

## Infectious Diseases Affecting Reindeer

### **Brucellosis**

Brucellosis is a bacterial disease which is endemic in most herds in Alaska. Before establishing a new herd, reindeer should always be tested and negative serologically for brucellosis.

Brucellosis is a reportable disease in Alaska. Veterinarians require the testing of reindeer prior to importation into Alaska and 2 years thereafter for all herds.

The major impacts of brucellosis in reindeer are abortion and sterility. Retained placentas, swollen joints, enlarged testicles and abscesses are signs of possible infection. It is believed that brucellosis is primarily spread through contact with infectious uterine discharges following abortion.

Abortion in reindeer usually occurs 1 to 2 months before normal calving. Calves may be born alive but are weak and die within a few days. Other calves born to infected females can survive but remain infected as carriers of the disease. Typically, females abort the first calf following infection. Although they may abort the next year, they can produce viable calves in future years.

Wide varieties of wild animals can be infected with brucellosis. These also include elk, bison, caribou, reindeer, wolves, fox and bears. In Alaska, the disease of primary concern in reindeer and caribou which are infected by their own type of *Brucella*, *Brucella suis type 4*. It has been suggested it should be better be called *B. rangifur*.

The current product used to control brucellosis in Alaskan reindeer is called a *killed homologous vaccine in adjuvant*. This product provides protection for up to 4 years. Currently, it is recommended that all reindeer in a herd be vaccinated after reaching the age of 12 months.

### **Tuberculosis (TB)**

TB has not been seen in reindeer in the area. TB testing in reindeer is a federal requirement that has to be done every 3 years. This is done along with the Brucellosis testing. A negative test within 60 days is usually required for those being shipped.

If you have numerous birds in the area, most notably pigeons, contact with Avian TB may give your deer a false positive reading. Your deer will then be retested to make sure it was Avian TB that caused the "positive" test result.

### **Clostridial Disease**

Clostridial diseases have been reported in reindeer during summer months or when their diets change. Vaccinating the animal with killed, multivalent bacterian-toxioid (8-way vaccines) combinations is inexpensive, safe and recommended.

Clostride perfringen infections causing acute diarrhea and death usually within 12 hours may occur in fawns. Many reindeer farmers routinely inject their fawns at birth and again at 10 to 14 days with a Clostridial antiserum (Clostratox) to prevent losses due to clostridial infections.

## **Tetanus**

Tetanus is not common in reindeer unless you are in a high tetanus area. It has also been reported in reindeer that have antler trauma and wound contamination. It is recommended that tetanus toxoid (found in 8-way vaccines) be given.

Tetanus is fairly easy to recognize as all the deer will be the same. The animal will be stiff in the legs and move like a sawhorse in motion. There will probably be an infected wound somewhere on its body. They may also have a stiff neck, causing the neck and head to be extended. After about 24 hours, you will find the effected deer laying down, very stiff and prone to convulsions when physically stimulated or exposed to loud noises.

Mortality in reindeer with tetanus is about 80%.

If you suspect tetanus, contact your veterinarian immediately as high dosed tetanus toxoid, along with a broad range antibiotic, must be given.

Prevention is the best "cure" for tetanus. Make sure your pasture is clear of sharp objects and rusty metals that could cause wounds that lead to infection.

## **Respiratory Diseases**

Many factors can lead to diseases of the respiratory tract. If the reindeer is weakened by stress, exhaustion, cold and wet weather, poor nutrition, lungworms or other diseases, their body's immune system may also be weakened. Organisms normally present in the reindeer's environment become harmful when the normal defense mechanisms are lowered.

Pneumonia is one of the most common results of a weakened condition. A reindeer may be observed to move slowly, traveling with its head held low. It may have a thin, watery or a thick mucous discharge from the nose. If the lungs are damaged, it cannot transfer enough oxygen to the blood for survival.

Antibiotics can be administered in the treatment of pneumonia and other respiratory diseases.

## **Pneumonia**

Pneumonia can strike at any age, but deer under the age of one year are the most susceptible. The first sign is often coughing, rapid respiration and a low-hanging

head. Fever will accompany pneumonia, so you should monitor the animal's temperature. Quick introduction of antibiotics is essential.

### **Foot Rot**

Two diseases cause most of the lameness in reindeer: brucellosis and foot rot.

It is believed that *Fusobacterium necrophorum* (which causes foot rot in cattle) has the same effect on reindeer.

As the infection progresses, the foot and hoof may become large and deformed. An open, draining sore in the foot is usually associated with foot rot but not with brucellosis.

Foot rot can be treated with some success with penicillin injections or sulfa-containing pills (contact your vet for more information). Certain chemical foot baths have also proved effective.

Other nonspecific events such as an inflammation or injury in the hoof or mineral deficiencies have also been known to cause large, abnormal hooves.

### **Mandibular Lesions**

An abnormal swelling or deformity in the lower jaw (mandible) is called a mandibular lesion. It is an infection of the bone, originating from damage around the root of the tooth and along the gum line. Damaged teeth may fall out.

Barley beards are a common culprit of mandibular lesions. The problem will often worsen with age.

### **Setaria**

Setaria is a parasite but will be included due to its disease-like effect on reindeer. The adult worm lives free in the abdominal cavity outside the intestines. It is a white worm visible to the naked eye.

Immature setaria live as microscopic larvae in the bloodstream. Biting insects pick up these microscopic larvae (called microfilariae) in the blood and carry them to another animal when they bite.

Setaria appears to be more prevalent in interior Alaska, theoretically due to the migration of the parasite from local moose to reindeer.

### **Keratitis** (pink eye / white eye)

Keratitis is an infection of the eye. It's usually seen in the summer and is associated with dusty conditions and flies. The effected eye first appears red with tears running down the face (pink eye). In later stages, the eye clouds over and the cornea becomes white with a ring of inflammation close to the limbus. Ulceration can occur. The causative agent in reindeer is unknown, but subconjunctival injection of procaine penicillin G mixed with corticosteroids results in an almost 100% recovery rate. Other

effective treatments are the use of ophthalmic ointments daily in the eye for 4 to 5 days.

Keratitis is usually only seen in one eye, but both should be treated.

### **Broken Antlers**

Broken antlers should be cut off if possible. Reindeer become extremely agitated if broken antlers are left attached. Starvation has occurred because the animal is so distracted by the antler, it cannot eat.

It is especially important in young calves to get the broken antler off because the skull is usually also broken. Continued movement of the broken antler moves the broken portion of the skull cap around, damaging brain tissue underneath. This type of damage is almost always fatal.

Broken antlers on adults can be cut off at the break or at the base (above the pedicle). Calves should be cut as close to the skull as possible without breaking the skin.

An antiseptic or fly repellent should be sprayed to help prevent infection and maggots. Make sure any treatment or pharmaceutical is certified for use in a food animal. Rubber bands may be applied to the base to help control bleeding if necessary on adults.

### **Maggots in Antlers**

Maggots are uncommon, but not beyond the realm of possibility. In velveted animals it may occur more often, especially if the velveted practices are unclean. About the only indication that a deer has maggots is that they will shake their head regularly to no avail.

Maggots in antlers can be very hard to see unless the hair around the base is disturbed. However, if the case is serious enough, the parasites will be clearly visible. Maggots will burrow into the skull and damage the brain tissue if left unchecked. An animal will eventually die if untreated.

You will have to remove the maggots first before beginning treatments. To remove them, rinse the area in a half strength solution of creolin. Pine tar may then be used to coat the area, especially into the areas that the maggots have chewed through.

Rinsing them off with a garden hose will also work. Remember to treat the area after all the maggots are off. KRS seems to work well in killing them.

Continually recheck the area for a few days for reoccurring symptoms (until you are satisfied they are gone). If caught early enough, a relapse can be treated easily and effectively.

### **Grain Overload (Acidosis)**

Grain overload and carbohydrate poisoning can happen even if your deer have been on the same diet for months or even years. Grain overload occurs when the deer have simply eaten too much. Some symptoms to look for are lack of appetite, excessively consumption of water (due to dehydration) and distended (swollen) stomachs. The swelling is a side effect of increased water absorption due to a change in their internal osmotic pressure. The animal will experience an inflow of liquid from the blood vessels rather than an outflow. Many will exhibit symptoms of a central nervous system disorder, specifically staggering and convulsions. If it gets to this point, death is imminent. However, if the deer is diagnosed early enough, it can usually be saved.

To make the diagnosis, you must first establish the acidity level. Normal pH level in reindeer is 6.5 – 7. With grain overload, the pH level will drop to 5 or 6. The lower the number, the worse the case is.

To obtain a reading, insert a stomach tube into the animal. Put your finger over the end of the tube and pull it back out. Use pH paper to determine the reading and make the diagnosis. A simple treatment is a product used for cattle, a milk of magnesia supplement. CARMOLAX has been used with success.

Once this is under control, you have to take care of the dehydration factor and anything else that may have occurred during this time. Your vet will be able to help you with this. Be sure to give some B vitamins and an antibiotic as well. This will prevent or correct a condition in which the brain cells are destroyed. Carbohydrate toxicity causes *thiaminase* to be produced which breaks down thiamin or B1. This causes a problem in the brain called *encephalomalasia*, which is the breakdown of brain tissue. Therefore, B vitamins are essential to recovery.

Once they're stabilized and on their feet again, you may administer a probiotic for a few days or so. This will aid the rumen in working normally again.

### **Bloat**

Treatment for bloat is much the same as for grain overload. The pH level must be determined and the rest is basically the same. Contact your local vet for advice and medications needed if you do not have them on hand.

### **Yersinia (yersinosis)**

Yersinia is a bacterial infection caused by contaminated food or water, such as muddy, stagnant water in the spring.

It causes liver, enteric and intestinal ailment and usually affects a large number of animals in a herd. Animals that contract this usually die very quickly and for no apparent reason.

Your vet will be able to tell you the signs and symptoms to look for and if your area is especially susceptible. A treatment for yersinia is to add *Aureomycin* – Vitamin premix to the feed on a daily basis.

### **Periostitis or Periodontal Diseases**

This is not common for reindeer but is something of which you should be aware. If a deer has particularly bad breath, this is an indication of infection (much like in humans). It is caused by types of plant fibers getting stuck deep between tooth and gum. Look into the coarseness of the diet.

The gum becomes infected around the root of the tooth and you will see lumps on the jaw and draining, sore, bad teeth. Most of the time it is necessary to use a long term antibiotic, remove the tooth and correct the diet.

### **Copper Deficiency**

If you suspect that your animals are deficient, a blood test is the only way to tell. Some signs and symptoms are bloating, diarrhea episodes, and smaller or deformed antler growth. In later stages, the deer become very thin with a protruding back bone and sunken appearance around the hips and trail. The deer will still eat normally but will lose weight.

Once the diagnosis is made, your vet will be able to help you by administering a fast acting injectible preparation or a bolus.

### **Iodine Deficiency**

Iodine deficiency is hard to diagnose. What you will see is an increase in the number of barren females, still born calves or weak calves. Only blood tests will indicate if this is an iodine deficiency or something else.

Normal blood levels of iodine in reindeer should be between 9 and 30 mcg/dl.

### **Eye Lid Abscesses**

Eye lid abscesses can occur, but are usually short lived and easily treated. One of the things that can make the abscesses appear is hay (round bales) that is not unrolled. The deer will rub up against them, trying to get to the feed. In doing so they rub the soft part of the eyelids and an abscess can happen.

Deer can also develop abscesses by grazing in mature timothy pastures. The deer will not eat the mature timothy and when they reach down to get at the younger shoots; the mature timothy will act the same as a round bale. This will not occur if the pastures are cut and baled mowed.

One treatment that can be used is to clean the scabbed area of all hair and foreign matter (including the scab itself). Then apply a furican wound spray to the open area. IT is found that if an ointment is used, dirt and debris will stick to the ointment and infections may occur.

### **Peritonitis**

Peritonitis is an infection in the abdominal cavity usually caused by bacterial organisms. Reindeer have a high incidence of bacterial peritonitis. The primary cause is unknown. Various organisms have been isolated on culture with Actinomyces (Corynebacterium) pyogenes being the most common. Peritonitis is especially

prevalent in areas where Seteria, another abdominal worm, is common. Routine treatment with ivermectin greatly reduces the incidence of peritonitis in those areas.

### **Johne's Disease**

Also known as Mycobacterium paratuberculosis infection, this disease causes chronic debilitating enteritis. Symptoms include chronic or intermittent diarrhea and emaciation. Johne's disease is usually found in reindeer that are in close association with contaminated cattle or livestock facilities. Although no diagnostic tests or treatments have been development specifically for reindeer, control methods recommended for cattle should be followed.

### **Malignant Caterlal Fever (MCF)**

This virus affects most domestic sheep and goats without disease. If has been found to be fatal in cervidae species with the exception of fallow deer.

It is a virus acquired through nasal and ocular secretions and through the feces. Susceptible ruminants are "end hosts" so transmission to other animals in the herd is rare.

If goat or sheep pens are situated uphill or upstream from the reindeer, your deer are in danger. Never have your deer nose to nose with sheep or goats.

Clinical finds are reported to be sudden death in acute cases, but more often death is preceded by high fever, depression, enlarged lymph nodes, serious eye and nose discharges, problems with coordination and diarrhea. Deer will often have blood in the feces from prominent intestinal hemorrhage. Death usually occurs in 3 – 7 days. There is no preventative vaccine.

A zoo owner in the Edmonton area lost most of his reindeer herd to this disease. His reindeer pen was next to the big horn sheep pen. Since he has moved his reindeer, he has had no more deaths due to this disease.

### **Papillomas or Fibropapillomas (warts)**

Warts are benign tumors, most likely of viral origins, which are observed on the skin of reindeer. The tumors can appear as large, pedunculated masses up to 10 cm in diameter or as coalescing masses on the head and neck. They usually disappear after several weeks of months without treatment. Pedunculated warts may be surgically removed if they impair vision or otherwise cause irritation. Although they can grow to be very large, they are not harmful but can be quite annoying. They are attached to the reindeer by a thin stalk that can be cut at the base. AN antiseptic or antibiotic powder should be applied afterwards to prevent infection.

### **Rabies**

Rabies is a very serious disease caused by a virus and carried in the saliva of an animal. This disease can effect all animals, including humans, and left untreated will result in death.

The disease virus does its damage by multiplying many times within the animal and migrating along nerve fibers to the brain. The animal will often act strangely, losing partially ability to walk and swallow.

The disease may cause an animal to become vicious and unpredictable, attacking anything that moves. IN other cases, a rabid animal might avoid light and noise, seeking a quiet and dark place to lie down. The most typical and common sign is heavy drooling at the mouth. This is caused by the inability to swallow.

A reindeer with rabies typically exhibits some degree of impairment of locomotion such as staggering, posterior paralysis or the appearance of being blind. They can be aggressive to people as well as other deer. Infected deer should be killed, but not shot in the head. The head should be sent in to the local lab for diagnosis.

There is currently no vaccine for reindeer against rabies.