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 Tail Deer
  - Elk (Wapiti)
  - Fallow Deer
  - Reindeer
  - Axis Deer
  - Sika Deer
  - Red Deer

Cervids

- 17 Genera of Cervids (deer)
  - 42 Species
- Each Species can have many sub-species
  - Red deer - 28 sub-species
- Red deer, Wapiti (Elk), Fallow and Sika
  - Considered most amenable to farming
- Rusa, Sambar, Axis and Whitetail
  - Less amenable- still profitable

US Cervid Industry

- Highest proportion of animals raised
  - Whitetail
  - Elk

PURPOSES of DEER FARMING

- **Avenues of deer farming include:**
  - Hunting Industry:
    - Raising Shooter Bucks / Breeding stock
    - Raising Genetically superior fawns
    - Lodging / Dining
  - Meat Production
    - Venison
  - Specialty Products
    - Hides
    - Antlers (Velvet)
    - Urine
    - Crafts

US Cervid Industry

- **Cervid Farming**
  - **One of the fastest growing industry in rural America.**
- **Cervid farming industry-**
  - **has a direct economic impact of $893.5 million.**
- **Economic activity-**
  - **supports 29,199 jobs in rural America.**

Economic Impact of the US Cervid Farming Industry Aug. 2007: ag and Food Policy Center, Texas A&M University

US Cervid Industry

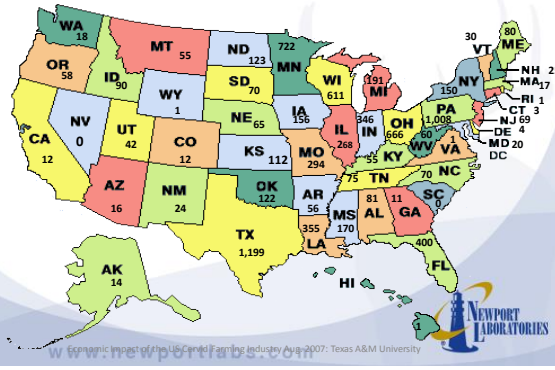
- **Indirect economic impacts-**
  - **Feed, veterinary supplies, fuel ect- $2.3 billion.**
- **Impact of hunting dollars spent-**
  - **$757 million is generated by the cervid farming industry.**
- **Total impact of the industry-**
  - **$3.0 billion annually.**

US Cervid Industry

- Number of cervid farms- 7,828
- Number of hunting preserves-2,639
- Number of Farmed Deer in US- 300,000
- Small # of farms and animals generating a 3 billion dollar a year business

Economic Impact of the US Cervid Farming Industry Aug. 2007: Texas A&M University

Number of Cervid Farms by State



Economic Impact of the US Cervid Farming Industry Aug. 2007: Texas A&M University

MONETARY VALUE OF THESE ANIMALS

- PA is the second largest deer farming state in the United States with 1008 registered / monitored herds.
  - PA's direct sales for the 2007 season was $40.3 million while generating 3,500 jobs.
  - Sales for 2010 increased to $47.1 million.
- Texas is the largest deer farming state in the United States with 1,199 Ranches.
  - Texas' direct sales for the 2007 season was $652 million dollars while generating 7,335 jobs.

Economic Impact of Pennsylvania's Deer Farms, Feb. 2007

US Cervid Industry

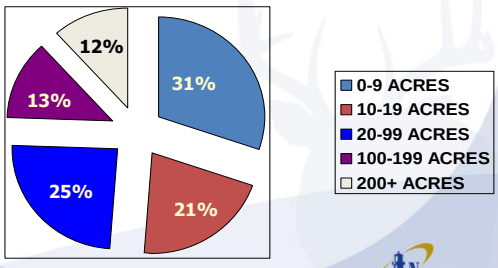
- Top producing states
  - Texas, Pennsylvania, Michigan, Wisconsin and Ohio
- Typical Cervid Farm
  - Family run operation
  - average of $53,650 in annual sales
  - 50% less than 20 Acres

US Cervid Industry

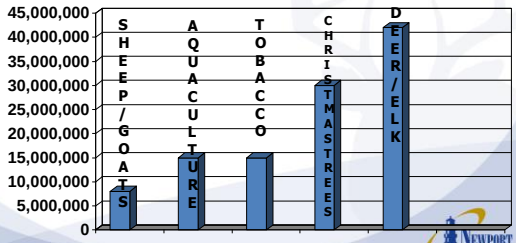
US Cervid Industry

US Cervid Industry

DEER FARMS BY ACRES OF LAND



DEER FARMING COMPARED TO OTHER AGRICUTURAL SPECIALITIES



US Cervid Industry

- Previous data gathered from 2007 AG Census
- Industry has continued to grow
- Estimated # of farmed deer 750,000
- Production continues to grow due to:
  - Increasing demand for deer products
  - Minimal acreage requirements
  - High potential return on low # of animals
  - TDA 2012- 5 Sales – 5.2 Million

US Cervid Industry

- Common Disease of Whitetail
  - Pneumonia
  - Lumpy Jaw
  - Epizootic Hemorrhagic Disease (EHD)
  - Enteritis
  - Cellulitis with spepticemia
  - Antler infection/brain abcess
  - Parasitism

Necrobacillosis

- **What is it ?**
  - An infection caused by the bacteria *Fusobacterium necrophorum.*
  - *Fusobacterium necrophorum* is a Gram negative anaerobic bacteria.
  - It is found world wide in the soil and is often part of the normal flora in humans and animals.

Necrobacillosis

- ***Fusobacterium* bacteria causes disease in both humans and animals**
- **In humans it is the cause of:**
  - 10% of acute sore throats
  - 21% of reoccurring sore throats
  - Meningitis
  - Thrombosis (blood clots)
  - Urogential (reproductive and urinary systems)
  - Gastro intestinal

Necrobacillosis

- At this time disease caused by *Necrobacillosis* is considered one of the leading causes of death / loss in the cervid industry.
- Every producer has *Fusobacterium bacteria* in the soil of their farm / ranch.
- Soil that has a high manure content has elevated numbers of the bacteria present.
  - Over-crowed deer pens!

Necrobacillosis

- ***Fusobacterium bacteria* can cause many different forms of disease in the Cervid population:**
  - Necrotic stomatitis
  - Foot rot
  - Diptheria
  - Lumpy Jaw
  - Pneumonia

Necrobacillosis

- **Predisposing factors such as:**
  - Stress, heat, cold, overcrowding or poor nutrition result in a higher incidence of infection.
- *Fusobacterium* **cannot** penetrate normal healthy tissue.
- *Fusobacterium* gain their access to tissues through cuts or abrasion in skin or mucus membranes.
  - Or through tissue that has been damaged by another bacteria, viral or chemical agent

Necrobacillosis

- Once the bacteria has gained entry to the body it can spread to any part via the vascular system.
- Clinical signs vary bases on the location of the bacteria in the body.

Necrobacillosis

- Signs that you may see if the deer is affected by *Necrobacillosis* :
  - Depressed
  - Fever
  - Rough hair coat
  - Off feed
  - Considered a poor doer
- Fawns who are affected have a higher death rate than adults due to their lack of nutritional reserve.

Necrobacillosis

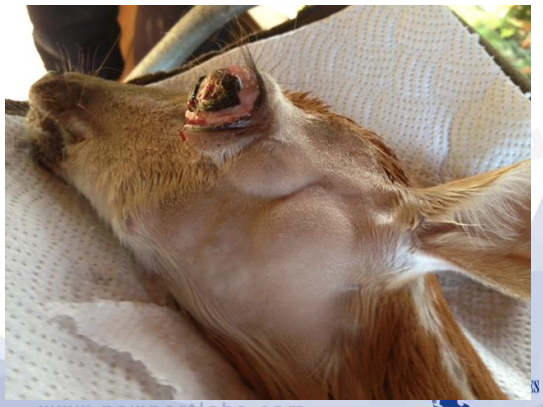
- The most common forms of the disease that I see in practice are:
  - Lumpy Jaw
  - Diphtheria
  - Pneumonia
- **Lumpy Jaw**
  - Fawns and adults present with small to large swelling on the lower jaw or cervical region.
  - The swellings may open and drain or become hard and bony like.

Necrobacillosis

Adult deer with Lumpy Jaw

LUMPY JAW IMAGES

LUMPY JAW IMAGES



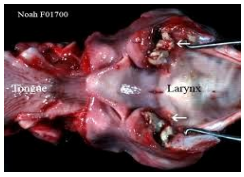
LUMPY JAW

- **Lumpy Jaw**
  - Fever and off feed are common signs
  - Oral ulcers are absent in most cases
  - Treatment should consist of antibiotics and supportive care (fluids, anti-inflammatories, nutrition)
  - Antibiotics of choice in my area are:
    - Zactran, Nu-Flor, Oxytetracycline, Long-acting Penicillin

Diphtheria

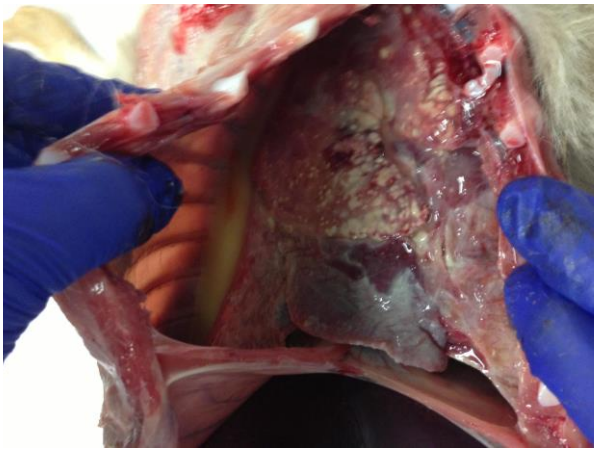
- **Diphtheria**
  - Mostly seen in fawns
  - Bacteria invade the laryngeal mucosa and cartilage (back of throat)
  - Clinical signs include: painful and loud breathing, extended head and neck, fever, off feed, dehydration and weakness
  - Lymph nodes may enlarge and become visible / palpable, ulcers on the tongue are common
  - Treatment : same as for Lumpy Jaw

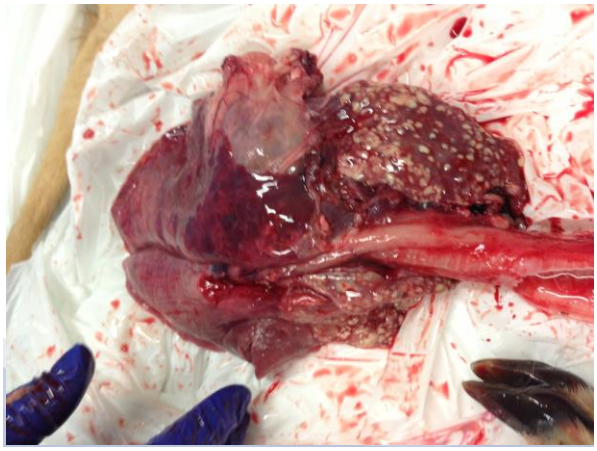
Necrobacillosis - Diphtheria



Necrobacillosis – Pneumonia

- **Pneumonia**
  - Dr. Jason Brooks of Penn State Univ. has data showing the most common bacteria isolated from cervids who died of pneumonia to be *Fusobacterium.*
  - We think the initial infection is caused by another agent either bacterial or viral and *Fusobacterium* is a secondary infection that leads to death.
  - Animals who do recover often do not reach full potential.
  - Treatment : same as for Lumpy Jaw and Diptheria
    - One dose of antibiotic treatment is often not enough
    - Animals should be covered with antibiotics for at least 7-10 days





Pneumonia

- Most common respiratory isolates at NPL
  - Trueperella
  - Pasteurellea
  - Fusobacterium
  - Bibersteinia
  - Mycoplasma

Clinical Signs

- **Flared Nostrils**/ increase respiratory rate
  - Often only sign noticeable
- Coughing is absent
- Nasal discharge is absent
- Decreased feed intake ???
  - Most owners, unless very observant will not be able to determine if intake has changed

Pneumonia

- Treatment

EARLY DETECTION

Pneumonia

- How will you touch the animal
  - Fawn
    - Bottle fed
    - Pasture raised
  - Adult
    - Handling facility with dark room and a chute
    - Darting

Pneumonia

- If the animals is to be darted:
- If you want it to live

–Use BAM

CHEMICAL IMMOBILIZATION

- **BAM:**
  - Acronym for:
    - Butorphanol (50mg/mL)
    - Azaperone (100mg/mL)
    - Medetomidine (40mg/mL)
  - Developed by ZooPharm (Wildlife Pharmaceuticals Inc).
  - Produces good analgesia with a wide species application.

CHEMICAL IMMOBILIZATION

- **BAM:**
  - Successfully used in White tail deer, mule deer, elk, bison, moose, pronghorn, bighorn sheep, waterbuck, and bear.
  - Does not work in fallow deer.
  - Administered through darting:
    - Most species can be darted with 1 or 2cc darts

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CHEMICAL IMMOBILIZATION

- Most commonly used combination to immobilize White tail deer is Xylazine and Telazole®
  - Xylazine is cheap
  - Telazole® is expensive
- Farmers will try to save money by increasing the amount of Xylazine used.
  - This leads to poor anesthesia, increased stress and re-dosing.

CHEMICAL IMMOBILIZATION

- The more stressed the deer are when they are darted the more anesthetic drugs they will require.
  - Remind your clients that the more they train their deer the less expensive it will be in the long run.
  - Different farms will require variations in dosing regimes.

CHEMICAL IMMOBILIZATION

- What is an effective mix of Xylazine and Telazole® ?
  - 400 mg Xylazine (4cc's) 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 Doe's per bottle
- This is my gold standard when darting deer.

CHEMICAL IMMOBILIZATION

- If the deer are trained to run through a shoot, a mix of:
  - 600 mg Xylazine / bottle of Telazole
  - 1cc of mixture /100 pounds of body weight
    - Yields out to be on average:
      - 3 Bucks per bottle
      - 5-6 Doe's per bottle

BAM

- With the price reduction the cost per dose is comparable to Xylazine/Telazole combination
- You the vet have to fill out a script for your client and send to ZooPharm
- You need to be compensated for you time and your responsibility
- YOUR CLIENTS NEED TO HAVE THIS ON HAND!
  - YOU WILL SAVE MORE DEER WHO ARE COMPRAMIZED IF YOU USE THIS TO PROVIDE ANESTHESIA

Pneumonia

- STRESS
  - Have a plan
  - Know when to stop
  - Don't be the immediate cause of death

Pneumonia

- Fluids
  - Most often overlooked
  - Fluids will make you look like a better vet than any AB ever will
  - Dextrose is your friend
    - Fawns!!!!!!!!

Pneumonia

- Antibiotics
  - Long lasting/ broad spectrum
    - Zactran
    - Draxxin
    - Nuflor
    - Zuprevo
  - Goal is for animal to be covered for 14 to 21 days
    - Often requires repeated dosing
    - Administration will often dictate choice of AB

Pneumonia

- NSAIDS
  - Flunixin
    - 1 to 2 cc per 100/lbs
- Steroids ????
  - Dexamethasone
    - Used at initial treatment
- H2 blocker/ proton pump inhibitor
  - Must in every case
  - Lansoprazole or Omeprazole

Pneumonia

- Nutrition
  - If the animal is to be treated and turned back out
    - Pray it eats
  - Recommend keeping animal in sick pen/handling facility if possible
    - Monitor feed intake
    - If tame enough tube feed slurry
    - Be creative
      - Chaff hay
      - Oatmeal, Peanut Butter, Applesauce, Beat Pulp

Pneumonia

- Do diagnostic testing!!!!!
- If the animal is anesthetized:
  - Deep nasal pharyngeal swab
  - Trans-tracheal wash
- If it dies
  - No excuse not to do diagnostics!!
    - Make it happen, tell your client if it dies call me right away
    - Make it a priority
      - Take your family with you, or make the producer bring it to you

Pneumonia

- One shot of AB is not an adequate treatment for this disease
- Be an advocate for you client
- Generally not isolated cases
  - Incidence is probably higher than your client realizes
- Do diagnostics

Pneumonia

Treatment Options?

- Antibiotics
- Anti-Inflammatories
- Anti-Histamines
- Anti-Ulcer medication
- Vitamins (B and C)
- Fluids
- Nutrition

Necrobacillosis

- **Prevention**
  - Farm management – good nutrition, do not over-crowd pens, prevent manure build up
  - Early treatment- daily monitoring of herd / individuals
  - **Vaccination**
    - Commercial Products- have been used with varying success, all off label
    - CMV– made from samples collected on your client/clients farm

Clostridium Perfringens Type A

- **Clostridium Perfringens Type A = "Yellow Lamb Disease"**
  - Occurs worldwide and is the most common type of this species that is isolated from soil.
  - A strain of bacteria that can rapidly produce harmful amounts of toxins if an intestinal disruption occurs.
  - Signs include : weakness, depression, fever, anemia, fast breathing, permanent recumbency.

Clostridium Perfringens Type A

- Clostridium Perfringens Type A has also been associated with:
  - **Abomasal ulcers and Abomasal hemorrhage**
    - Signs include: quick onset of abdominal distention with pain, bloat, depression, feed refusal and sudden death.
  - **Hemorrhagic bowel syndrome (HBS)** = bloody gut, or dead gut.

Clostridium Perfringens Type A

- **Hemmoragic Bowel Syndrom (HBS)**
  - **Fawns:**
    - Few symptoms may be seen
    - May be off feed and bloody diarrhea may or may not be present
    - Diagnosis made at necropsy
  - **Adults:**
    - Often off feed, depressed and lethargic
    - Bloody diarrhea often seen
    - Treatment consists of antibiotic therapy and supportive care


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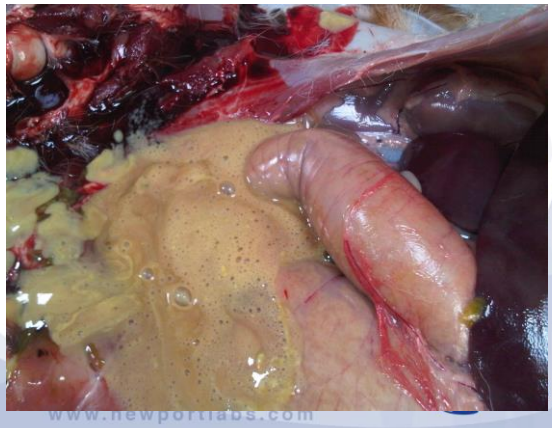
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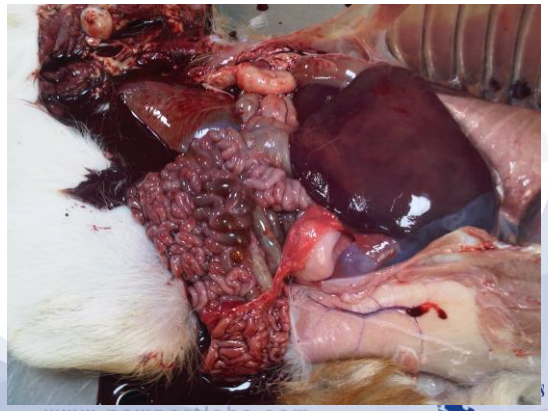

Clostridium Perfringens Type A

- Treatment
  - Generally unrewarding for fawns
    - Supportive care
    - Broad Spectrum AB
- Prevention
  - Good management
  - Vaccination
    - Commercial- used with varying success (off label)
    - CMV- have had good success

EHD

- Three forms of the disease
  - Peracute
  - Acute
  - Chronic
- Peracute-generally found dead with no clinical signs observed

EHD

- Acute
  - Clinical signs
    - Swollen tongue, foaming/drooling from mouth
    - Ataxia, weakness
    - Rough hair coat
    - ADR
- Chronic
  - Laminitis, weight loss, diarrhea, POOR DOER

EHD

- Treatment
  - Steroids
  - AB to prevent secondary infection
  - Supportive care
    - Fluids
    - Move to environment with temperature control
      - Air-conditioned dark room
  - Get shovel
    - Dig hole

Antlers

- Antlers are the fastest growing tissue
- The bucks begin to re-grow the antler in the spring.
- The inner hard core is covered by a soft, skin-like, vascular tissue called *velvet.*
- In late summer the bucks will begin transitioning to Hard Antler.
- The blood flow to the antler will decrease and the bucks will begin to rub off or shed the velvet.

Antler Damage/Infection

- **Broken Tines:**
  - One option would be to leave it alone and see if it will reattach.
  - If the velvet is broken I recommend removing the broken portion of the antler and leaving enough velvet to make a flap and surgically close.
  - The velvet will heal and the antler will continue to grow
  - Always cover with long acting antibiotics
  - Use sterile procedures to avoid an infection under the velvet at all cost.

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Broken Tines

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Antler Damage/Infection

- **Antler infections:**
  - Commonly occur in early August
  - Results from a break in the velvet and flies will lay eggs
  - The bucks will get very sick very fast – often septic
  - Generally they become off feed, depressed and febrile.
  - If the buck needs to keep his rack, place a tourniquet around the base of the horn and strip off all the velvet.
  - If the rack is not needed this season, place a tourniquet and remove the entire rack.

Antler Damage/Infection

- The quicker these animal are identified and treated the better results will be had.
- To anesthetize these animal I recommend using BAM®
  - BAM® offers quick induction and reversal
- Fluid therapy and antibiotic treatment are a must while these animals are anesthetized.

Surgery

- **Most common needs for surgery in practice are:**
  - Hernia repair - traumatic or congenital
  - Orthopedic - pinning or plating
  - Amputation
  - Enuculation
  - Laceration
  - Antler repair / removal
  - Dystocia / C-section

Surgery

- Most surgery can be done in the field except for orthopedic procedures.
- Good planning and preparation is a must for either in-house or field surgery.
- If the animal is to be transported to your facility give injectable anesthesia before removing from transport box.
- Use short acting injectables (Xylazine/Ketamine) if gas anesthesia is to be used.

Surgery

- If gas anesthesia is not available:
  - The use of long acting injectables (Xylazine/Telazole®) or BAM® in combination with local nerve blocks is a nice combination.
- If the animal begins to move or is too light during the procedure re-anesthetize with Ketamine® IV.
- IV catherization should always be performed and fluids administered along with antibiotics.
- After surgery move animal back to transport box for reversal and extubation.
- My goal is for the animal to go under in their box and wake up in their box with my hospital and all of its stresses absent from their memory

Fractured Limbs

- **WHAT DO YOU DO?**
  - Anti-inflammatories: Banamine
  - Antibiotics: Broad spectrum
- To Splint or not?
- Compound fractures:
  - Options are: surgery or amputation

COMMONLY USED ANTIBIOTCIS

- Remember : None of the antibiotics we use are labeled for white tail deer.
- Always recommend at least a 30 day slaughter withhold.
- The dose range that is typically used is the same as the cattle dose or the sheep and goat dose.

COMMONLY USED ANTIBIOTCIS

- The less we have to capture the animal to provide treatment, the less stress we create.
- Daily antibiotic therapy is hard to administer, unless given orally usually in the feed.
- Single dose long acting Antibiotics are the preferred method of treatment.

COMMONLY USED ANTIBIOTCIS

- **Excede® (Ceftifur) 200mg / mL**
  - Wide range of effectiveness against both Gram Positive and Gram Negative bacteria.
  - Side effects: loss of edible muscle tissue at injection site.
  - Due to its long acting affects, this antibiotic should be thought of when doing routine work.
  - Dose: Excede® – 1.5cc per 100lbs SQ or IM every 7 days

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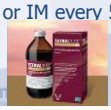
COMMONLY USED ANTIBIOTCIS

- **Tetradure®(Oxytetracycline) 300mg / mL**
  - Wide range of effectiveness against both Gram Positive and Gram Negative bacteria.
  - Good penetrating qualities in all tissues (including brain and spinal cord).
  - Side effects: Lameness associated with the injection site (especially given IM).
  - If injection is given IM additional side effects include: restlessness, ataxia, swelling of eyes and ears, respiratory abnormalities, frothing at the mouth, collapse, and death.
  - Dose: 4.5cc per 100 lbs SQ or IM every 5 days



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COMMONLY USED ANTIBIOTCIS

- **Nuflor® (Florenicol) 100mg / mL**
  - Wide range of effectiveness against both Gram Positive and Gram Negative bacteria.
  - Side effects: inappetance and decreased water consumption. Both are usually short lived.
  - Should be considered as it is a good alternative to Tetradure.
  - Dose: 3cc per 100lbs SQ or IM every 48 hours.
  - Alternative dose: 6cc per 100lbs SQ only if one dose is desired.

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COMMONLY USED ANTIBIOTCIS

- **Zactran (Gamithromycin) 150mg/ml**
- *In vitro* activity against *Mannheimia haemolytica, Pasteurella multocida, Histophilus somni* and *Mycoplasma bovis*,
- Has been given to deer IM with no side major effects noted, manufacturer recommends SQ only
- Side effects- swelling at injection site
- Dose- 2 cc per 100lbs SQ

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COMMONLY USED ANTIBIOTCIS

- **Draxxin® (Tulathromycin) 100mg / mL**
  - Has been given to deer IM with no side effects noted, manufacturer recommends SQ only.
  - Side effects: Head shaking and foaming at the mouth.
  - Dose: 1.1cc per 100lbs IM or SQ as a one time dose.

COMMONLY USED DRUGS

- **Dexamethasone 2mg / mL**
  - **Use / Indications –** used mainly for its anti-inflammatory affects. Also used in the treatment of trauma and shock.
  - Negative side effects include: suppression of the immune system and the formation of ulcers.
  - Dose: 1-2cc per 100lbs IV,IM,SQ once daily.

COMMONLY USED DRUGS

- **Banamine® (Flunixin Meglumine) 50mg / mL**
  - **Use / Indications** - used mainly for its anti-inflammatory affects, endotoxic affects and pain control.
  - All animals that are being darted or worked in the chute should be given a dose of Banamine ® for its anti-inflammatory affects and pain control.
  - Side effects: Ulcers and Renal damage.
  - Dose: 1-2cc per 100lbs IV or IM once to twice

COMMONLY USED DRUGS

- **Pepcid AC (Famotidine) - 10, 20, 40 mg / tablet**
- **Lansoprazole or Omeprazole**
- **H2 blocker/ proton pump inhibitor**
  - **Must in every case**
- Sick fawns are generally stressed = the higher the stress level of the fawn the more probable an ulcer will form.
  - Easier to prevent an ulcer then to treat one.

WORDS TO LIVE BY

- Knowledge is power!
- Knowledge is power!
- **Knowledge is power!**

•Back to the Basics

PHYSICAL EXAM

- The most valuable item in any situation is your brain.
- You must use your brain to gather every piece of available information.
- The better you understand a situation the better you will be able to chose the appropriate treatment.

PHYSICAL EXAM

- A **PHYSICAL EXAM** = is an overall picture of the animal that identifies what is normal and what is abnormal.
  - Knowing what is normal is just as important as identifying what is abnormal.
  - A physical exam involves every aspect of the animal from the tip of the nose to the tip of the tail.

PHYSICAL EXAM

- We all are tired
- We all have too many things to do
- We all get stressed and are under pressure to do things quickly
- **DO NOT RUSH YOUR PHYSICAL EXAM**
- **A QUICK TPR IS NOT A PHYSICAL EXAM**

- HISTORY
  - Take the time and ask the right questions
  - If the fawn has been sick for more than 10 minutes then it has been given something
  - Find out if this is an isolated case or the tip of the iceberg
  - Try and separate fact from conjecture
    - Many times the owner will say the fawn was fine yesterday…….were they?

PHYSICAL EXAM

- Your physical exam starts outside the pen.
  - Observe the fawn from a distance.
  - Is the fawn resting comfortably or does it seem distressed?
  - Is the respiratory rate normal-fast-slow?
    - Are the nares flared ??????
  - Is the fawn aware and alert or does it seem depressed?
  - If it is moving, is the head held normal, can it walk normally, does it seem weak?

Touch the Fawn Everywhere

- Do any of the joints feel swollen?
- Do they seem painful when you touch or flex a joint?
- Is the jaw or neck swollen?
- Does the abdomen feel hard and / or swollen?
- Is the belly button soft and / or swollen?

Look at Every Part of the Fawn and Be Critical

- Are the eyes clear?
  - Do they have a discharge?
  - Any signs of an ulcer?
- Are the gums the right color?
- Do you see any ulcers:
  - On the tongue/under it/hard palate
- Do the feel moist or dry?
- Does the skin tent for too long when you pull on it?
- Is the hair standing up?
- Is the hair coat rough and / or dull?

Look and Listen

- Listen for gut sounds on both sides of the abdomen.
- Does the fawn look bloated?
- Does the fawn have diarrhea?
  - Do you see signs of it in the pen or on the walls?
- If the fawn has diarrhea what color is it?
  - What does it smell like?

PHYSICAL EXAM

- **PHYSICAL EXAM:**
  - T = Temperature (normal 101°F)
  - P = Pulse (???????)
  - R = Respirations (16-20)
- **Check the color of the fawns gums (CRT)**
  - Pink = good
  - Red / Purple = bad
  - White = bad very bad
  - Blue = bad very very bad
- **Check hydration**
  - Gums should be moist (if dry and tacky = dehydrated)
  - Tent skin, should fall back down quickly (if not = dehydrated)
- **Listen to heart , lungs, and gut sounds.**
- **Remember to look at the fawn all over and critically.**

Problems to Identify

Questions to ask your producer:

- Who did not eat as much as they did last feeding?
- Who was slow coming up to the bottle?
- Who is laying around and looks depressed?
- Who has scours?
- Who has flared nares ?

DEHYDRATION

- **Dehydration**
  - Very common in sick fawns
  - Stress!!!- what is the least stressful method to rehydrate
    - Tube the fawns with Lactated Ringers, E-lyte, Saline, Milk replacer, Gatorade, Pedialyte, water.
    - Sub-cue fluids: Lactated Ringers, Normasol, Saline
    - IV Fluids: Lactated Ringers, Normasol, Saline, any of these three mixed with Dextrose.

Energy Sources

- Hypoglycemia- very common
  - I will often give a dose of dextrose I.V. or orally and wait a few minutes before stressing them by rehydrating
- Quick energy sources:
  - Dextrose (sugar) or Karo Syrup given in the mouth.
  - Quickstart (high calorie paste)
- Tube feed:
  - Electrolytes mixed with dextrose, or
  - A mix of milk replacer and dextrose.

"DO NOT TUBE FEED WITH MILK IF THE FAWN IS COLD."

Energy Sources

- If they are flat out and down:
  - 1 – 3 cc's of 50% Dextrose in the vein.
  - 10 to 20cc's of fluids in the vein (Lactated Ringers, Normasol R, Plasmalyte, Saline)
  - Either one of these treatments should be followed by a bottle or tube feeding once fawn is stable.
- If they are in critical condition you may want to consider placing a continuous IV drip.

EMERGENCY FAWN CARE

- **EMERGENCY DRUGS:**
  - 1. Dopram 20mg/mL = Respiratory stimulant
    - Dose: 0.5-1mg/kg IV or injected under tongue
    - (8lb fawn = 0.1-0.5cc)
  - 2. Epinephrine 1:1000 (1mg/mL) (Epi) = Increase / restarts heart rate.
    - Dose: 0.5-1mL IV
    - (8lb fawn = 0.05-0.1cc IV)
  - 3. Dexamethasone 2mg/mL = Steroid (excellent for shock)
    - Dose: 1-2cc / 100 lbs IV, IM, SQ
    - (10lb Fawn = 0.3-0.5cc IV, IM, SQ)
  - 4. Dextrose 50% Solution= Sugar
    - Dose: 0.1-0.2mL/kg IV or PO
  - 5. Fluids (Lactated Ringers, PlasmaLyte, Saline)
    - Dose: 2-3mL/kg/hr SQ or IV
    - (10lb Fawn = 9mL/hr SQ or IV)

FAWN EMERGENCY KIT

DRUGS	SUPPLIES
Banamine®	Thermometer
Dexamethasone	Stethoscope
Dopram®	Pen Light
Epinephrine	Feeding Tube
Dextrose	Mini Surgery Pack
Lactated Ringers w/ IV Set	Bandage Material
Activated Charcoal Gel	Tourniquet
	Antibacterial Soap
	Needles and Syringes

- Fawns have Zero body reserve
- Most common cause of death I received on necropsy reports was- "death due to emaciation"
- Be Aggressive
  - Address hypoglycemia
  - Rehydrate
  - Anti inflammatory/steroids- if febrile or shocky
  - AB ????
    - Many times have to go with your intuition
    - Blood work- in house?, how far back to you clinic ?
  -

Common Problems

- Slacking off in feed
- Diarrhea
- Lumpy Jaw
- ADR (Dull eyes, rough hair coat)
- Hunch backed
- Straining

SCENARIO 1

- **SYMPTOMS:** A 24 day old buck fawn began having loose manure 1 day ago.
- **FIRST:** Physical Exam (including TPR)
- **PE Findings:**
  - T = 101.2° P = 60 R = 28 Wt = 17 lbs
  - watery manure that is brownish in color. No odd odor noted.
  - mm = pink , moist CRT = Normal
  - Skin tent = Normal
  - Abdomen = Gut sounds are increased
  - Heart / lungs = Normal
  - Appetite is good : ate last feeding and was hungry for more.

SCENARIO 1

- **With PE information WHAT DO YOU KNOW?**
  - A FEBRILE (does not have a fever)
  - LOOSE MANURE – brownish in color
  - GOOD APPETITE
  - NOT DEHYDRATED

SCENARIO 1

- **WHAT DO YOU DO?**
  - Place on Electrolytes for 24 hours
  - Administer charcoal, anti-diarrheas (ex: pepto bismol), pro-biotics, etc.
  - Monitor hydration: give fluids as necessary
  - Antibiotics ?
    - Tetradure or Excede would be my antibiotics of choice
  - Perform a fecal analysis / culture
  - Employ bio-security procedures

SCENARIO 1 … 2 DAYS LATER

- **SYMPTOMS:** Now 26 day old buck fawn with watery diarrhea and flecks of frank blood are noted. Drainage noted from right eye.
- **FIRST:** Repeat Physical Exam (including TPR)
- **PE Findings:**
  - T = 103.6° P = 88 R = 60 Wt = 15.8lbs
  - Lethargic / depressed, decreased appetite – did not finish last 2 feedings
  - mm = pink, slightly tacky CRT = Normal
  - Skin tent = Prolonged
  - Lungs = Left lung has a few crackles and decreased sounds over portions. Right lung is clear
  - Heart = Normal
  - Abdomen = Gut sounds increased
- **Previous History:**
  - Owner did not have time to get a fecal sample analyzed
  - Owner gave antibiotics yesterday (Nuflor)
  - Stool firmed slightly when on electrolytes for 24 hours

SCENARIO 1 … 2 DAYS LATER

- **With PE information WHAT DO YOU KNOW?**
  - FEBRILE (has a fever)
  - DEHYDRATED
  - WEIGHT LOSS
  - LOW BLOOD SUGAR (Hypoglycemic)
  - DIARRHEA IS WORSE: now contains blood
  - ROUGH LUNG: respiratory problem
  - POTENTIAL EYE PROBLEM / ULCER FORMATION?

SCENARIO 1 … 2 DAYS LATER

- **WHAT DO YOU DO?**
  - Dextrose orally or IV
  - Fluids Replacement SQ or IV
- Once Re-hydrated :
  - Broad spectrum Antibiotics
    - Chose one with the ability to penetrate lungs and GI tract
  - Anti-inflammatory : Banamine®
- Tube feed with Electrolytes / offer bottle
- Treat eye with medication (Triple Antibiotic ophthalmic ointment)
- Collect manure for a fecal /culture
- Continue Bio-security procedures

SCENARIO 1 : THE NEXT DAY

- **SYMPTOMS / HISTORY:** The fawn's overall attitude has improved;
  - Appetite is better this morning
  - Diarrhea is still the same
  - A small grayish area appeared overnight in the center of the right eye, more drainage than yesterday and the fawn is squinting today.
- **PE Findings:**
  - T = 101.6° P = 60 R = 44 Wt = 16.0 lbs
  - mm = Pink, moist CRT = Normal
  - Hydration = Normal
  - Lungs = improved but still rough
- Lab Results:
  - Fecal analysis = +++ Coccidia

SCENARIO 1 : THE NEXT DAY

- **With PE information WHAT DO YOU KNOW?**
  - A FEBRILE
  - NOT DEHYDRATED
  - INCREASED APPETITE
  - SLIGHT WEIGHT GAIN
  - IMPROVED ATTITUDE
  - PNEUMONIA / RESPIRATORY INFECTION
    - Antibiotic therapy seems to be appropriate
  - ULCERATIVE LESION IN EYE / PAINFUL
  - DIARRHEA = DIAGNOSED WITH COCCIDIA

SCENARIO 1 : THE NEXT DAY

- **WHAT DO YOU DO?**
- Anti-inflammatories : Banamine®
  - To control the eye pain
- Aggressive topical treatment for eye ulcer:
  - Atropine ointment applied to eye twice daily
  - Broad spectrum Antibiotic ointment every four hours
- Treat for coccidia
- Repeat antibiotics for respiratory if short acting antibiotics were used.
- Continue supportive care treatment as necessary.
- Strict Bio-security procedures.

SCENARIO 1 : TWO DAYS LATER

- **SYMPTOMS:** Fawns attitude is greatly improved:
  - Eye is no longer draining: ulcer is smaller in size
  - Stool is firmer with an occasional pellet
  - Lungs are clear
  - TPR is within normal limits
  - Appetite is normal

SCENARIO 1 : TWO DAYS LATER

- **With PE information WHAT DO YOU KNOW?**
  - Therapy regimen for eye is effective.
  - Antibiotic therapy for pneumonia seems appropriate.
  - Diarrhea seems to be resolving.

SCENARIO 1 : TWO DAYS LATER

- **WHAT DO YOU DO?**
  - Continue to monitor lungs closely
  - Repeat fecal
  - Continue treating eye until all signs are resolved
  - Continue Bio-security

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