

Porcine Reproductive and Respiratory Syndrome

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Porcine Reproductive and Respiratory Syndrome (PRRS) is rapidly gaining importance as one of the most economically significant diseases to keep out of Texas swine herds.

In late 1992, a large swine herd in Texas became infected with PRRS virus. The results were devastating:

- Sows farrowed 5 days early, with all pigs dying.
- Weak, stillborn, and mummified pig numbers in normally farrowed sows increased dramatically.
- Healthy unweaned pigs sickened and died.
- Nursery pigs suffered up to 25 percent mortality from pneumonia and many survivors became poor-doers.
- Pneumonia increased significantly in the grower-finisher area.

Treatment with antibiotic injections was more effective in grower-finisher hogs than in nursery and unweaned pigs.

As if all these problems were not enough, the outbreak went on and on. Out of 600 farrowings over 12 weeks, only 199 pigs were weaned! Seventeen-week-old pigs typically weighed only 70 to 80 pounds, and the prospect of continuing problems with pneumonia in nursery, grower, and finisher pigs was too much. The producer decided to depopulate.

At the time this large Texas herd was depopulating (1993), researchers in the U.S. and Europe were working feverishly to discover more about this disease. These research efforts were being driven by the many U.S. outbreaks of PRRS (then known as Mystery Swine Disease) in the late 1980s and early 1990s in the major hog-producing states. This disease appeared in Europe during 1990.

The virus that causes PRRS was first isolated in the Netherlands in June 1991. It was named the "Lelystad virus," after the town where the research facility was located. Tests to detect the antibody to PRRS

virus or the virus itself could be developed only after the cause was discovered.

Following the summer of 1992, the first diagnostic tests for PRRS became available in major hog-producing areas in the U.S. It is now thought that PRRS is a worldwide disease.

The following questions and answers about PRRS should provide the reader with a basic knowledge of this new disease.

What causes PRRS?

A virus causes PRRS. There are American and European types of PRRS virus, and at least 20 variations of PRRS virus exist. Current evidence suggests that PRRS virus was not in the U.S. before 1986.



How is PRRS spread?

PRRS virus is spread by pig-to-pig contact through contaminated mucus, excrement (manure and urine), and semen (artificial insemination and natural service) and possibly by aerosol (airborne) infection. This means the live pig that is infected with PRRS is the major source of virus transmission to non-infected pigs.

How long can a pig infected with PRRS virus remain contagious and spread this virus to other pigs?

Young pigs (unweaned, nursery, grower pigs) that survive PRRS infection are very contagious for up to 4 to 5 weeks. Older swine (finisher hogs and breeding stock) are highly contagious for 2 to 3 weeks after PRRS infection. Generally, the likelihood of an infected pig spreading the PRRS virus to non-infected pigs decreases as time passes, as long as the pig is not re-infected with the virus.

However, field evidence suggests that swine infected with PRRS for 90 days may be able to transmit the virus to non-infected swine and make them sick. It is also known that PRRS virus may be recovered from the throat of an infected pig 157 days after the start of infection. It is not known if the PRRS-infected pig can still infect another pig 157 days after the start of the original PRRS infection.

How long can a PRRS-infected boar spread this virus through semen?

Experimentally infected boars shed PRRS virus into the semen for 43 days after infection. Gilts artificially inseminated with this infected semen developed PRRS. The length of time an infected boar may transmit PRRS virus under natural conditions is not known. Antibiotics in semen kill only bacteria; they are not effective against viruses such as PRRS.

Is disease from PRRS virus infection always as bad as the infection of the large Texas herd that had to depopulate in 1993?

No. Swine herd disease outbreaks due to PRRS infection range from very severe (the 1992 Texas herd example) to inapparent infection (no obvious disease present). This wide range of dis-

ease is probably due to the many variations of PRRS virus (at least 20 types are known). Experimental infection of pigs with various PRRS virus types has proven this range of very mild to very severe disease.

Also, PRRS virus introduced into a previously uninfected herd (like many swine herds in Texas) is more likely to cause the most severe disease possible for that particular type of PRRS virus. This is because there is no immunity to PRRS in the herd.

How long will PRRS stay in my herd if I get it?

After an initial outbreak of PRRS, pneumonia and chronic poor-doers in nursery and grower-finished pigs may last for many months. One cause of persistent infection in a herd is the introduction of exposed newly-weaned pigs from continuous-flow nurseries containing PRRS-infected pigs.

In a PRRS-virus-infected herd, persistent reproductive problems may also occur in PRRS-virus-negative gilts. Infection after these gilts are introduced, bred, and pregnant is likely to cause the reproductive failure that typifies PRRS.

In summary, disease from PRRS infection can last a long time in an infected herd if nothing is done to control it.

How do I know if PRRS virus is in my herd?

Chronic reproductive and/or respiratory disease as previously described may suggest PRRS virus infection in a herd. Blood sampling and laboratory testing of a representative sample of the breeding stock and other pigs may allow detection in a herd. ELISA and IFA tests on serum are available. Both tests are accurate but not perfect. It takes a minimum of about 10 days after a PRRS virus infection before the IFA or ELISA test will be positive. Multiple samples (such as a herd test or two tests on one sick animal several weeks apart) can be interpreted better than a single test on a single animal. Contact a veterinarian for help in the diagnosis of PRRS.

What do I do if I find PRRS is not in my herd?

Try to keep it out by blood sampling and testing new breeding stock on arrival and after 60 days of isolation. Two negative tests indicate the

animal does not carry PRRS virus. Some producers put a PRRS-negative cull animal from their herd in contact with any new breeding animal they buy. After 60 days of exposure between their PRRS-negative cull pig (sentinel pig) and the new breeding animal, both pigs are tested for PRRS. If both are negative, PRRS is not in the new breeding animal.

What do I do if I find PRRS is in my herd?

If PRRS is diagnosed as a cause of reproductive and/or respiratory disease in a herd, steps may be taken to control it. For example, early weaning of pigs (at 14 days of age) and raising them isolated from other pigs has helped minimize the economic loss from PRRS virus infection. Also, cleaning and disinfecting the nursery areas and allowing a nursery to “rest” for 2 to 3 weeks between groups of pigs helps to reduce the transmission of PRRS virus from pig to pig.

Since PRRS virus infection reduces the ability of the lungs to fight infection, secondary bacterial infections that cause lung disease contribute greatly to poor pig performance and death. Treatment of PRRS virus-infected pigs with the correct antibiotic to treat the secondary bacterial infection will minimize disease loss. Picking the best antibiotic requires knowledge of common secondary respiratory pathogens in swine, like *Pasteurella multocida*, or sacrificing sick, untreated pigs and determining by laboratory testing which antibiotics will be effective. A veterinarian can assist you with either option.

Commercial and custom-made PRRS virus vaccines are available to help reduce economic losses. In a closed-herd situation, a vaccine that is custom-made from the PRRS virus isolated from the herd may be the most effective because there are many strains of PRRS virus, and the strain in a commercial vaccine may not provide cross-protection for the particular strain present in the herd. In situations where it is impractical or not cost-effective to isolate the virus for a custom-made vaccine, commercial PRRS virus vaccine may be used. One example

is RespPRRS by NOBL Laboratories (800-323-7527). But no matter how vaccines are used, they are not the complete answer.

It is still best to practice 60-day isolation for any new breeding stock before allowing them into a PRRS-infected herd. The isolation time of 60 days allows time for vaccination and immunity development in non-infected breeding swine or time for infected breeding swine to get over the maximum virus shedding stage. Vaccination of breeding swine of unknown PRRS-infection status may also be practiced during the 60-day isolation. With any of these strategies, the prevention of a fresh outbreak of PRRS in the main herd is the objective. Consult a veterinarian to work out an individualized herd health plan for a PRRS-virus-infected herd.

If I sell breeding stock, can I continue to sell these animals if PRRS virus infection occurs in my herd?

Attempts to get PRRS-virus-negative pigs from PRRS-virus-positive sows have been successful in many cases by waiting until the outbreak is over, then early-weaning (10 to 14 days of age) and rearing the pigs off-site. Apparently this technique works, because the PRRS colostral antibody that the pigs suckle lasts for 3 to 8 weeks and helps prevent infection. Also the sows that are well recovered from a PRRS virus infection may not be shedding much or any PRRS virus to infect their pigs.

Two negative blood tests on all the pigs in an early-weaning group is evidence that this isolated group of pigs does not have PRRS virus. The first test should be conducted about 60 days after the colostral antibody is gone or at 16 weeks of age or older (8 weeks for colostral antibody + 8 weeks after colostral antibody is gone = 16 weeks of age minimum for PRRS blood test). The second test should be conducted 60 days after the first or at 24 weeks of age (16 weeks of age + 8 more weeks = 24 weeks of age).



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