

Updates in white-tailed deer management

Dr. Douglas Wagner

Christiana, PA 17509

Cervids

The term “cervid” refers to any one of the various members of the Cervidae family; a group of hoofed animals that include such members as:

- White-tailed deer
- Elk
- Fallow deer
- Reindeer
- Axis deer
- Sika deer
- Red deer

Cervids are part of the ruminant family. Currently, there is little research done to help you as a veterinarian treat these particular animals. We rely on our knowledge from other species – particularly sheep and goats to treat and take care of these animals.

Common diseases of white-tailed deer

Common diseases of white-tailed deer include:

- CWD (Chronic wasting disease)
- EHD (Epizootic hemorrhagic disease)
- Capture myopathy
- Pneumonia
- Clostridials
- Parasites
- Rabies

Chronic wasting disease

- Changed the cervid farming industry in the U.S.
 - ▷ Farmed cervids that die or are harvested
 - Must be tested for CWD
 - ▷ Farms with a positive case
 - Quarantined/depopulated – depends on state regulations
 - ◆ Trace backs are initiated
 - ▽ Other farms are quarantined
 - ▶ Quarantine- 3 to 5 years
- Texas and Pennsylvania
 - ▷ Historically have the largest number of cervid farms/ ranches
- Texas
 - ▷ Circa 2005 – over 1,200 facilities
 - ▷ Now – around 500 facilities
- Pennsylvania
 - ▷ Circa 2005 – 1,000
 - ▷ Now – between 500-600
- Initially
 - ▷ Many states said we don’t have it, we don’t want it
 - Limited what states they would receive cervid shipments

- Reality
 - ▷ More prevalent than anyone wants to admit
- Recent improvement
 - ▷ Sales for shooter bucks have increased
 - ▷ Prices have begun to go back up
 - ▷ Research into genetic resistance continues

Top killers of white-tailed deer in Pennsylvania

Based on a study done by Dr. Jason Brooks from the Pennsylvania Animal Diagnostic Lab, Penn State, from 2000-2003 submitted for necropsy evaluation:

1. Pneumonia
2. Enterocolitis
3. Malnutrition
4. Trauma
5. Gastrointestinal parasitism
6. Cellulitis with septicemia
7. Degenerative myopathy
8. Ruminal acidosis
9. Nephritis

Top killers of white-tailed deer (adults)

Based on my own field experience working with white-tailed deer, the top three adult killers would be:

1. Stress
2. Pneumonia
3. Trauma

Top killers of white-tailed deer (fawns)

Based on my own field experience working with white-tailed deer, the top three fawn killers would be:

1. Necrobacillosis
2. Pneumonia
3. Enteritis

How to work with white-tailed deer

Remember, stress is one of the number one killers of white-tailed deer:

- Keep stress to a minimum
- Work quietly and slowly
- Be prepared
- Instruct your clients to be prepared

Major pathogens

The major players are:

- *Fusobacterium* (lumpy jaw/pneumonia)
- *Clostridium* type A (diarrhea/death)
- *E. coli* (diarrhea)
- *Trueperella* (pneumonia)
- *Pasteurella multocida* (pneumonia)
- *Bibersteinia* (pneumonia)
- *Mycoplasma* (pneumonia)
- EHD/bluetongue

Vaccine recommendations

I recommended that all deer be vaccinated with a product that covers pathogens common in cervid disease. Encourage your clients to vaccinate the does twice yearly and the bucks once yearly, twice yearly if facilities are adequate.

What have/do producers used?

- Covexin 8/Alpha 7
- *Clostridium*
- Chauvoei
- *Septicum*
- Novyi
- *Sordellii*
- Tetani
- *Perfringens* Types C & D

Collect samples:

- Submit to diagnostic lab
- Determine known pathogens
- Create autogenous vaccine for your clients

Newport Labs autogenous bacterin

What is in the product?

- *Fusobacterium*
- *Clostridium* type A
- *P. multocida*
- *Trueperella pyogenes*
- *Bibersteinia*
- *E. coli*

Does should be vaccinated during pregnancy, at 60 to 90 days prior to fawning. If vaccination history is unknown, two doses of vaccine should be given, the primary at 90, and secondary at 60 days prior to fawning.

Necrobacillosis

Necrobacillosis is an infection caused by the bacteria *Fusobacterium necrophorum*. *Fusobacterium necrophorum* is a Gram-negative anaerobic bacteria found worldwide in the soil and is often part of the normal flora in humans and animals.

Fusobacterium bacteria can cause many different forms of disease in the cervid population:

- Necrotic stomatitis
- Foot rot
- Diphtheria
- Lumpy jaw
- Pneumonia
- Necrobacillosis

The most common forms of the disease that I see in practice are:

- Lumpy jaw – Fawns and adults present with small to large swelling on the lower jaw or cervical region. The swellings may open and drain or become hard and bony like.
- Diphtheria – Mostly seen in fawns. Bacteria invade the laryngeal mucosa and cartilage (back of throat). Clinical signs include: painful and loud breathing, extended head and neck, fever, off feed, dehydration and weakness. Lymph nodes may enlarge and become visible/palpable; ulcers on the tongue are common. Treatment is the same as for lumpy jaw.
- Pneumonia – symptoms that accompany pneumonia are:
 - ▷ Fever
 - ▷ Cough
 - ▷ Increased respiratory rate
 - ▷ Off feed
 - ▷ Nasal discharge
 - ▷ Depression
 - ▷ Chest pain
 - ▷ Muscle pain/reluctance to move

Parasites

Common types of parasites found in farmed white-tail include:

- Strongyles (*Strongyloides papillosus*)
- Hookworms (*Trichostrongyloidea*)
- Whipworms (*Trichuriasis*)
- Tapeworms (*Anoplocephalidae*)
- Lungworms (*Dictyocaulus viviparus*)
- Coccidia (*Eimeria*)
- Giardia (*Giardia duodenalis*)
- Cryptosporidium (*Cryptosporidium parvum*)
- Liver Flukes (*Fasciolidae*)

An atypical coccidia has been identified in wild white-tailed deer and has now also been identified in farmed white-tailed deer, *Emieriazajace*. *Emieriazajace* is half the size of normal *Eimeria* but slightly larger than a cryptosporidium cyst on fecal flotation. It does respond to normal anti-coccidial agents.

Chemical immobilization

Drugs used in the chemical immobilization of white-tailed deer:

- Class III drugs
 - ▷ Telazole®
 - ▷ Ketamine®
- Alpha 2 adrenoreceptor agonists
 - ▷ Xylazine
- Reversal agents
 - ▷ Yohimbine
 - ▷ Tolazine®
- BAM
- MK or MKM

What is an effective mix of xylazine and Telazole?

My gold standard for darting deer is:

- 400 mg xylazine (4cc) mixed in one bottle of Telazole.
- Dose: 1cc of mixture /100 pounds of body weight
- Yields out to be on average:
 - ▷ 2 bucks per bottle
 - ▷ 4 does per bottle

BAM

BAM stands for:

- Butorphanol (50 mg/mL)
- Azaperone (100 mg/mL)
- Medetomidine (40 mg/mL)

It was developed by ZooPharm (Wildlife Pharmaceuticals Inc) and produces good analgesia with a wide species application.

MK or MKM

MKM stands for medetomidine HCL 3.3 mg/kg + ketamine HCL 150 mg/mL + midazolam HCL 5 mg/mL. It is generally quick knock down and has a duration of 15 minutes or so, with reversal in three to five minutes.

Anesthetic emergencies associated with chemical immobilization

The following are anesthetic emergencies associated with chemical immobilization:

- Respiratory distress/arrest
- Cardiovascular shock/failure
- Hyper hypothermia
- Aspiration pneumonia
- Capture myopathy
- Bloat
- Seizures

Bloat

Clinical signs include rapid shallow breathing, increased CRT time and an abnormally distended abdomen. For treatment, place the animal in sternal recumbency with the head and neck extended, and pass a stomach tube. To prevent bloat, the animal should have proper positioning and be in sternal recumbency. Avoid direct sun exposure and control food intake when possible prior to immobilization.

Capture and immune resistance

At the University of Otago in New Zealand, a study was conducted on the immune capabilities of physically captured Red deer by a mitogen response test. It was found that the immune response of these deer is zero after capture and does not return to normal levels for approximately 40 days post-capture. Thus, there exists a window of susceptibility of infection and disease for up to six weeks post capture.

Capture myopathy

Destruction of muscle fibers can be seen as early as two minutes from onset of a hard chase. Common clinical signs include non-recovery (shock/death), sudden death 24-48 hours post-event, hind end lameness/weakness two days to three weeks post-event and brownish urine (myoglobin is present). To prevent capture myopathy, abort capture if the deer is chased more than two minutes, and re-schedule the event no sooner than 24 hours.

Administration of antibiotics

Always administer antibiotics anytime a deer is darted. Why? Because of the use of an injection method that is both non-sterile and rapid. Also, treat and prevent aspiration pneumonia.

