



Top Pig Diseases to Know for Boards Success Part 1: Respiratory conditions

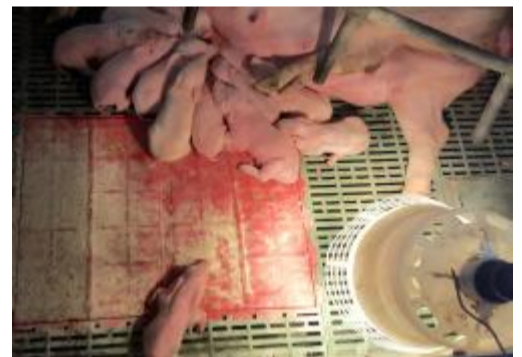


Sick pigs with PRRS may huddle together for warmth

- 🦉 Porcine reproductive & respiratory syndrome (PRRS) is the most costly pig disease worldwide.
- 🦉 Only 15 (6%) NAVLE® test questions cover pigs.

1. Porcine reproductive and respiratory syndrome (PRRS)

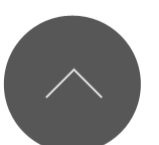
- Classic case
 - Can be subclinical: i.e., infected pigs w/ NO signs
 - Breeding herd: Varies from mild to severe
 - Abortions
 - Early farrowing
 - Anorexia
 - Up to 100% neonatal mortality
 - Growing pigs: Transient disease w/ up to 20% mortality
 - Cough, fever
 - Secondary infections
 - [Streptococcus suis](#)
 - *Glaeserella parasuis*
 - *Mycoplasma* spp.
- Etiology
 - RNA Arterivirus: Different strains
 - Invades pulmonary alveolar macrophages
- Dx
 - Necropsy: Lungs fail to collapse w/ multifocal consolidation, enlarged lymph nodes
 - Histopath: Necrotizing interstitial pneumonia, lymphoid hyperplasia, and focal follicular necrosis
 - Oral fluids or serum on sows and newly weaned piglets
 - ELISA



Sows with PRRS that farrow early will have small pigs with a weak immune system



Lungs that fail to collapse with diffuse, multifocal consolidation from a pig with PRRS



- PCR
 - PCR on lungs
- Tx: None
 - Supportive: Prevent secondary infections
 - Very common: If low level and not causing significant economic losses, may do nothing but monitor
- Pearls
 - Most economically costly disease in pig production
 - Highly infectious and contagious
 - Biosecurity is key!
 - Must test new animals before entry

2. Influenza A virus (IAV)

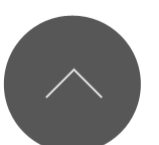
- Classic case: Affects all ages!
 - Acute: Transient disease, worse in younger pigs, better in vaccinated pigs
 - Sudden onset of fever and cough
 - 100% morbidity
 - Nasal discharge
 - Endemic IAV in sow farms and nursery pigs
 - Poor reproductive performance
 - Piglets coughing in farrowing crates
 - Cough and poor performance in nursery
- Etiology
 - Influenza A viruses
 - Major surface antigen types in swine: H1N1, H3N2
- Dx
 - Gross lesions:
 - Sharply demarcated multifocal areas of consolidation
 - Microscopic lesions:
 - Degeneration and necrosis of the epithelium in the bronchi and bronchioli
 - Hyperemia and dilatation of the capillaries
 - Infiltration of alveolar septae with lymphocytes etc.
 - Oral fluids: PCR (or, less commonly, virus isolation)
 - Nasal swabs on febrile pigs for PCR
 - PCR on lung tissue
- Tx
 - Outbreak
 - Supportive care such as aspirin, NSAIDs like flunixin meglumine
 - Need to get fevers down so pigs eat and drink
 - Treat secondary bacterial infections with antimicrobials
 - Prevent via vaccination: sows and piglets
 - Homologous protection is best
- Pearls
 - Zoonotic: Humans and other animals can get IAV from pigs so we DON'T call it "swine flu" anymore
 - Conversely, pigs are good incubators of different flu viruses they get from birds and humans



Febrile, coughing pigs with nasal discharge are indicative of influenza infection



Lungs from a pig with influenza that fail to collapse with diffuse multifocal consolidation



- In 2009, an H1N1 IAV strain of swine origin spread globally, infecting people, poultry, dogs, cats, and other animals
- One of the most common respiratory pathogens of growing pigs

3. Actinobacillus suis

- Classic case
 - Acute death
 - Affects all ages from sows and neonates to finishing pigs
 - May be accompanied by cough, lethargy, epistaxis, and sometimes discoloration of ears
 - Respiratory disease in finishing pigs
 - Dyspnea
 - Acute death
- Etiology: Ubiquitous small gram-negative rod
- Dx: Culture visible lesions
 - Gross lesions
 - Petechial to ecchymotic hemorrhages in multiple organs
 - Serous to serofibrinous exudates in the thoracic and abdominal cavities
 - Pleuritis, pericarditis, arthritis, and miliary abscesses in a variety of organs
 - Microscopic lesions
 - Foci of necrosis in multiple organs associated with bacterial thromboemboli
- Tx
 - Antimicrobials
 - Spreads nose to nose so inject antimicrobials into those pigs that have nose-to-nose contact with the pigs that died
 - Follow up with antimicrobials via the water if needed
 - Good prognosis with Tx
- Pearls
 - Can be primary pathogen, but also associated with viral diseases
 - Sporadic and difficult to prevent



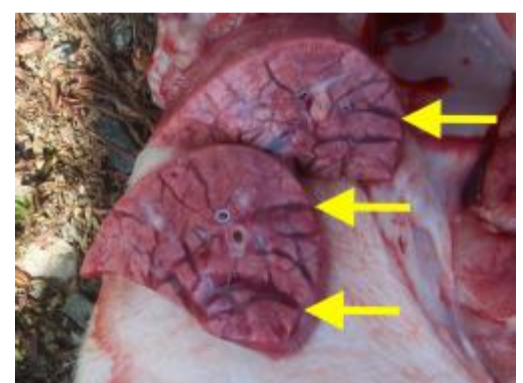
A. suis is spread via nose-to-nose contact



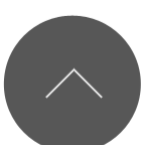
Lungs are hard and deep red to black in color with A. suis pneumonia

4. Porcine circovirus diseases (PCV2)

- Classic case
 - Ages affected: Pigs early in grower (>10 weeks of age) have two syndromes
 - Post-weaning wasting multisystemic wasting syndrome (PMWS)
 - Diarrhea
 - Porcine dermatitis and nephropathy syndrome (PDNS)
 - Pale to icteric skin with coalescing raised red to purple lesions covering the rump
 - Ages affected: Gilts in sow herd
 - Increased mummified fetuses
 - Late term abortions
- Etiology: Small, nonenveloped DNA virus
- Dx



Cross section of a lung with marked interlobular edema consistent with PCV2



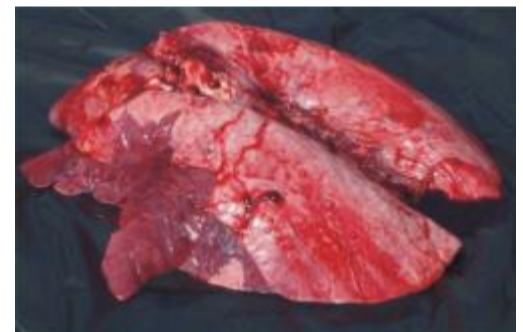
- Gross lesions:
 - Enlarged lymph nodes
 - Lungs do not collapse, with interlobular edema
 - Kidneys are enlarged and pale and subcapsular surface may have spotted white foci
- Microscopic lesions:
 - Lymphocytic histiocytic infiltration of lymphoid tissues
 - Sloughing of lung epithelium with fibroplasia
- Oral fluids: PCR
- IHC and PCR (low cycle time [CT]) on lung tissue and lymph nodes

AND

- Histopathologic lesions of lymphocytic histiocytic infiltration of lymphoid tissue
- Tx
 - No Tx
 - Prevent via vaccination
 - Prognosis poor in unvaccinated pigs
- Pearls
 - UNcommon now due to vaccines, but can occur in unvaccinated or under-vaccinated pigs
 - Ubiquitous in pigs world-wide
 - There are other types of PCV that are not pathogenic, or their pathogenicity is unknown

5. *Mycoplasma hyopneumoniae* a.k.a. enzootic pneumonia

- Classic case
 - Ages affected: Late finishing (>15 weeks of age)
 - Deep, barking and/or non-productive cough
 - Pigs stop growing
 - May occur in sow farms if positive animals are introduced to a negative farm
- Etiology: slow-growing bacterium
- Dx
 - Gross lesions:
 - Cranioventral consolidation (apical, cardiac, and accessory lobes)
 - Microscopic lesions:
 - Lymphocytes in perivascular, peribronchial, and peribronchiolar tissues
 - Cuffing and lymphoid hyperplasia around the airways
 - Not a good candidate for culture
 - PCR: Lung, oral fluids, tonsil scrapings
 - ELISA in negative herds
- Tx
 - Prevent using vaccination
 - In piglets (twice)
 - In replacement gilts depending on status of sow herd they are entering
 - Antimicrobials during outbreaks in late finishing pigs



*Cranioventral consolidation in the lung consistent with *M. hyopneumoniae**



- Hard to eliminate cough in pigs
- Pearls
 - May be seen in conjunction with PRRS or other pathogens
 - Many farms have eliminated the pathogen
 - Poor growth may persist after infection

Bonus! - [Atrophic rhinitis](#)

- Classic case: Ages affected: three- to six-week-old pigs
 - Sneezing
 - Nasal discharge
 - Tear staining
 - Decreased growth rate
- Etiology: Cause is combination of *Bordetella bronchiseptica* ± toxigenic *Pasteurella multocida* + management factors (e.g., poor air quality)
- Dx
 - Gross lesions
 - Mild to moderate turbinate atrophy
 - ± Deviation of the nasal septum
 - Microscopic lesions
 - Disruption of normal bone formation in the turbinates
 - Gross lesions
 - Mild to moderate turbinate atrophy
 - ± Deviation of the nasal septum
 - Microscopic lesions
 - Disruption of normal bone formation in the turbinates
- TX
 - Vaccination
 - Sow twice @ pre-farrowing
 - Piglets twice
 - Antimicrobials to the sow at parturition
- Pearls
 - No longer a major health concern in the US - RARE
 - Still found at slaughter surveillance
 - Usually mild Dz and turbinate damage may be reversible



Snout at post-mortem with extensive turbinate damage and deviated septum due to atrophic rhinitis

All images courtesy of Meghann Pierdon, VMD, DACAW.

Porcine

