

# CELLULITIS

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## What is cellulitis?

Cellulitis can be a frustrating and challenging condition to treat. It is caused by a bacterial infection of the soft tissues under the skin. In horses, it is most commonly found in one of the hind legs but can occur anywhere in the body.

Cellulitis is typically first noticed as sudden swelling that is hot and painful to the touch. As the infection worsens, the horse may develop a fever or become lame to the point of not wanting to bear weight on the affected leg. Swelling can spread from the initial site of infection to affect the entire leg. The infection spreads throughout the tissue causing massive swelling. The lymphatics (fine vessels that return tissue fluid or “lymph” back to the circulatory system) are overwhelmed or compressed by the swollen tissue and this results in additional swelling from oedema (non-infected tissue fluid). Cellulitis is very painful, while oedema is non-painful and can be diagnosed by making an impression of a finger in the swollen tissue without any pain response from the horse. It can however be difficult to distinguish exactly which parts of the swollen limb are due to the primary cellulitis and which parts are due to the secondary oedema.

In severe cases, the skin become so stretched that it splits open and drains fluid or pus. Due to the fever and pain, horses may become depressed and lose their appetite. In rarer cases, horses can get life-threatening complications, such as death and sloughing of stretched skin due to loss of blood supply, gangrene if infected with a Clostridial organism or laminitis.

## What causes cellulitis?

The exact causes of cellulitis are not known. In humans, there are many factors that increase the risk of getting the condition, such as trauma, obesity, poor hygiene, diabetes mellitus, poor circulation and damage to lymphatic drainage. However in horses, we don't yet fully understand the risk factors. Certain environmental conditions, including prolonged exposure to deep mud or sand can promote cellulitis development. Other contributing factors could be external parasites (e.g. mites) and damage to lymphatic vessels in the leg. Many horses develop cellulitis after getting a wound. Interestingly, the size of the wound doesn't seem to matter, even a tiny scratch can act as an entry point for infection. Often there is no wound or scratch visible and it is presumed that the introduction of bacteria may have been from a tiny penetrating object such as a blackberry prickle, thistle or rose thorn. Identifying and treating the source and removing a foreign object is ideal but finding out the exact cause may not always be possible.

Most cases are treated with a combination of antibiotics and non-steroidal anti-inflammatory drugs (NSAIDs). Additional therapies such as cold hosing, topical osmotic agents (strong salt solutions to draw out excess fluid) and pressure bandages may also be helpful. The protocol your vet decides on will depend on several factors, including the severity of the infection and type of bacteria involved. Pressure bandages are expensive to apply, especially if cold water therapy is 3 times per day. Reusable pressure stockings are available for horses and are extremely useful in the management of cellulitis. Many different species of bacteria have been cultured from equine cellulitis but the most common are *Staphylococcus* and *Streptococcus* species.

Some horses can have chronic cellulitis or repeat episodes. A 2007 study from the University of Pennsylvania found that 23% of cellulitis cases have at least one reoccurrence. Horses with non-healing wounds or with compromised blood or lymphatic supply from scar tissue formation or trauma may be predisposed to repeated episodes of cellulitis.

## Other causes of limb swelling

A similar but more severe condition is clostridial myositis in which the muscle become infected by a soil dwelling clostridial bacteria. The initiating cause is usually a deep penetrating wound, similar to the cause of tetanus which is also caused by a clostridial bacteria known as *Clostridium tetani*. Intramuscular injections of anti-inflammatory drugs and vitamins are common causes. Clostridial organisms only survive and proliferate in the absence of oxygen but often produce their own putrid smelling gases. They cause massive degeneration of muscle tissue and the condition is often life threatening. For centuries it has been known as gas gangrene and was the killer of many horses and humans during times of war prior to the availability of antibiotics. As clostridial organisms cannot grow in the presence of air, it is sometimes necessary for the veterinarian to surgically incise into the muscle to help control the infection. Cases of gangrene are best managed by equine internal medicine and critical care specialists at referral hospitals such as University Veterinary Schools.

Other conditions that can appear similar to cellulitis include white tailed spider bites in Australia and rattlesnake bites in the USA. If there is swelling of all 4 legs then an allergic reaction to an insect or spider bite, or vaccine or drug is possible. These conditions usually resolve very quickly with appropriate veterinary care. A more severe condition is called purpura which is an immune reaction that occurs several weeks after recovery (or vaccination) from Strangles or less commonly various respiratory viruses. It is important to perform an endoscopy and diagnostic testing of a fluid sample from the guttural pouches to diagnose or rule out Strangles and chronic carrier animals. Another cause of swelling of multiple limbs is from a virus called equine viral arteritis (EVA). This is frequently spread as a respiratory virus causing fever, coughing and nasal discharge in a group of in contact horses. It can also cause abortions if spread from a stallion (who becomes a life-time carrier).

## What can I do to reduce the chance of my horse getting cellulitis?

Preventative measures can be taken to reduce the risk of your horse getting cellulitis. Maintaining a regular exercise program, if your horse is fit to do so, helps to improve circulation and lymphatic drainage from the legs. It's important to keep your horse's legs clean and dry and disinfect all abrasions and cuts. Avoid turning your horse out in areas with standing water, mud or deep sand, or thorns. Cellulitis can rapidly progress from a little swelling around a small cut to massive swelling of the entire limb. The more severe and extensive the condition the more difficult and expensive it is to treat and the more scar tissue will result. Scar tissue from cellulitis can lead to a permanently enlarged limb which is not only unsightly, but can lead to a mechanical lameness and a much greater risk of occurrence.

Close observation of your horse and good communication with your veterinarian is key to early detection and successful treatment.



Mild-moderate cellulitis of the right hindlimb



Severe cellulitis (and myositis) of the right thigh region with secondary oedema over the lower limb. No initial wound on the limb was identified.





Purpura all 4 legs bandaged



Purpura all 4 legs in compression stockings



Secondary facial oedema from cellulitis and clostridial myositis that occurred as a consequence of a dirty needle used to give a vaccine in the neck.



Cellulitis and oedema of the head in a horse that sustained a ruptured oesophagus from a non-veterinary professional performing nasogastric intubation for a saline drench.



Clostridial myositis (gangrene). Surgical incisions were made to introduce oxygen and the horse was successfully treated with appropriate antibiotics and intensive care.