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Strangles: Dispelling the Myths

Strangles. Even the common name for this bacterial disease—caused by the sinister *Streptococcus equi*—sounds like something of legend, a cautionary tale inscribed by medieval monks.

The abscesses and pus-laden nasal discharge common to the condition can seem like something from a mythical plague. However, strangles is very much an actuality in today's horse world, a real respiratory disease with a real, mundane bacterial cause.

Though the disease has been recognized in horses since it was first reported in 1251, myth and misunderstanding persist even today. But before launching into the realm of myth, let's take a quick look at the basic facts of the disease.

Cause *Streptococcus equi* spp *equi* (frequently referred to as *S. equi*) inhabits the respiratory tract of sick horses and carriers—those horses that might not be obviously sick.

Clinical signs Ashley Boyle, DVM, Dipl. ACVIM, assistant professor at the University of Pennsylvania School of Veterinary Medicine, says the first sign of strangles is often (though not always) a sudden fever spike. In a 2011 article in *Compendium: Continuing Education for Veterinarians*, Boyle lists other signs of the disease, including "lethargy, depression, bilateral mucopurulent nasal discharge, lymphadenopathy, and abscessation of the retropharyngeal and mandibular lymph nodes." Translation: If your horse has strangles, he might seem very tired and have thick snot made up of mucus and pus streaming from both nostrils, swollen lymph nodes, and abscesses under the jaw and at the throatlatch.

Disease spread Sick horses shed *S. equi* via these nasal secretions and when the abscesses drain pus. Chronic carrier horses that appear healthy can shed bacteria trapped in their guttural pouches through their pharynx (more on this phenomenon in a moment). Horses can become infected through direct contact with diseased horses; contact with people, equipment, or surfaces that have recently touched diseased horses or their secretions/pus; or common water sources shared by sick or carrier horses.

While some bacteria might travel short distances through the air when a horse coughs or sneezes, Benjamin Buchanan, DVM, Dipl. ACVIM, AVECC, of Brazos Valley Equine Hospital in Navasota, Texas, says he is "not a big believer in aerosolized spread." Rather, he stresses the role of water and stable management: "Water is a critical and often overlooked area of how (strangles) is spread. I've had farms where it spread stall to stall. It turned out they were submerging the water (faucet mouth in each bucket)."

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Treatment Protocols vary depending on each horse's disease stage and severity when detected and the treating veterinarian's experiences. Practitioners frequently treat uncomplicated cases (those involving lymph nodes that have begun to abscess) symptomatically, with anti-inflammatory drugs to control pain and aid appetite and hot compresses or drawing agents to bring the abscesses to a head more quickly. Letting the disease run its course in this fashion offers the advantage of conferring more complete immunity against future disease.

However, draining abscesses can increase the risk of contamination and disease spread on a farm, so some veterinarians use antibiotics to treat horses with early disease to prevent abscesses from maturing, says Boyle. The downside is that horses treated with antibiotics won't develop as good an immune response against future strangles threats.

J. Scott Weese, DVM, DVSc, Dipl. ACVIM, a professor in the Department of Pathobiology at the University of Guelph's Ontario Veterinary College, says antibiotics "aren't very effective once abscesses develop and are probably only justifiable early in disease and when good infection control measures are being used to prevent subsequent exposure. If you treat with antibiotics but are in a facility where *S. equi* is still being passed around, the horse may just get it again, and treatment might delay the inevitable."

Possible complications As if strangles cases weren't troublesome enough, roughly 20% of affected horses can develop complications—even lethal ones—according to the 2005 American College of Veterinary Internal Medicine (ACVIM) consensus statement regarding *S. equi*.

"Bastard strangles" refers to abscess development in the internal lymph nodes—usually in the mesentery (ligamentous attachment of the intestines to the body wall), kidneys, spleen, lungs, or brain. These horses might not show outward signs of the disease, but they can develop fever, weight loss, and life-threatening illness. Boyle says researchers theorize that in these horses the bacteria has spread via the lymphatics and settled somewhere besides the typical upper respiratory system and lymph nodes of the head and neck. But no one knows why some horses are susceptible to this form of the disease and others aren't.

Another twist in the strangles plot is an immune-mediated disease called purpura hemorrhagica—the result of the immune system going overboard in its fight against *S. equi*. Horses with very high blood antibody titers to *S. equi* (either from vaccination or prior infection) can develop an excessive immune response when exposed to the antigen (by revaccination or contact with *S. equi* in the environment). Purpura results in vasculitis, or severe inflammation of the blood vessels. The most common signs are edema (swelling) of the legs, head, and/or lower belly, serum oozing from the skin in these areas, and red spots or blotching of the mucous membranes (in the lips, gums, and inside of the vulva or rectum). Horses with purpura might also develop severe muscle soreness, difficulty breathing, or signs of colic.

Now that you're familiar with the disease in question, here are some myths worth dispelling:

MYTH 1: Strangles is a disease of young horses.

"The biggest misconception is that it's a young horse problem," says Buchanan. He describes a recent run of strangles cases at Brazos Valley Equine Hospital, where for three years, at any given time, a horse was housed in their isolation barn due to strangles. "And not just 2-year-olds," he says, "but also 10-year-olds and older."

Perhaps the severity of strangles signs in younger horses is to blame for this myth. The ACVIM consensus statement authors report that older horses might have milder signs, develop smaller abscesses, and recover from the disease faster than young horses.

MYTH 2: *S. equi* bacteria persist in the environment for weeks to years.

Conventional wisdom has long held that *S. equi* can persist in the stable environment for extended time periods. Studies in which researchers examined the organism under laboratory conditions seemed to bear this out. However, Weese and colleagues debunked this notion in a 2009 Canadian Veterinary Journal study. They realized that in prior studies researchers had evaluated the bacterium's longevity only under "ideal" conditions, rather than those of an actual stable, where temperature and moisture fluctuations, wind, and sunlight impact surfaces.

"Stressors in the environment that will take care of (e.g., kill) bacteria will be UV light, desiccation (drying out), and temperature and humidity changes," Weese says. In other words, bacteria prefer a consistent environment, and the real world can do a lot to shorten the out-of-horse life span of bacteria such as *S. equi*.

Weese and his colleagues found that as few as 24 hours of sunlight could kill *S. equi* under their experiment's conditions. While he acknowledges that variations in environmental conditions can make a difference, such as protective layers of mucus or dirt, surface texture, and actual sunlight exposure, Weese calls the previously recommended environmental quarantine period of three months extreme. "If you can wipe off the surfaces and get a day of sunlight, it's going to be a pretty quick death (for the bacteria)," he says.

MYTH 3: If you wait two weeks after the last sick horse recovers, the barn is disease-free.

Buchanan says the myth of an arbitrary post-disease "safe zone" is a dangerous one to believe. "Once a horse has been infected, there is no (set) time period after which he's not contagious," he explains. "Unless you test, you can't know he's not contagious." In his practice, Buchanan says veterinarians perform many polymerase chain reaction (PCR) tests to check for *S. equi* DNA and whether a horse is still shedding strangles bacteria.

Boyle also advocates testing all recovering horses from an outbreak to verify that the disease is truly gone. Currently, she is trying to determine what sampling method is best for detecting carrier horses. But for the moment she believes scoping the guttural pouches, where the bacteria can hide for years in dried out or "inspissated" pus, offers the fastest and most accurate results.

"In endemic barns with a chronic shedder, generally the horse that doesn't get sick and never gets tested is the one doing the shedding," Buchanan adds. "If you don't test you'll have a seasonal endemic problem every year."

These "silent shedders" have had lymph nodes rupture into their guttural pouches during past active infection, leaving pus that has dried out into chondroids. "When the horse swallows (water), it sheds the bacteria," he explains. "One day, the herd immunity is (weak) enough, the horse is drinking water, it sheds into the water, and there's an outbreak."

MYTH 4: Vaccination is dangerous and does no good.

Though some horses might have local reactions to the intramuscular vaccine and, rarely, horses might develop purpura hemorrhagica, Buchanan remains a strong proponent of intranasal vaccination against strangles. "In my (region's horse) population, we consider it a core vaccine," he says. "It's about 70-80% effective. If it doesn't prevent the disease, it will limit the clinical signs." He says his practice sees far more problems from infection than from vaccination, so he and his colleagues consider the vaccine a low risk when used properly.

Other practitioners such as Weese don't consider strangles to be a core vaccine. "It needs to be a risk-based vaccine," he says. "In many areas and in many horse populations, the risk is relatively low, and it's harder to justify, especially with a marginally protective vaccine."

In Buchanan's experience, the benefit of protection outweighs the low risk of vaccine reactions. "Treating a sick horse is expensive," he says. "You can lose a month of showing or training time. We had a farm (in the area) go bankrupt, and a lot of that was due to a bad strangles outbreak that crippled them financially."

Boyle is currently conducting a study examining how long high *S. equi* titers persist after a disease outbreak. Because of the purpura risk, she recommends either testing titers in horses that have been exposed to the disease or waiting at least two years before vaccinating them against the disease. "Certain horses seem to be hyperresponders," she says. For that reason, she and other practitioners recommend against vaccinating in the face of an outbreak.

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MYTH 5: Antibiotics cause bastard strangles.

Historically, some owners and veterinarians have feared that treating strangles with antibiotics could drive the bacteria deeper into the body, increasing the horse's risk of developing bastard strangles. But Boyle says there is no literature confirming this. For her own part, she says, "I've gotten much more aggressive in using antibiotics" in treating strangles caught in the early stages. "The trick," she says, "is using the appropriate antibiotics long enough."

She recommends scoping the guttural pouches and monitoring blood fibrinogen levels on these horses to know when it is safe to discontinue administering the drugs. "If you're treating with antibiotics, you probably want to continue at least until the fibrinogen is down into the normal range," and any evidence of infection in the guttural pouches is gone, she says.

Buchanan agrees, saying the concern with discontinuing antibiotics too soon is not having killed all the bacteria.

Take-Home Message

Horse industry participants must fight fear and fiction surrounding strangles with facts. Using smart biosecurity practices, consulting with your veterinarian regarding vaccination, and testing all exposed horses in an outbreak to confirm the disease is gone can go a long way toward taming the strangles beast.

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