It is best to prevent choke, since the complications related with treating it can cause more problems for the horse.

Causes
Choke is the most common esophageal disorder in horses. Horses can become choked on many different substances, most commonly grain or hay, but also beet pulp, corn cobs, and apples. Small horses or foals can choke on conglomerated shavings (stuck together chunks), while dangerously inquisitive horses have even been known to unsuccessfully swallow riding crops.

It's clear that overly large or bulky items won't make it down a horse's esophagus into the stomach. But why do horses choke on feed? Some feeds expand after they become moistened with saliva. Pelleted feed and beet pulp expand quite a bit after getting wet. So, if a horse takes a large swallow of dry pellets or beet pulp and it mixes with saliva, it can expand enough to become lodged in the esophagus.

This can also happen with hay. Horses can swallow large portions of hay not properly chewed first. The bolus of hay can then become lodged in the esophagus.

Predisposing Factors
Some horses are predisposed to choke. Older horses with missing teeth or other dental disorders such as wave mouth might not be able to chew (masticate) their food properly before swallowing, making them especially prone to developing esophageal obstruction, and often their diets must be modified to prevent recurring episodes. Since many older horses can't chew food into small pieces and might end up swallowing it whole, modifying the diet to include softened feeds such as dampened pellets rather than feeding hay and long grasses could help prevent choke. Owners should not feed hay cubes or large, fibrous horse treats to horses that are not used to them because this might predispose them to choke.

Size can be a predisposing factor. Horses often ingest bedding, such as wheat straw or wood shavings, and a miniature horse or foal can easily choke on it because of a small esophagus. To prevent choke, you might have to remove bedding or use a muzzle. Some older horses with no teeth will benefit from special muzzles, like grazing muzzles, so they can't eat big chunks of food. These muzzles can be found at tack shops or in tack catalogues.

Esophageal Anatomy And Physiology
The esophagus of the horse is a muscular structure that begins just above the trachea (windpipe) at the end of the pharynx. When horses eat, they chew food until it forms a bolus, then push the bolus into the back of the pharynx and swallow it. The bolus then enters the esophagus. The esophagus lies just above the trachea or windpipe. As the horse swallows, the
esophageal sphincter opens, allowing food to travel from the pharynx to the esophagus. The epiglottis moves up and the arytenoid cartilages close, both preventing food from entering the trachea. The bolus then travels down the esophagus (which is on the left side of the neck), passes into the chest cavity, and continues through the diaphragm to the stomach. The beginning, or proximal two-thirds, of the horse's esophagus is composed of striated (skeletal) muscle, with the last or distal two-thirds composed of smooth muscle (the muscle type found in blood vessel and organ walls). The anatomy of the esophagus lends itself to obstruction in certain areas. The beginning of the esophagus, the esophagus' entrance to the chest cavity, and the esophagus' entrance to the stomach have narrowed areas that are often the sites of obstruction.

Clinical Signs
The most common sign of choke is an inability to swallow food or water, called dysphagia. These horses will drool saliva or saliva mixed with food and might make multiple attempts to swallow. They also might make many attempts to drink. This can lead to coughing, and often a lot of water and/or food runs out of the nostrils and mouth, resulting in a thick nasal discharge, often with feed particles present. Horses with choke might also extend their heads and necks repeatedly. When horses try to swallow when choked, they might aspirate the food or water into the trachea, which can lead to aspiration pneumonia. As a result, they might develop a fever. Signs of pneumonia usually appear 24 to 48 hours after the onset of choke. If the object or feed bolus causing the obstruction is large enough, and the obstruction is in the portion of the esophagus running along the left side of the neck, then the obstruction might be visible and/or palpable. If the obstruction is farther down and within the chest cavity, then the obstruction will not be able to be seen or felt. Horses which have been sedated for any reason should not be allowed to eat while under the influence of sedation because of the risk of choke.

Diagnosis
If choke is suspected, then a veterinarian should be called immediately. If horses can't drink, they rapidly become dehydrated, so early treatment is very important. Furthermore, when horses drool, they lose quite a bit of electrolytes, especially chloride, thus altering their acid-base balance. The first step of treatment is to remove all food and water to prevent the horse from attempting to eat and drink. Often the bedding must also be removed. When your veterinarian arrives, a physical examination will help determine the extent of the obstruction and whether the horse has aspiration pneumonia. To determine if the horse is truly choked, the veterinarian will pass a tube through one of the nostrils into the esophagus--if he can't pass the tube down the esophagus, then there is an obstruction. Endoscopy can be used to detect the presence and cause of an obstruction and evaluating the health of the esophagus. The lining or mucosa of the esophagus can become ulcerated and weak from the obstruction, although sometimes this can't be determined until after the obstruction is removed. Radiographs of the neck area might also reveal the obstruction and possibly how much of the esophagus is involved.

Treatment
If caught early, sometimes the only treatment needed is sedation to relax the horse and the esophagus, allowing the obstruction to pass on its own. The horse can be muzzled so he doesn't attempt to eat or drink, which also helps prevent aspiration pneumonia. If this doesn't work, then more aggressive treatment is warranted. The next step is gentle pressure with a nasogastric tube and some type of lavage (washing). The tube is passed to the level of the obstruction, then warm water is gently pumped into the esophagus to help push the obstruction along. This must be done gently and carefully to prevent rupture of the esophagus.
The horse is usually sedated so that the head is hanging low, helping the extra water flow out of the nose. Sometimes a tube is placed into the horse's trachea to prevent inhalation of the water. This usually corrects most obstructions. However, for refractory (stubborn) cases, horses can be anesthetized for this procedure to further relax the esophagus. Some objects that end up in a horse's esophagus should not be pushed into the stomach because they might cause an obstruction farther down the intestinal tract. Indigestible objects should be removed via an esophagotomy (an incision into the esophagus). Following the clearance of an esophageal obstruction, it is a good idea to view the esophageal lining with an endoscope. This helps determine if there has been any damage, which is especially a risk if the horse has been choked for a few days or longer. This will help determine how quickly the horse can resume eating food. If the esophagus has been damaged by the obstruction—usually seen as erosion or ulceration of the esophageal mucosa—then feed might be withheld or gruel (thin, watery nourishment) can be fed. Often the horse will be restricted to eating gruel until the esophagus is healed. Sometimes, intravenous fluids and nourishment are required during the time the horse cannot eat or drink. Treatment for aspiration pneumonia might be necessary.

Complications
Most episodes of esophageal obstruction resolve quickly or are easily treated by your veterinarian, who identifies the underlying cause, performs any necessary dental work, and recommends feeding changes if necessary. Occasionally, horses with severe cases that take days to resolve or lead to circumferential ulceration of the esophageal mucosa have problems afterward. Circumferential ulceration occurs all the way around the inside of the esophagus. The problem with these lesions or other deep ulcers is that as they heal, they can scar and cause a stricture (narrowing of the esophagus), possibly leading to chronic obstruction. While choke can be a very serious problem, early detection and treatment will usually resolve it quite favorably, and proper feed management can drop your horse's risk of it to nearly zero.