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## PORCINE RESPIRATORY DISEASE COMPLEX

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The Porcine Respiratory Disease Complex (PRDC) is probably the most discussed disease entity in the swine industry today. A number of things have been learned about this complex over the last several months and today I would like to give you an overview of what we know about this disease at the current time.

The typical PRDC herd is usually positive to the Porcine Respiratory & Reproductive Syndrome Virus (PRRSV). At 14 weeks of age about 90% of the animals are infected.

PRDC herds are usually infected with *Mycoplasma hyopneumonia* (MH). At 14 weeks of age about 65% of the animals are infected.

These herds typically have a high gilt replacement rate increasing the rate of MH infection prior to weaning because of low maternal antibody titers.

Wide weaning ages are common, 14 to 22 days, resulting in MH infected and naïve pigs at weaning.

As a result of the above factors, pigs are commingled in the grower/finisher (GF) with varying degrees of immunity to the PRRSV and MH.

PRDC then results from viral-bacterial co-infections. At about 16 to 18 weeks of age the PRRSV positive – MH negative pigs become infected with MH and disease results. MH attracts inflammatory cells, alveolar macrophages and intravascular macrophages into the lungs which produce an ideal environment for the PRRSV to persist and replicate.

The primary pathogens contributing to PRDC are PRRSV, MH and Swine Influenza Virus (SIV).

The secondary pathogens that may be involved include *Pasteurella multocida*, *Streptococcus suis*, *Actinobacillus pleuropneumonia* (APP), *Haemophilus parasuis* (HPS) and *Salmonella choleraesuis*.

PRRSV is usually transmitted by direct contact with infected pigs and the virus replicates in cells of the immune system. Two disease entities are evident. A reproductive syndrome in which premature, weak, stillborn and mummified pigs result and a respiratory syndrome, which results in a diffuse, interstitial pneumonia. Enzyme Linked Immunoabsorbent Assay (ELISA) and Polymerase Chain Reaction (PCR) are the primary tests used for laboratory diagnosis. Modified live virus (MLV), killed and autogenous vaccines are available.

*Mycoplasma hyopneumonia* is transmitted by direct contact as well as aerosols. If uncomplicated a chronic non productive cough results. If complicated by PRRSV and secondary pathogens a severe anterioventral pneumonia may result. ELISA and PCR are the primary laboratory tests used for diagnosis. Commercial as well as autogenous bacterins are available.

SIV is transmitted by both direct contact and aerosols. Uncomplicated infections result in a mild to moderate cough. Severe lobar pneumonia may result if complicated by PRRSV and secondary pathogens. Hemagglutination inhibition (HI) is the most widely used test for laboratory diagnosis. Both commercial and autogenous vaccines are available.

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*Pasteurella multocida* is a normal inhabitant of the upper respiratory tract and is the most common secondary bacterial pathogen in the PRDC. Disease is usually associated with stress such as crowding, weaning, transport, change in diet, change in temperature, inadequate ventilation, etc. This organism causes a purulent, anterioventral pneumonia in combination with PRRSV, MH, etc. Laboratory diagnosis is accomplished by culture and PCR. Commercial and autogenous bacterins are available.

*Streptococcus suis* is a normal inhabitant of the upper respiratory tract and disease is usually stress related. Stress conditions tend to compromise the immune system and allow opportunistic pathogens to cause disease. A serofibrinous polyserositis, polyarthritis, anterioventral pneumonia and meningitis may result. Laboratory diagnosis is usually accomplished by culture of the organism. Commercial and autogenous bacterins are available.

*Actinobacillus pleuropneumonia* (APP) can cause a primary or secondary infection and together with PRRSV and MH can cause a fibrinonecrotic pneumonia. Stress can also be an important factor in this disease. Laboratory diagnostic methods include culture, ELISA, complement fixation (CF) and hemolysin neutralization (HN). Both commercial and autogenous bacterins are available.

*Haemophilus parasuis* (HPS) is present in the upper respiratory tract of normal pigs and disease can be a result of stress. Along with PRRSV and MH a serofibrinous polyserositis and pneumonia can result. Culture, ELISA and fluorescent antibody (FA) can all be used for laboratory diagnosis. HPS bacterins include both commercial and autogenous products.

*Salmonella choleraesuis* is present in the upper respiratory tract and animals can be asymptomatic carriers until stress conditions exist. This organism is capable of causing a septicemia with a resulting serosanguinous pneumonia and gastrointestinal infection with diarrhea. Culture is the primary method of laboratory diagnosis. Commercial vaccines, both avirulent live and killed and autogenous bacterins are available.

The prevention and control of PRDC includes the use of improved management procedures along with a proper vaccination program. Management procedures should include a strict biosecurity system, isolation and acclimation of new breeding stock, use of the MCREBEL system in the farrowing house, segregated early weaning (SEW) and all in all out (AIAO) pig flow. Other preventive measures include cleaning and disinfection of buildings between groups of pigs, proper ventilation, heating and cooling, proper nutrition, keeping stress to a minimum and a proper vaccination program.

