Workshop # 4
Common Beef Cattle Diseases

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Definition

• Common-occurring or appearing frequently
• Beef-not Dairy
• Disease-any condition that results in deviation from normal function.
  • Infectious and Non-Infectious causes
References

• Beef study 2007-2008 USDA NAHMS


Beef study 2007-2008
USDA NAHMS
Calving Time Management

- Prepare early
- Know Stages of Labor
  - Stage 1: Dilation of Cervix
  - Stage 2: Delivery of Calf
    - 30 minutes for a Cow
    - 1 hour for a Heifer
  - Stage 3: Shedding of the Placenta

Neonatal Diarrhea or “Calf Scours”

- dia=through rhein=flow “through flow”
- Abnormal frequency and liquidity of fecal discharges
Most Common Agents

• *E. coli*
• *Rotavirus*
• *Coronavirus*
• *Cryptosporidium*
• Combination infection common

Sources of Infectious Agents

• Fecal material from healthy and sick animals
Environment

• Inclement weather
• Unsanitary conditions
• Overcrowding

Clinical Signs

• Diarrhea
  • Pasty to watery
  • Color yellow or white or green or blood tinge or bloody
• Temperature elevated, normal, subnormal
• Depression
• Weakness
• Dehydration
• Death
Treatment

• FLUIDS must correct dehydration, acidosis, electrolyte abnormalities, and hypoglycemia
• Antibiotics?
• Anti-inflammatory

Prevention

• Proper nutrition for cows (BCS5) and heifers (BCS6)
• Calving management
• Quality and Quantity of colostrum
• Reduce pathogen exposure
• Increase resistance
Coccidiosis

• *Eimeria* spp
• Young cattle
• Often seen in wet conditions
• Associated with stress (weather, weaning, comingling, transportation)

Clinical Signs

• Variable none to severe
• No clinical signs but reduced weight gains
• Tenesmus (straining)
• Unthrifty cattle with fecal stained perineal areas
• Calves with watery feces with little or no blood
• Severe infections (rare) bloody diarrhea, fever, anorectic, depressed, dehydrated, weight loss
• Nervous form?
Treatment

• Spontaneous recovery
• Isolate, supportive care, fluids, sanitation
• Antimicrobials (sulfonamides, amprolium)
• Thiamine?

Prevention

• Sanitation
• Prevent stress
• Coccidiostats in feed
• Avoid grouping calves of different ages
• All in/All out
Bloat

• Excessive accumulation of gas in the rumen
• Free form (gas) or mixed with ingesta (frothy)
• Gas bloat obstruction or grain overload
• Animals on pasture typically have frothy bloat

Bloat (continued)

• Normally seen in animals grazing succulent plants such as cereal grains and legumes
Clinical Signs

• Tight skin over the left paralumbar fossa
• Colic
• Open mouth breathing

Treatment

• Attempt to relieve gas with a stomach tube
• Administer antacids for gas bloat
• Administer antifoaming agent (mineral oil, detergents, poloxalene, DSS) for frothy bloat
Treatment (continued)

• Life threatening relieve gas with a trocar or rumenotomy

Prevention

• Never turn hungry animals on pastures with high bloating plants
• Gradually adapt animals to new forage or feed
• Rotate pastures frequently
• Graze mature plants if possible
• Keep legumes to no more than 50% of pasture
• Bloat blocks (poloxalene)
Parasites

• Internal and External

Hardware Disease (Traumatic Reticuloperitonitis)

• Results from ingested foreign objects
• Metallic objects fall or are carried to the reticulum
• Perforation of the reticulum
• Results in localized peritonitis and adhesions
• Movement of object may result in penetration of the diaphragm or thoracic cavity
Clinical Signs

• Acute
  • Fever
  • Increased respiration rate
  • Arched back, reluctance to move

• Chronic
  • No signs
  • ADR
  • Lower feed intake
  • Lower fecal output
  • Heart problems
  • Septicemia in sever cases

Treatment

• Surgery (expensive)
• Antibiotics
• Magnets
Prevention

• Avoid foreign objects in feed or hay
• Magnet

Johne’s Disease

• *Mycobacterium avium* subspecies *paratuberculosis* (MAP)
• Chronic, progressive, non treatable disease
• Occurs in 8% of beef herds?
• Normally calves become infected early but clinical signs do not show until cows are 3 years of age or older
• Clinical signs are diarrhea and weight loss
Johne’s Disease (continued)

• Control Program
  • Education
  • Manure management
  • Colostrum management
  • Biosecurity
  • Testing and Culling

Bovine Respiratory Disease Complex

• BRD
• Shipping fever
• Pneumonia
• ADR (Ain’t Doing Right)
Many Factors Lead to Bovine Pneumonia

Bovine respiratory disease (BRD) has a multifactorial etiology and develops as a result of complex interactions between environmental factors and pathogens.

The Merck Veterinary Manual

Comprise the Immune System

Environmental factors (weaning, transport, commingling, crowding, dust, and inadequate ventilation) serve as stressors that adversely affect the immune and non-immune defense mechanisms of the host.

The Merck Veterinary Manual
Virus IBR, BVDV, BRSV, PI3 AND OTHERS

Many infectious agents have been associated with BRD. An initial pathogen (virus) may alter the animal’s defense mechanisms, allowing colonization of the lower respiratory tract by bacteria.

The Merck Veterinary Manual

Bovine Pneumonia

- *Mannheimia haemolytica*
- *Pasteurella multocida*
- *Histophilus somni*
- *Mycoplasma*
- *Trueperella pyogenes*
Clinical Signs

- Fever
- Depressions
- Loss Appetite
- Coughing
- Nasal and Ocular Discharge
- Increased Respiration Rate

Treatment

- Early recognition!
- Antimicrobials
- Anti-Inflammatory?
- Vitamins
- Probiotics
Prevention

• Colostrum
• Nutrition
• Stress
• Vaccinations
• Metaphylaxis?
• Enzymes?
• Probiotics?

**Clostridium**

• Infection site for muscle
  • *C. chauvoei* (blackleg), *C. septicum* (malignant edema), *C. sordelli* (sord or sordelli)

• Infection in the liver
  • *C. novyi*, Type B, *C. haemolyticum*

• Infection in the gastrointestinal tract
  • *C. perfringens* Types B, C, and D
Clinical Signs

• Death
• Fever
• Depression
• Anorexia
• Subcutaneous emphysema (blackleg)
• Edema
• Enterotoxemia
• Neonatal diarrhea

Treatment

• Antibiotics
• Isolation
• Supportive care
• Poor prognosis
Prevention

- Immunization
- Remove carcass

Reproductive Diseases

- IBR
- BVD
- Vibrio
- Lepto
- Trichomoniasis
- Anaplasmosis
- Neosporosis
- Brucellosis
Infectious Bovine Rhinotracheitis (IBR)

• Bovine Herpesvirus-1 (BHV-1)
• Respiratory disease, conjunctivitis, encephalitis, generalize infections of newborns, reproduction (abortion and Infectious Pustular Vulvovaginitis)
• Transmission nasal and ocular fluids, venereal
• Diagnosis laboratory test
• Treatment none
• Prevention vaccinations and biosecurity

Bovine Viral Diarrhea (BVD)

• Pestivirus, Noncytopathic, Cytopathic, Types 1a, 1b, 2a
• Respiratory, Digestive, Reproductive diseases
• Reproductive low conception rates, early embryonic deaths, abortions, stillbirths, weak born calves, birth defects, PI calves
**BVD (continued)**

- Transmission body fluid
- Diagnosis laboratory test
- Treatment none
- Prevention vaccinations, biosecurity, PI testing

**Campylobacter (vibrio)**

- *Campylobacter fetus* subspecies *venrealis*, *C. fetus* subspecies *fetus*, *C. jejuni*
- Infertility, early embryonic death, rarely abortion
- Transmission venereal, ingestion
- Diagnosis Laboratory (similar to Trich)
- Treatment Extra-label drug use
- Prevention vaccinations and biosecurity
Leptospirosis

• *Leptospira interrogans* serovars *pomona, canicola, icterohaemorrhagiae, hardjo, L. kirschneri* serovar *grippotyphosa* (Lepto 5)
• *L. borgpetersenii* serovar *hardjo* (*hardjo-bovis*) lifelong infections in kidneys and reproductive tracts
• Low conception rates, abortion, weak born calves

Leptospirosis (continued)

• Transmission infected urine, placental fluids, venereal, transplacental
• Diagnosis laboratory test (can be difficult)
• Treatment antibiotics
• Prevention vaccinations, biosecurity, prevent exposure (rodent and wildlife control, prevent drinking stagnated water), selective treatment
• Zoonosis
Bovine Trichomoniasis

Trichomoniasis is a highly contagious venereal disease of cattle that results in abortion and infertility.

Trichomoniasis is cause by the protozoan *Tritrichomonas foetus*

The protozoan live in the reproductive organs of bulls and cows
Clinical signs

Infected bulls usually have no clinical signs

Infected cow may have a mucopurulent vaginal discharge but is very seldom observed

Treatment

There are no legally available treatments in the United States
Prevention and control

• Biosecurity
• Test Bulls prior to entry
• Replace old bulls with young bulls
• Artificial Insemination
• Defined breeding season
• Pregnancy test early and cull open cows
• Vaccinations

Anaplasmosis in Cattle

• Major tick – bovine disease in US
• Impacts cattle production
• Intracellular rickettsia = *Anaplasma marginale*
• Clinical disease in cattle; other ruminants may serve as asymptomatic reservoirs
• Costs conservative estimate = $100 x 10^6
Clinical Signs~ age at infection

• Infected in utero or Infected as calf or Infected < 1 year of age
  • Animal usually no signs of illness
  • Good at making new RBC
• Infected at 1-2 years
  • May see some disease but usually not death loss
  • Usually respond to treatment

A. marginale Clinical Signs Infected > 2 years of age

• Fever early
• Weight loss
• Lethargy
• Short of breath
• Pale mucous membranes
  • Yellow/orange mm
• Abortion
• Aggression ~ lack of oxygen to brain
Treatment

- Tetracycline injection or add to feed
- When administering tetracycline time is more important than dose
- Currently no reliable treatment regimen to eliminate persistent infections
- Remember stress of handling cattle with clinical disease may = sudden death (generally PCV ≤ 10-12%)
  - Lack of $O_2 = \downarrow$ oxygen to brain (cerebral anoxia) & respiratory distress
  - Administration of antimicrobials during anemic crisis may not significantly alter the disease outcome
- Note: 1 dose of ttc will not clear infection

Treatment Of Extremely Sick Cow

- Shade
- Hay
- Water
- Consider stress of handling to give OTC
- Feeding CTC may be less stressful?
- B12 and Rumen inoculants?
- Blood transfusion? – generally more valuable animals
**Prevention**

- Maintain *A. marginale* free herd which is not practical in endemic areas
- In Oklahoma, the goal is to prevent clinical disease, **not** to prevent infection
- In endemic areas, calves exposed develop persistent infections but usually no clinical disease
- Persistent infections can = lifelong immunity & contributes to stability of anaplasmosis

**Control Strategies**
- Vaccination
- Feeding tetracycline to prevent disease
- Treat with tetracycline in a disease outbreak
- Vector control

**Neosporosis**

- *Neospora caninum*
- Mid-term abortions, weak born calves, normal calves but seropositive
- Transmission transplacenta, ingestion
- Treatment none
- Prevention biosecurity, prevent exposure to canines, test and cull, vaccinations?
Brucellosis

• *Brucella abortus*
• USA is brucellosis free with exception of the Yellowstone park area and **wild pigs**
• Late term abortions, stillbirths, inflammatory lesions in the male reproductive tract
• Transmission placenta, fetus, fetal fluids
• Treatment none
• Prevention biosecurity, vaccinations
• Zoonosis

Interdigital Phlegmon (Foot rot)

• Necrotic foot disease usually affecting one foot
• *Fusobacterium necrophorum* and other bacteria
  • *Porphyromonas levii*
  • *Prevotella intermedia*
• Bacteria gain entrance to skin by mechanical injury or during wet conditions
• “Super Foot Rot”
Clinical Signs

- Lameness
- Lesion between toes
- Necrotic and foul smelling
- Swelling of coronary band (both toes)
- Fever
- Loss of appetite

Treatment

- Recognize and treat early
- Clean and topical treatment
- Antimicrobials (Check with Veterinarian)
- Pain Management
- Isolation
Prevention

• Manage Environment
• Sanitation
• Vaccination
• Zinc Supplementation
• Foot Baths

Keratoconjunctivitis (Pink Eye)

• Highly contagious
• Causes inflammation of the cornea and conjunctiva
• Moraxella bovis
• M. bovoculi
• Mycoplasma spp
• IBR, BVD
Clinical Signs

• Swelling of the conjunctiva (inner surface of the eyelid and outer perimeter of the eyeball)
• Tearing, Squinting, Blinking
• Loss of appetite
• Small opaque area in the cornea to white-gray eye to ulceration of eye

Treatment

• Isolation
• Antimicrobials systemic and/or topical
• Pain relief
• UV light protection (patch, shade, or suture shut)
• Fly control
**Prevention**

- Fly control
- Grazing management
- Hay and/or feed bunk management
- Ultraviolet light (breed, pigment around the eye, provide shade)
- Vaccine

**Cancer**

- Squamous Cell Carcinoma is the most common cancer of cattle
- Most common is white faced cattle
- Treatment: Early recognition, excision, cryotherapy, hyperthermia therapy, radiation, local chemotherapy, immunotherapy (experimental)
- Prevention: Heritable cull
Cancer (continued)

- Bovine Lymphosarcoma, Leukemia, Malignant Lymphosarcoma
- Sporadic or Bovine Leukemia Virus (Enzootic Bovine Leukosis) (10% of beef cattle infected)
- Transmitted by transfer of blood (virus is in lymphocytes)
- Three possible outcomes
  - Infection with no clinical signs (most common)
  - Infection with a persistent lymphocytosis (29%)
  - Infection with lymphosarcoma (<5%)

Cancer (continued)

- Clinical signs depend on the site of the cancer
- Treatment None
- Control Test and Cull
- Prevention Sanitation and preventing transfer of blood
- Note BLV has been associated with breast cancer in women
Wooden Tongue
(Actinobacillosis lignieresii)

• Clinical Signs
  • Inability to eat or drink
  • Drooling
  • Rapid loss of body condition
  • Painful and swollen tongue
  • Ulcers on tongue
  • Lymph nodes enlarged and may have purulent material

• Treatment
  • Iodides

• Prevention ?

Actinomycosis (Lumpy Jaw)

• Actinomyces bovis
• Localized, progressive, granulomatous lesion
• Usually infects boney tissues of the head
• Gains entry from penetrating wounds to the oral cavity

Courtesy of Dr. John Prescott
Lumpy Jaw (Continued)

- Treatment: Iodides with antibiotics
- Prevention: Avoid metal objects in hay or feed

![Image of Lumpy Jaw]

Courtesy of Dr. Geoffrey Smith

Skin Conditions

- Warts, Ringworm, Rain rot, Photosensitization
- Diagnose condition
- Treatment depends on diagnosis
- Prevention
  - Vaccines
  - Antimicrobials?
  - Antifungals?
  - Environment?