Veterinary Science
Preparatory Training for the Veterinary Assistant
Floron C. Faries, Jr., DVM, MS
Brucellosis & Tuberculosis Eradication Programs

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Objectives

- Discuss the decrease in the prevalence of brucellosis in cattle and swine
- Discuss the decrease in the prevalence of tuberculosis in cattle
- Understand that health regulations are health management practices used to prevent the spread of the diseases
Brucellosis

- Bacterial disease
- Numerous animal species affected
- Endemic to most parts of world
- Reportable
- Zoonotic
Caused by species of *Brucella* bacteria

- *Brucella abortus* - cattle, bison, elk
- *Brucella melitensis* - goats
- *Brucella suis* - swine
- *Brucella ovis* - sheep
- *Brucella canis* - dogs
- *Brucella neotomae* - rats
Routes of exit from infected animal

- Aborted fetus
- Fetal fluid
- Placenta
- Milk
- Urine
- Semen
Routes of entry to susceptible animal

- Ingestion
- Mucous membranes
- Broken skin
- Intact skin
- Venereal
Once an animal is infected, it is forever infected with brucella bacteria!

- Reservoir hosts (normal): shed bacteria
- Dead-end hosts (abnormal): do not shed bacteria
Cattle Brucellosis

- Clinical symptoms
  - Abortions
  - Retained placentas
  - Decreased milk production
  - Testicular abscesses
  - Arthritis

- Laboratory tests
  - Serology
  - Culture
  - Milk test
Prevention

- Heifer vaccination
- Testing new entries
- Herd testing and slaughter
USDA Brucellosis Eradication Program

- Surveillance
  - Interstate movement testing
  - Show testing
  - First point testing
  - Slaughter testing

- Prevention
  - Free-herd test (certification/validation)
  - Vaccination

- Eradication
  - Identify positive animals and destroy
  - Reduce amount of time to get back test results
  - Track origin of suspect animals (trace-in, trace-out)
Surveillance
  - Blood test
    - Shows
    - Slaughter plants
    - Change-of-ownership

Eradication
  - Quarantine and disposal
Horse Brucellosis

- Dead-end host

- Clinical symptoms
  - Fistulous withers
  - Poll evil

- Laboratory tests
  - Serology
  - Culture
Sheep and Goat Brucellosis

Clinical symptoms
- Abortions
- Retained placentas
- Mastitis
- Lameness
- Orchitis and epididymitis
- Impaired fertility

Laboratory tests
- Serology
- Culture
Swine Brucellosis

Clinical symptoms
- Abortions
- Weak/stillborn pigs
- Orchitis
- Sterility in boars
- Swollen joints and tendon sheaths
- Lameness
- Posterior paralysis
- Metritis
- Body abscesses

Laboratory tests
- Serology
- Culture
Cattle Tuberculosis

- Bacterial disease of cattle
- Reportable
- Zoonotic
Causative Agent

- Bacteria

- Strain *Mycobacterium bovis*

- Bacteria not resilient in environment
  - Dry conditions (2 weeks)
  - Moist conditions (2 months)
Transmission

- Exit from cattle
  - Exhale (aerosol)
  - Milk
  - Saliva
Entry to cattle (direct/close contact)
- Inhale (aerosol)
- Ingest (milk)

Entry to cattle (indirect contact)
- Environmental contamination
  - Ingest (shared water systems)
  - Ingest (contaminated soil)
Incubation period for positive test
- Positive skin test – 8 to 60 days
- Clinical symptoms – years

Bacteria difficult to culture
- Multiplies slowly once every 20 hours
Diagnosis

Clinical symptoms (advanced cases)
- Chronic emaciation
- Respiratory distress

Clinical symptoms (mild cases)
- None
Post mortem/slaughter findings
- Nodules/lesions (tubercles, abscesses)
  - Lungs
  - Lymph nodes
  - Abdominal organs
  - Reproductive organs
  - Nervous system
  - Bone
- Tuberculin skin tests (caudal fold, cervical)
  - Read 72 hrs later
  - Positive result reads as swelling in injection area
    - If positive, more tests needed

- Post mortem test
  - Tissue – culture, histopath

- Serological test
Prevention

- Closed herds
- TB-free herds
- Test new animals
- Maintain fences
- Cooperate with state officials on regulations
USDA Tuberculosis Eradication Program

USDA-APHIS-VS

State animal health agencies

U.S. livestock producers
- Depopulate quarantined herds
- Surveillance program
  - Slaughter lesions
- Voluntary herd-testing program
  - Herd accredited-free
- Interstate movement testing requirement
- Interstate livestock shows testing requirement
- Identify positive animals and destroy