

Diseases Affecting 4H Pigs

Dr. Chad Frank  DVM, MS, DACVP
CSU Veterinary Diagnostic Laboratory

Recommended Vaccinations for 4H Pigs

• Bordetella bronchiseptica
• Pasteurella multocida (type A and D)
  – Rhini Shield TX4
• Erysipelothrix rhusiopathiae
• Mycoplasma hyopneumoniae
  – MycoFlex
• Swine influenza
  • PneumoSTAR SIV
• Porcine Circovirus-2
  – CircoFlex

Porcine stress syndrome (malignant hyperthermia)

• Heritable condition
  – Defect in ryanodine receptor calcium channel
• Triggers
  – Stress
  – Injectable drugs (acepromazine and ketamine)
  – Inhalants anesthetics (halothane and isoflurane)
• Primarily show pigs
Porcine stress syndrome

- Clinical signs: fever, muscle rigidity, tachycardia, tachypnea, arrhythmias, unstable blood pressure, myoglobinuria
- Diagnosis: Blood test (DNA test)

Parasitic infections

Sarcoptic Mange

- Transmission: Direct contact (sow or other pigs)
- Clinical signs and lesions:
  - Pruritus, crusts, erythematous papules
- Diagnosis: Need to find the mites
- Treatment:
  - Treat sows with ivermectin 8 days before farrowing

Parasitic infections

Roundworms (Ascaris suum)

- Direct life cycle
- Young pigs
- Clinical signs: poor weight gain, respiratory signs (thumping), icterus
- Eggs may remain in infected pasture for up to 10 years (chemicals don’t work, but sunlight and steam kill them)
- Prevention/treatment: deworming
Progressive atrophic rhinitis

- Multifactorial—Pasteurella multocida (type D)
  + Bordetella bronchiseptica and/or poor air quality
- Clinical signs—sneezing, nasal/ocular discharge, epistaxis, deformation of snout, dry cough, brachygnathia superior

Pathogenesis:
- Damaged mucociliary apparatus → bacterial colonization → elaboration of cytotoxin (dermonecrotic toxin) → resorption of bone and decreased bone formation

Diagnosis:
- Clinical signs, necropsy findings, isolation of toxigenic Pasteurella multocida

Prevention/control: Vaccination (Pm toxoid and killed B. bronchiseptica) of sows and piglets at 7 and 21 days, antibiotics, and ventilation
Porcine Reproductive and Respiratory Syndrome virus

- Arterivirus (Enveloped, single stranded RNA virus)
- Transmission-
  - Direct, indirect, vertical
- Clinical disease
  - Reproductive failure
    - late-term abortions, stillborn or mummified fetuses, and premature farrowing
  - Respiratory disease
    - Interstitial pneumonia
    - Neonates, weaned pigs, occasionally grower-finishers

Porcine Reproductive and Respiratory Syndrome virus

- Other lesions
  - Generalized lymphadenopathy
  - Myocarditis
  - Encephalitis
  - Systemic vasculitis
- Diagnosis
  - Clinical signs, gross/histopathology lesions, serology, virus isolation, PCR (lung)

Mycoplasma hyopneumoniae

- “Enzootic pneumonia”
- Suppression of innate and acquired pulmonary immunity-> commensal bacteria (P. multocida, S. suis, H. parasuis, and/or A. pleuropneumoniae) proliferate and cause disease.
- Potentiation of disease caused by viral pathogens
- Colonizes and destroys airway cilia, compromised clearance, alters macrophage function
Mycoplasma hyopneumoniae

- **Clinical signs-**
  - Dry and non-productive cough, fever, acute respiratory distress, progressive variance in size, death
  - Epizootic and enzootic forms
- **Diagnosis-**
  - Clinical signs, gross/histo lesions, PCR, serology (better for herd evaluation)
- **Treatment/control-**
  - Antibiotics (tetracyclines, tiamulin, valnemulin)
  - Vaccination
  - Good ventilation, reduction in stress, age segregation.

Porcine Circovirus-2

- **Disease syndromes**
  - Postweaning multisystemic wasting syndrome
  - Porcine dermatitis and nephropathy syndrome
  - Porcine respiratory disease complex
  - Reproductive disease
- **Transmission**
  - Vertical and horizontal
- **Clinical signs (can be present without causing disease)**
  - Usually 7-15 weeks of age
    - Progressive wasting, dyspnea, generalized lymphadenomegaly +/- pallor, jaundice, and diarrhea

Porcine Circovirus-2

- **Diagnosis (PMSW)**
  - Clinical signs, histopathology lesions, detection of PCV-2 within lesion
- **Prevention**
  - Vaccination of piglets
**Polyserositis**
- Clinical signs
  - Fever, coughing, swollen joints, lameness, CNS signs, sudden death
- *Streptococcus suis*
  - 5-10 weeks (can see up to 32 weeks)
- *Haemophilus parasuis*
  - 4-8 weeks (rarely adults)
- *Mycoplasma hyorhinis*
  - 3-10 weeks, low mortality
- Other gram negative bacteria

**Erysipelothrix**
- Clinical signs (any age)
  - Acute form: fever, reluctance to stand, depression, skin lesions, abortion, sudden death
  - Subacute form: mild fever, occasional skin lesions, infertility, some subclinical
  - Chronic form: Arthritis and valvular endocarditis
- Lesions
  - Septicemia, arthritis, endocarditis, raised "diamond" skin lesions
- Treatment
  - Antibiotics (Penicillin)
- Vaccination is effective
- Zoonotic (very rare)

**Gastrointestinal Diseases**
- **Diarrhea / vomiting**
  - **Suckling**
    - E. coli
    - Clostridia
    - Rota virus
    - Corona virus*
    - Vomiting & wasting disease*
    - Coccidia - Isospora
  - **Nursery**
    - E. coli
    - Salmonella
    - Brachyspira
    - Corona virus
  - **Grow/finish**
    - Lawsonia
    - Salmonella
    - Brachyspira
    - Corona virus
  - **Adult**
    - Lawsonia
    - Salmonella
    - Brachyspira
    - Corona virus
**E. coli**

- Neonatal septicemia (0-48 hours)
- Pre- and post-weaning diarrhea
- Shiga toxin-producing *E. coli*
  - Edema disease
  - Post-weaning neurologic disease in “best” pigs
  - Toxin-vascular damage

**Corona virus**

- Transmissible gastroenteritis virus and Porcine epidemic diarrhea virus
- All ages susceptible, only young pigs die
- In epizootic, see vomiting in young pigs and the sows go off-feed for 2-3 days. Then explosive outbreak of diarrhea in all ages of pigs. Mortality is 100% (0-7 d), 50% (8-14 d) and 25% (15-21 d).
- Attacks mature enterocytes -> villous atrophy -> malabsorptive diarrhea
- Diagnosis
  - Clinical signs, serology, EM on feces, FA

**Lawsonia intracellularis**

- Porcine proliferative enteropathy, porcine intestinal adenomatosis (PIA), proliferative hemorrhagic enteropathy
- Postweaning diarrhea - loose to watery gray-green feces +/- blood and mucous
- Fecal-oral infection -> invasion of intestinal crypt cells -> hyperplasia and mucosal thickening (ileum and proximal spiral colon)
- Hemorrhagic form in young adult.
Lawsonia intracellularis

- Diagnosis
  - Clinical signs, serology and demonstration of organism on histology. Can also do PCR.
- Treatment
  - Antibiotics (e.g. Tetracycline, Tiamulin)
  - Efficacious vaccine available

Coccidiosis

- Isospora suis
- Commonly 7-14 days
- Yellow watery diarrhea
- Diagnosis