

# Understanding Vesicular Stomatitis

**As 2015 was another bad year for Vesicular Stomatitis, knowing the signs and how to treat the disease will minimize risk.**

by Heather Smith Thomas

Vesicular Stomatitis (VS) spread north again this past year, affecting cattle and horses in the United States. Several western states have been affected, and cattlemen need to be more aware of this disease and its related restrictions and try to minimize risk to their own animals.

A veterinarian at Colorado State University veterinary diagnostic laboratory, Kristy Pabilonia says cattle producers and horse owners need to know what the clinical signs look like so that they will be able to detect and identify it.

"Since this is a reportable disease, they also must alert their veterinarian," she says. "Then

their veterinarian would report to the state veterinarian. In Colorado the state veterinarian is part of the Department of Agriculture."

Pabilonia says clinical signs of VS include blister-like lesions, often around and inside the mouth, drooling and reluctance to eat.

"You may also see lesions around the feet, or around the prepuce or penis on a male animal," she says. "In horses we sometimes see lesions in the ears. Cattle producers need to realize it's not just a horse disease, and it's not just mouth lesions."

There was a large outbreak this year; the disease was detected in multiple western states. "In Colorado we saw it this year and also had a large outbreak last year," Pabilonia says. "Our state has been a hot spot for cases, with numerous counties and premises affected."

In addition to the western states, parts of the Southwest have also been affected. The U.S. Department of Agriculture (USDA) has a website ([aphis.usda.gov](http://aphis.usda.gov)) with all the current information for 2015 and weekly situation reports regarding how many cases were found. For instance on Dec. 18, 2015, there were new premises in Texas affected and five new confirmed cases in Colorado, according to Pabilonia.

This is generally a summer disease, but it can continue into the fall until cold weather halts insect activity since certain insects transmit the disease and spread it from animal to animal.

"We were seeing some cases into December this year, but by late December when we tested animals at several different operations they all came up negative, and we haven't had any samples sent in since then, so we hope this means people are no longer seeing clinical signs," she explains. "It's winding down for this year, but lasted a bit longer than usual because of the warm weather this fall."

The USDA website has maps showing all the premises where VS has been found. Cattlemen can look to see if there have been any cases in their own region.

"Their state veterinarian would also have current information regarding locations and premises where they've found VS," Pabilonia says. "This is also where any positive cases get reported. For example, we get samples from veterinarians around our state, and report the results back to the submitting veterinarian and simultaneously report the results to the state veterinarian. This gives the whole picture in an outbreak situation and also gives a lot of information regarding which counties are affected and where they are seeing cases."

The testing this past year was done through the National Animal Health Laboratory Network (NAHLN). This is a network system of labs in various states coordinated with USDA.

"We were able to test samples from our local veterinarians and get results out very quickly, often within one day," she says. "This is helpful to the cattle producers and horse owners to get a quick result, as well as have a local lab they can send samples. Previously the VS testing was done at the national lab in Ames, Iowa. They are very fast, too, but it's nice to have a local testing capability. This has been very helpful for our producers."

## Background

This contagious viral disease of cattle, horses and pigs has been recognized for more than 80 years. It occurs most commonly in warm regions of South and Central America but sometimes spreads north into the United States.

VS generally appears in late spring and continues to spread through the fall. It occurs year-around in central Mexico. A big outbreak in the United States occurred in 1982-83, eventually

covering 14 states, infecting many herds of cattle and horses.

The disease can be spread by insects traveling on wind currents. Killing frosts in the fall help eradicate it. Outbreaks have been controlled mainly by restricting movement of infected animals and by the decrease in insects after cooler fall temperatures.

A serious outbreak in 1995, starting with a horse in Dona Ana County, N.M., in April of that year, affected many western states, causing cancellation of livestock shows and sales and the quarantine of farms, and halted interstate livestock travel.

Hundreds of equine competitions, shows and events were cancelled. Kentucky prohibited entrance of all livestock from New Mexico, Arizona, Colorado and Texas and also refused to allow animals originating from any state that had inadequate restrictions in an effort to protect its Thoroughbred breeding industry.

The state veterinarian's office in Kentucky stated that any incoming animals from affected states had to go elsewhere for 30 days before they could enter Kentucky to make sure they were free of VS and that any animals from the eight states bordering those states had to have a negative VS test before they could enter Kentucky. The Canadian government also required veterinary inspection of all horses crossing the border and barred all livestock from infected states.

By mid-July 1995, New Mexico livestock producers/marketers estimated that more than \$13 million had been lost in their state due to cancellation or postponement of sales, county fairs, horse shows and rodeos. Additional losses resulted from costs of transporting feed to animals quarantined in depleted pastures.

A vaccine was made available in July of 1995 that provided some degree of protection, but the Colorado State Veterinarian at that time, Jerry Bohlender, stated that vaccinated animals could develop clinical symptoms and mild cases of the disease.

Officials of the American Association of Equine Practitioners and the American Horse Council warned horse owners that use of the vaccine could cause problems, since there were no studies done on its safety in horses and there was no lab test that could differentiate between a positive serology test from vaccination or from actual infection. Thus the vaccine could disrupt interstate and international movement of horses.

VS did not appear in the U.S. during 1996 but crept out again in June 1997, appearing first in a handful of horses in Arizona and New Mexico. Texas immediately



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placed restrictions on interstate movement of livestock. Canada and Europe also had restrictions. All the restrictions did not seem to make much difference in the spread of the disease. VS continued to spread northward until cooler weather that fall.

During the summer of 1998, it came north again. Steve England, a veterinarian in Albuquerque, N.M., said in 1998 that all the restrictions in 1995 and 1997 did not help.

“VS does not follow normal patterns for disease movement,” England explains. “It jumps sporadically from one place to another. In 1995 we had more than 300 premises affected but not one was adjacent to another. All the normal things you do to prevent spread of disease don’t work for this one. VS can jump 200 miles.”

New Mexico officials in 1998 did not impose as many restrictions on movement of horses and livestock to other states. The Western States Livestock Health Association decided that the 10-mile-circle quarantines they’d been using were ineffective in preventing spread of VS. Most states now simply restrict only the livestock from affected and exposed premises.

#### Why the concern?

VS is not a fatal disease, but health officials are diligent to prevent its spread because symptoms are so similar to those of foot-and-mouth disease. Any VS outbreaks must be accurately identified. Foot-and-mouth disease is a much more serious foreign disease of cloven-hoofed animals and was eradicated from the U.S. in 1929; officials are vigilant to prevent its reappearance.

Also, the clinical signs of VS are very similar to swine vesicular disease, another serious foreign illness. The only way to tell these diseases apart is through laboratory tests.

Even though VS is not as serious, the USDA Animal and Plant Health Inspection Service (APHIS) works hard to keep it from being established in the U.S. because of its adverse effect on livestock production (sick animals lose weight and drop in milk production) and its threat to human health.

VS is a reportable disease; many countries that import livestock and animal products from the U.S. would impose restrictions if VS were allowed to spread.

England stated in 1998 that VS is basically a political disease, an economic disease and is used by European countries to inhibit importations from the U.S.

“In a normal year the major economic loss is from political implications and restrictions, rather than from the disease itself,” he says. “Actually we don’t get too worried as long as we only see it in horses — since horses do not get foot and mouth disease. But we have to report it and keep track of it. When cattle get it, that’s another story; it really makes us nervous when we see it in cattle. We can’t ignore it when it shows up in cattle. Not only can it be devastating in a feedlot or dairy, but we have to make sure it’s not foot-and-mouth disease.”



Foot-and-mouth disease could wipe out U.S. livestock industries.

VS occurs only in North and South America and occurs during summer, due to increased movement of livestock and larger insect populations. One type of VS is known to be spread by phlebotomine sandflies. Horse and livestock shows, fairs, rodeos and other events draw animals from a wide area and increase the chances of spreading the disease.

Horse or livestock owners should be alert to any signs of VS and should consult a veterinarian for diagnosis and before moving or accepting shipment of animals. They should not move or sell suspicious animals. If any animal is suspected of having VS, a veterinarian should be contacted

are no complications such as secondary infections, the affected animal usually recovers in two to three weeks.

Since VS mimics foot-and-mouth disease, livestock owners must get a definitive diagnosis to rule it out. Sometimes insecticides, toxic plants or allergic reactions can cause similar signs, so veterinarians make a final diagnosis based on clinical signs, blood test results or isolating the virus in tissue.

There is no specific treatment, except to prevent secondary infection where the blisters have broken and raw tissue is exposed. Animals can be protected from VS by avoiding congregation and exposure. Good sanitation and quarantine on affected farms can usually keep VS from spreading until it dies out. Mild

work areas can help prevent spread of VS. Disinfectants containing .645% chlorine bleach or chlorhexadine (Nolvasan) will kill the virus.

Individuals should use protective measures when handling infected animals to prevent human exposure to VS by contact with infected body fluids. The virus can be transmitted to humans through the skin or respiratory systems, causing flu-like symptoms. The prevalence of VS in people may be under-reported because it is often misdiagnosed. In humans VS causes an acute illness — fever, muscle aches, headache and general discomfort — with blister lesions seen only very rarely.

People who handle affected animals can contact VS if they don’t take proper precautions to avoid infection. When handling livestock that might have the disease, they should wear gloves to protect the hands from saliva and blister fluid. These fluids should never be allowed to come into contact with mucous membranes such as eyes or mouth or open wounds.

#### Prevention

In outbreaks, most cases are near water or wet areas with high insect populations, in stressed animals with compromised immune systems or in animals not treated for flies and insects. To protect animals from VS, Colorado’s Department of Agriculture suggests keeping them in dry corrals or stalls and avoiding stress or medication that compromises the immune system.

Apply insecticide and repellent daily, especially around ears and belly, using insecticide regularly where livestock are kept. Use insecticide ear tags in cattle and eliminate insect habitat. Isolate new animals at least 21 days so they can’t introduce disease to healthy herds. A quarantine area should be as far away from the main herd as possible.

Avoid shared feeding equipment. Use separate equipment for each group. If it must be shared, clean and disinfect it for at least 10 minutes between uses. Clean and disinfect feed bunks and water sources daily.

People caring for animals should shower and change clothing and boots when moving between the quarantined group and the main herd. If possible, care for isolated animals should always be done after handling the main herd to avoid contamination. For more information on VS, contact your veterinarian or the USDA APHIS. Information on VS is also available at any state veterinarian’s office or state departments of agriculture. **HW**

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immediately and the animal should be isolated. Gloves should be worn to protect hands; if exposure is suspected, individuals should contact a physician.

#### The disease

VS can affect horses, cattle and pigs and occasionally sheep, goats and llamas and many species of wildlife, including deer, bobcats, raccoons and monkeys. Humans can become infected when handling sick animals.

The disease is rarely fatal, but causes blisters in the mouth and nostrils and on the dental pad, tongue, lips, teats and feet. The blisters swell and break and the skin sloughs away, leaving painful ulcers which cause the animals to stop eating and drinking, losing weight because of the raw tissue and pain. Blisters on the coronary band can cause lameness and sometimes founder — and occasionally loss of a hoof.

The most common clinical sign is drooling. Affected animals have a high fever. The incubation time from exposure to blister formation is two to eight days, sometimes longer. Often excessive salivation and drooling is the first noticed sign, with temperature rise beginning about the same time the blisters first appear. Close examination of the mouth will show blanched, raised vesicles. In horses these blisters usually appear on the upper surface of the tongue. If there

antiseptic mouthwashes and ointments can help alleviate pain and speed recovery in affected animals.

Spread of the virus is not completely understood, but insect vectors, such as sandflies and black flies, may facilitate mechanical transmission from one animal to another. Contact with saliva from an infected animal or fluid from ruptured blisters plays a role in its spread.

VS seems to go through a herd by contact or exposure to saliva. Movement of animals increases the chance of spread. Moving infected animals, poor sanitation of vehicles used in transport and simple walking and contact between infected and non-infected premises are ways in which the virus can be spread. Blister fluid or saliva on tack or in water buckets can infect susceptible animals. An area that has had a sick animal cannot be considered free of the disease until at least 30 days have passed since the animal’s lesions have healed.

If a case occurs, the animal should be quarantined, preferably in a barn stall. Animals on pasture are more frequently infected; isolating a sick one in a stall reduces risk of spread. Producers should not move any animals from the premises (unless they go directly to slaughter) for at least 30 days after the last sick animal’s lesions have healed. Insect control programs can help. Disinfecting equipment and