

## Common Diseases and Treatments for Cervidae

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Cervid farming is currently a 3 billion dollar economic impact industry in the US (NADeFA sponsored Texas A&M study 2007). Coupled with values of individual animals for breeding stock, hunt ranches, producers of urine and as pets, treatment of these animals is much sought after by producers. These animals are sometimes difficult to diagnose and treat due to their behavior and temperament. Treatment options and management of the most common diseases of whitetails will be discussed. All antibiotics are extra label and require a valid veterinarian-client-patient relationship.

Enteric diseases that commonly affect cervids are *E. coli*, salmonellosis, Johne's disease, Clostridium types A, C & D, coccidiosis, inappropriate diets and worms. These are among the most common problems that I see in the deer farms that I service. Many can be prevented with sanitation and vaccination.

*E. coli* is commonly seen in fawns in the first week of life. Occasionally it affects older fawns when the diet is inappropriate or improperly fed. These fawns can become dehydrated and die very rapidly so early aggressive treatment is important. It is important that fawns receive colostrum from the dam. It helps if does can be vaccinated for *E. coli* prior to fawning but in many cases that is not possible. *E. coli* antiserum can be administered in the first few hours after birth to help prevent the disease as well as colostrum supplements (First Fawn, Labelle, Inc. Bellingham, WA). Potentiated sulfas (flavored pediatric formulas) work well and are well received by most fawns and can be administered in the formula or per os directly. This also has the advantage that the fawns do not have to be restrained or unnecessarily stressed by handling. Other antibiotics that can be given orally and are effective against *E. coli* could also be used in this manner. Intravenous fluids or oral fluids may also be given. Treat as one would calves or other neonate. Fawns raised on does present special problems. They may have to be pulled and hand reared or caught and treated once or twice daily till recovered. That is one reason why treatment of all fawns at birth with antibodies is important.

Coccidiosis can be treated in the same manner as *E. coli*, but is best prevented by the addition of decoquinate to the formula in bottle raised fawns. Amprolium at the treatment dose for cattle is effective as a treatment. Ponazuril (Marquis®) is also useful for treatment, especially in mother reared fawns that can be caught once and treated instead of daily treatments of other drugs. The addition of ionophores to a starter or grower ration will also be effective if it can be mixed appropriately and consumed in adequate quantities.

Clostridial diseases are usually manifested by sudden death, but some fawns suffer from chronic bloat that has been attributed to Clostridium species. It has been advocated on many farms that the feeding of "clean" dirt to fawns will help decrease the incidence of this and improve fawn health. The author has seen fawns successfully raised with or without access to dirt. Routine administration of C & D antitoxin at birth (let doe bond with fawns and nurse) by

both parental and oral methods will help prevent this disease. When presented with a probable *Clostridium* case, treatment with procaine penicillin G both orally and parental coupled with antitoxin will usually be effective if given early in the course of the disease.

Intestinal nematodes can cause severe losses if not treated. Deer that are raised in confined situations with abnormally high animal densities are especially susceptible to “worms”. Topical dewormers containing ivermectin, moxidectin, eprinomectin, etc. can be used or can be mixed in feed and delivered in that manner. Injectable parasiticides in that family of dewormers can also be mixed in feed and delivered in that manner. Fenbendazole can also be administered in the feed as can pyrantel products. Typically when deworming in feed, the author will calculate the weight of the deer to be dewormed and double the dose and feed for three days. This helps to ensure adequate intake of the parasiticide and hopefully decreases parasite resistance problems from developing. Current recommendations would be to do fecals to determine parasite load and follow up fecals to determine if the parasiticide was effective.

Pneumonia can be caused by several different organisms. *Pasteurella multocida*, *Mannheimia hemolytica*, *Truiperella pyogenes*, *Pasteurella trehalosi*, mycoplasma and *Fusobacterium* sp. are the most commonly found agents. The key to treatment is early intervention. Deer behavior is geared toward hiding clinical signs to avoid predation. Any fawn off feed should be suspected of having pneumonia and if any kind of cough is present, aggressive antibiotic therapy should be instituted. Fawns on the bottle usually respond well to potentiated sulfas as in *E. coli* therapy. Injectable antibiotics can also be used, but tend to make the fawns sore and after repeated injections, may change their behavior towards their caretakers. Most people hand rearing fawns want to make them as tame as possible, so avoiding this may be important in some cases. Drugs that are commonly used other than the sulfas are tulathromycin, tetracycline, ceftiofur, ampicillin, amoxicillin, etc. Long acting preparations that are available in some of these drugs make it less stressful on the animal when treating since multiple handling episodes can be avoided. Use of non-steroidal anti-inflammatories may also be beneficial. Overuse of such can lead to or exacerbate gastro-intestinal ulcers however. Fawns on does present a special problem and may need to be darted to be treated. They are very small, delicate targets and may lead to severe injuries. Stressing a fawn by capturing it or anesthetizing it may also be detrimental to its health and welfare.

Necrobacillosis, foot rot, necrotic stomatitis and lumpy jaw may all be caused by *Fusobacterium* sp. In fawns it is usually manifested by necrotic lesions in the mouth or lumps on the jaw or abscessed cervical lymph nodes. In older animals, infected lymph nodes and foot lesions are more common. It is also a common agent found in pneumonia in adults and older fawns. Once infections are detected, debridement and aggressive antibiotic therapy with procaine penicillin G, benzathine penicillin, tetracycline, sulfas, tulathromycin, ceftiofur, etc. may all be tried. Many times abscesses will break and drain, only to reoccur later or in another lymph node. Foot infections may be treated with antibiotics and debridement, but amputation of the affected digit may be necessary. Most deer do extremely well with an amputated digit or

leg. Treatment with one of the longer acting preparations of antibiotics will decrease stress on the animal from handling.

Fractures are very common in deer. These are commonly caused by handling, fighting, running into fences, darting or other activity in which the deer either injures itself by panicking and running into an object or is forced into running into an object such as a fence by dogs or other predators. Most fractures above the carpus and tarsus are best left to heal on their own. Deer provided with shelter, food and water and no competition from other deer will generally heal with little or no problem if left alone. Many times injuries are exacerbated by the disposition of the deer if intervention is attempted. Some of the injuries may dictate humane euthanasia, but the author has observed many injuries that have healed with no intervention at all. Sometimes the animal may be given antibiotics with a dart or in the feed or water if deemed necessary, but that is usually reserved for open fractures where it is felt necessary for the welfare of the animal. Lower leg fractures most often benefit from splinting or casting. Usually lightweight plastic splints for canines or calves have been used with great success. PVC pipe that has been cut in two length wise works very well and can be shaped by heating and cut to length. Even open fractures will heal on occasion. If healing does not occur, the leg can always be amputated at a later date. In some cases, euthanasia or humane slaughter for food should be considered. These decisions should be based on value of the animal, disposition of the animal, ability of the caretaker to assess and care for the animal, environmental conditions and other factors.

Hemorrhagic disease (HD) is probably the worst disease that a deer producer may face. Morbidity and mortality may reach 100% in some cases. Southern deer may have some genetic resistance to bluetongue, but may succumb to epizootic hemorrhagic disease virus type 1,2 or 6. No treatment is effective for this viral condition, but they may benefit from antibiotics for secondary bacterial invaders and NSAIDS to help with fever and inflammation. Controlling the vector for HD is the most important aspect next to vaccination. Applying insecticides to the deer or the premises may be helpful. Whitetails are difficult if not impossible to spray and handling them at this time of the year to apply topical insecticides is fraught with difficulties due to velvet antlers and young fawns. Feeders equipped with insecticide applicators have been successfully used for tick control and seem well adapted to application of insecticide for *Culicoides* sp. Mowing tall grass and eliminating brush may decrease hiding places for the gnat. Drying up mud holes and elimination of standing water may reduce breeding areas for the gnat as well. Vaccination for the disease through the use of autogenous vaccines combined with vector control may reduce or eliminate the disease.

Antler care is an important aspect of farmed deer. Injury to the antler during the growth or "velvet" phase can be life threatening. If velvet antler is infected or suffers from fly strike, the animal may die or suffer permanent injury to the antler or skull. Some of these infections may lead to brain abscesses and death. Deer in velvet antler should be observed daily if possible for any signs of injury to the antler. Any change in attitude with abnormal antler configuration or growth should be carefully evaluated. These animals usually cannot be run through a

handling facility as more antler injury may occur. Observation and treatment with a dart gun for infections or remote anesthesia and treatment may be attempted. Systemic treatment with a broad spectrum antibiotic coupled with debridement, lavage or amputation of the antler may be done. NSAIDS may also be given as appropriate.

Ulcers of the gastro-intestinal tract are common in farmed deer. They are exacerbated by stress, overcrowding, social changes and handling. Most present as poor doing, rough hair coat, poor appetite and diarrhea. Definitive diagnosis is difficult, but testing feces for blood may be helpful. Melena may be present but it is usually rare. Many ulcers are not found till post mortem. If the deer are not responsive to antibiotics, deworming or change in diet, and the clinical signs continue, a presumptive diagnosis of ulcers is made and the animal started on treatment. The author has seen the majority of these in does handled multiple times for synchronization for artificial insemination programs and fawns that fail to adjust to hand rearing or being introduced into a larger social group. Putting the animals on gastric protective agents such as aluminum hydroxide and ulcer medication such as omeprazole, cimetidine or ranitidine have been useful in some cases. Dietary change such as more roughage may also help. Eliminating social stress as much as possible should also be tried. Putting the affected animal in a smaller group or in a group of its peers may be helpful. Most do not like to be alone and that may be more stressful than a large group. Compounding pharmacies may be able to make "treats" for the deer using applesauce or liquid compounds that can be put in bread, apples or other food that the deer consume readily.

De-antlering deer is a very common procedure. This is done for velveting of elk and red deer and for treatment of infected antlers in whitetails. It is never done by cutting below the pedicle. All antler (hard or velvet) should be cut above the pedicle. Cutting below the pedicle will damage future antler growth in subsequent years. If hard, the antler may be cut in a handling facility using a hand or power saw. Many times, the animal will have to be anesthetized for the procedure if no handling facility is available or the animals are not amenable to handling (too late in the rut and they will injure each other in the handling facility). The most common reasons to de-antler males is to prevent them from hurting each other or the caretakers. They should never be trusted once they reach rut and hand reared males are especially dangerous as they have little fear or respect for man. The best time to de-antler is immediately after the animals shed their velvet and before they go into the rut. If velveting is done, anesthesia of the antler and blood loss needs to be considered.

Treatment and diagnosis of deer disease is problematic but not impossible. Taking advantage of their natural behaviors and using long acting antibiotics and being creative in getting medicaments in them make it challenging and rewarding.

Further suggested readings include:

J. Haigh and R. Hudson, Farming Wapiti and Red Deer, Mosby, St. Louis, Mo, 1993

T. Alexander and D. Buxton, Management and Diseases of Deer, 2<sup>nd</sup> Edition, The Veterinary Deer Society, J.A. Spence, Loanhead, Midlothian, 1994

M. Fowler, editor, Zoo & Wild Animal Medicine, 2<sup>nd</sup> Edition, W.B. Saunders Company, Philadelphia, PA 1986