

## Case Report: Strangles Outbreak

Natalie McTaggart, AAS - RVT

On May 2<sup>nd</sup>, 2021, the attending veterinarian was called out to a local boarding barn for a horse that had large amounts of nasal discharge, coughing, and not eating. Upon arrival, Whiskey, a 13-year-old Quarter horse mare presented with lethargy, exuberant amounts of nasal discharge that was thick and yellow in color, a deep coughing, and no appetite. While obtaining vital signs, it was discovered that she had a fever of 103.6 Fahrenheit, heart rate of 48 beats per minute (bpm), respiratory rate of 18 breaths per minutes (brpm) and mucous membranes (MM) were pink, slightly tacky with a capillary refill time (CRT) of less than 2 seconds. She was estimated to be approximately 590 kilograms (kgs) and a body condition score 7 out of 9. The boarding operation had an outbreak of *Streptococcus equi equi*, more commonly known as strangles, the year prior. Due to this history, it was decided to obtain culture swabs to submit to the reference laboratory an equine respiratory polymerase chain reaction (PCR) test, to determine what respiratory strain was present.

Due to the mare's uncooperative nature, the attending veterinarian administered xylazine at the dosage of 0.4 milligram (mg) per kg at a concentration of 100mg/ml for a total of 250 mg or 2.5 mls of xylazine, intravenously (IV) to the mare, so nasal swabs could be collected. Since she was not showing any indication of wanting to eat and was very depressed from her normal attitude, along with her high fever, 11 milliliters (mls) of flunixin meglumine, at the dose of 1.1 mg/kg at 50 mgs/ml, was administered IV for the fever and general discomfort. Ceftiofur crystalline free acid sterile suspension was given by intramuscular (IM) injection at the dosing of 6.6 mg/kg with a concentration of 200 mg/ml for a total of 20 mls in the left side of the neck since oral antibiotics would be difficult to administer due to the lack of appetite. The mare's owner was informed that she would need another injection of antibiotics in 96 hours if her appetite and nasal discharge had not improved substantially.

Isolation of the infected mare was strongly suggested to the barn owner, but due to the layout of the paddocks with shared fence lines, every horse was already potentially exposed. Necessary precautions to help prevent the spread of the disease to the other 39 horses on property, including the broodmare that was due to foal in less than 30 days were discussed. Suggested precautions included isolation of the infected horse, stopping all movement of horses around the property, disinfecting of all community items of the barn, and the handling of the symptomatic horse(s) last to decrease the chance of accidental spread of the contagion.

After the attending veterinarian had given all recommendations, bio-security protocols were discussed and implemented by the facility. Along with working for the attending veterinarian, the registered veterinary technician was one of the main care givers at this location and helped with all health care aspects at the facility. The infected mare was kept quarantined to her pen, with water and food intake closely monitored for improvements or declines. Due to the mare's uncooperative nature, daily collection of vitals were unable to be obtained for safety of the staff. All feed scoops, buckets, and gate latches were sprayed with a 10 percent bleach solution after every feeding and left at her pen. Shoes were also sprayed with the 10 percent bleach solution before care givers returned to their housing to change clothes and shoes. Nothing worn at the barn was worn to the veterinary clinic and vice versa. TWhiskey was handled last at each feeding and contact was kept to necessary handling only. The other

horses that normally were turned out with her were kept in their stalls to monitor for symptoms and to prevent any further exposure.

To limit the spread of the respiratory disease, all boarders were informed that a sick horse was being treated for a potentially contagious disease and that measures were being taken to limit the spread. Spray bottles with a 10% bleach solution were placed at all entrances to the barns and owners were strongly encouraged to disinfect shoes before entering and leaving. The facility owner encouraged owners not to visit their horse(s) at this time to help with controlling the spread of the disease. Outside horses coming in to use the facilities was postponed until culture results were finalized and quarantine times could be established.

On May 6<sup>th</sup> another 20 mls of ceftiofur crystalline free acid was administered to Whiskey since her nasal discharge continued to be persistent and the cough showed no improvement. Her appetite had slowly returned, and her attitude continued to improve. Daily vitals were still difficult to obtain, so objective observations were used to judge progression and/or declines in her health. Isolation and bio-security protocols at this time were fully implemented and all boarders were being trained via oral communication to disinfect bottom of shoes before entering and leaving the barn, heading out to turn-out paddocks and to spray stall latches and cross-ties after handling. Many of the boarders had adopted the protocol of changing shoes before heading out to the pastured horses and changing back into the "clean" shoes before entering the barn. Education of the owners included, but not limited to, spread of the bacterial disease, recurrent infections, preemptive measures to halt spread of diseases, and habits to adopt going forward to help prevent any new disease outbreak at the barn. The 3 horses slotted to start showing in June and July were kept isolated as much as possible in the off-chance the quarantine would be lifted in time, and normal activities could resume.

The respiratory PCR results had been finalized by the reference laboratory and the mare had tested positive for both *Streptococcus equi* ss. *equi* and *Streptococcus equi* ss. *zooepidemicus* while the culture only isolated *Streptococcus equi* ss. *equi*. Both the mare's owner and the barn owner were informed of the results and the boarding operation immediately went into a full quarantine that was not to be lifted until 14 days past the resolution of clinical signs. The area had experienced major rains and all turnout was halted and stalled horses were kept in their stalls until it could be determined that no other horse(s) were starting to show clinical signs of either bacterial disease. While many of the current horses being boarded there had contracted *Streptococcus equi* ss. *equi* the previous year, Whiskey was one that had not. There were also 11 additional horses that had moved onto the property following the outbreak the prior year, those horses were closely monitored twice daily for any change in behavior or signs of respiratory illness.

On May 13<sup>th</sup>, two more horses presented with similar symptoms. "Dubs", a 3-year-old quarter horse mare, approximately 550 kgs and a body condition score of 5 out of 9 presented with a deep cough, nasal discharge, no appetite, and severe depression. The same attending veterinarian of the original case was called in to evaluate the mare and start treatments. Physical findings were, a fever of 104 F, respiratory rate of 28 brpm, heart rate of 50 bpm, MM were pink and slightly tacky with a CRT of 3 seconds. The owner agreed to a respiratory culture as this mare was a performance horse and had several upcoming shows to attend. The technician administered 10 mls of flunixin IV at a dose of 1.1 mgs/kg with a concentration of 50 mg/ml and 18 mls of ceftiofur crystalline free acid at a dose of 6.6 mg/kg concentrated at 200 mg/ml. The mare was fully isolated in her stall, the barn stopped all turn-out again, and a halt movement issued for all horses on the property. The other horse to show symptoms

was a 21-year-old paint mare, and their veterinarian was called to evaluate her. Owners of boarding horses were informed of the new cases and advised to continue limiting visitation and to not remove horses from stalls or paddocks in a continuous attempt to severely curtail the spread of the disease. The pregnant broodmare was immediately moved from her paddock that shared fence lines with other horses and moved to a stall in the lower barn that had no horses in it. Boarders were informed that she was in isolation and the barn was off limits to all but the facility owner and staff to control any contamination of her area.

Bio-security measures were increased to include a foot bath with 10% bleach solution that was placed just inside the entrance to the lower barn, no wheeled vehicles or carts were allowed into the barn from other locations around the farm, and the broodmare was the first to be fed and the stall cleaned at the start of each round of chores. Only the technician was allowed access to the mare and the handling of all horses at chore time in order to control contamination. While striving to hold the bio-security measures to a high standard of excellence in accordance with clinical standards, constant re-evaluation of disease management and equine health practices continued.

On May 14<sup>th</sup>, Dubs vitals were taken after morning rounds had been completed. Her fever had dropped to 101.8 F, heart rate of 42 bpm, respiratory rate was 13 brpm with some effort, MM were pink and moist, and CRT of less than 2 seconds. She continued to not show interest in food, and a warm mash was made to try and coax her to eat. That evening her fever spiked to 105.8 F and another 10 mls of flunixin was administered IV. Her respiratory effort had increased to 20 brpm and her cough continued to progress. As daily temperatures were taken she continued to have a persistent fever ranging from 103.4 F to 106.1 F, and per the veterinarian, 10 mls of flunixin was administered IV every 24 hours for the next 7 days to control the fever and inflammation of her submandibular lymph nodes. She was placed on 2.28 grams of omeprazole oral paste at a dose of 4 mgs/kg every 24 hours to help with the prevention of gastric ulcer development from long term use of anti-inflammatory pharmaceuticals. Grain continued to be soaked into a mash consistency to make it easier for her to eat and electrolytes were added to her water. On May 19<sup>th</sup>, flunixin was discontinued as Dubs was no longer showing drastic rises in her temperature and her appetite was ravenous. A cough persisted, though no nasal discharge was present. Respiratory culture results came back as only Strep equi. ss. equi and no other bacterial strains were isolated, thus giving insight to controlling the outbreak further.

On May 24<sup>th</sup>, all horses that had symptoms of strangles were no longer symptomatic, and per the veterinarian, a 14-day waiting period had started. If no other symptoms were observed, the quarantine would be lifted, and normal activities could resume at the barn. However, all horses were closely monitored for resumption of symptoms and any new cases. Protocols remained in place to continue containment of any residual contamination.

7 days later, on May 31<sup>st</sup>, the fourth horse to show symptoms was noted. An 18-year-old paint gelding was slow to approach the feed bunk and was coughing to the point of hindering walking. The horse was isolated and monitored for signs of declining health along with the facility staying in full quarantine. The owner was unable to be reached, and therefore no treatment was authorized. On June 13<sup>th</sup>, all horses were deemed to be symptom free and the 14-day waiting period was started over.

No further horses were noted with symptoms and the quarantine was lifted on June 27<sup>th</sup>. Owners were encouraged to have their horse's titers checked and vaccinated if low to prevent a re-current outbreak in the future. While some restrictions were lifted among the boarders, continuation

of a modified bio-security protocol was left in place. Spray bottles were left in strategic places and owners encouraged to continue spraying down communal items within the barn after use.

Throughout the outbreak of Strep. eEquiequi ss. equi, several other barns in the area had announced similar problems. While it remains unclear where the outbreak started, it is theorized that with the warming temperatures and increase activity of the barn, residual contamination from the previous year was allowed to expose and therefore infect horses that did not have sufficient titers. While this could have been significantly worse, constant communication and client education on infectious disease spread and proper disinfecting of communal items and areas played a substantial part in containing the disease from infecting any other horses, including the broodmare. During the post outbreak phase, several horses were slotted to start showing and the owners were given a brief educational talk in proper show health protocols to limit any potential exposure to other diseases while at the shows. A review of the current barn's health management plan, along with testing Strep. equi ss. equi titers, vaccinating as needed, and an increase in horse owner education, the chances of another recurrent outbreak should be diminished in the following years.