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# Pseudorabies in Swine

RECORDS

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## Pseudorabies in Swine

Pseudorabies, also known as Aujeszky's disease, "mad itch," and infectious bulbar paralysis, is a disease of swine caused by a herpesvirus. Pseudorabies is occasionally transmitted to cattle, sheep, dogs, cats, and wild animals, where it causes encephalitis, intense itching, self-mutilation, and death. Swine, the only known reservoir, are the prime spreaders of the disease.

Pseudorabies has been in the United States for more than 150 years. An affliction called "mad itch in cattle" was reported in March 1813 in the *American Farmer* magazine. The author says, in part: "An observing farmer noticed in one of his cows, an unusual propensity for rubbing her nose, and side of her head against every hard substance that came within reach . . . So far as I hear, in every instance it has proved fatal. The disease appears to be in some measure contagious as there is one instance of a dog being attacked, who was known to have eaten a cow recently dead with the complaint. In a few hours the dog died."

Dr. Aladar Aujeszky (1902), working in Hungary, was the first to describe the disease in the scientific literature. He observed its natural occurrence in cattle, cats, and dogs, and transmitted the virus experimentally to rabbits.

Dr. R. E. Shope (1931), Ames, Iowa, established that "mad itch" occurring in cattle in Iowa was the same disease that Aujeszky had described and that the virus was immunologically identical to Aujeszky's Hungarian strain of pseudorabies virus.

Pseudorabies has become a threat to the U.S. swine industry. Although known in the United States for more than a century and a half, pseudorabies in swine was formerly considered to be of only minor importance. However, a more virulent form of the disease, first observed in Europe in the 1950's, appeared in this country in the 1960's. Now, most outbreaks are caused by this more deadly form of the disease, which can cause death in swine of all ages. Highest losses—often 100 percent—are in pigs under 2 weeks of age.

This leaflet attempts to answer some of the frequently asked questions about pseudorabies. For more information, contact your veterinarian or State or Federal animal health officials.

## **What is pseudorabies?**

Pseudorabies is a herpesvirus disease primarily affecting swine, but it can be transmitted to almost all other warmblooded animals except man. The species most often affected are cattle, sheep, dogs, cats, mink, mice, rats, raccoons, skunks, and opossums. Although it does not affect humans, this is the same family of viruses that gives people fever blisters, cold sores, chicken pox, and shingles.

Swine serve as the natural reservoir for the disease. Some swine become latent carriers that can shed the disease organism when stressed. In adult hogs, the disease can occur with few or no visible signs. Death rates decrease from near 100 percent in newborn pigs to just a few deaths in older hogs.

In most other species, death of infected animals is nearly certain. And it is agonizing. Pseudorabies is recognized as one of the cruelest deaths an animal can suffer.

## **Where is it found?**

Pseudorabies in swine was reported in 24 states in 1980. The Corn Belt States have been the hardest hit. The disease has been confirmed in all sizes and types of operations, but greatest damage has been done in large confined herds and those continuous farrowing operations.

## **What is the incidence of the disease?**

Although incidence has not been measured precisely, indications are that pseudorabies increased drastically during the decade of the 1970's.

Random slaughter serum surveys conducted in 1974, 1977-78, 1980-81, and 1983-84 showed infection rates of 0.56, 3.73, 8.39, and 8.78 percent, respectively. However, factors such as seasonal differences and, in the last two surveys, increased use of vaccines influenced the data to an undetermined degree. While incidence increased during this period, the extent could not be measured.

## **What are the clinical signs in swine?**

In pigs under 3 weeks of age, the clinical signs are lack of appetite, incoordination, depression, vomiting, nervousness, diarrhea, and convulsions, often followed by death of the entire litter.

In older pigs, the signs include lack of appetite, coughing, rubbing of the nose, sneezing, convulsions, reproductive problems, abortion, and birth of still-born and mummified pigs.

## **What are the signs in other animals?**

In other species, including cattle and sheep, clinical signs are usually more consistent and severe. All signs listed for swine may be apparent, but the most common clinical signs in cattle and sheep are incessant scratching to the point of self-mutilation until death, hence the name "mad itch." Signs resembling rabies—such as grinding the teeth, excess salivation, bellowing, and excitement—are also common. Death usually occurs within 48 hours of the first signs of disease.

## **Do all infected hogs show signs of the disease?**

No. In older swine, clinical signs may be absent. A flu-like syndrome may be the only symptom. Since other species show visible signs more frequently than swine, a dead dog, cat, or raccoon near a swine operation may be a sign of pseudorabies in the swine herd.

## **How long does it take the disease to develop?**

The virus usually enters its host through the nose or mouth and makes its way to the brain in 24 to 48 hours.

Signs of the disease may first appear about 30 hours after exposure to the virus.

## **How long does the disease last?**

Often swine are dead within a few days of first exposure. If a hog survives, symptoms usually disappear within 10 to 14 days. The disease may then pass into its latent state. Infected swine may be carriers of the virus for life. Stress or other conditions may bring the virus out of its latent state so that the carrier starts exhibiting symptoms, often causing an outbreak of the disease.

## **How can I find out if my herd has pseudorabies?**

Contact your veterinarian. He will collect blood samples for laboratory tests and have the results back to you within 10 days.

There are several laboratory tests used to confirm the disease. The most frequently used are:

(1) Serum neutralization (SN) test. The SN test is used to detect antibodies produced as a result of exposure to the disease.

(2) Enzyme-linked immunosorbent assay (ELISA) test. The ELISA test is another method for detecting antibodies.

(3) Fluorescent antibody tissue section (FATS) test. The FA test involves microscopic examination of specially treated thin slices of tissue. Infected tissue has a different color than normal tissue under the microscope.

(4) Virus isolation using tissue cultures or live animals. The test is accomplished by exposing swine tissue culture cells to swine tissues suspected of being infected with the virus.

Other serological tests to detect antibodies to pseudorabies are being developed.

## **When should a test be used?**

Whenever pseudorabies is suspected and before any swine enter a breeding herd.

## **Is pseudorabies sometimes mistaken for other diseases?**

Yes. Because of the variation in symptoms, the disease is often mistaken for rabies, transmissible gastroenteritis (TGE), pneumonia, SMEDI, viral encephalitis, and influenza.



## **How does the disease spread?**

Healthy animals get pseudorabies from:

- Direct contact with infected animals.
- Feed, water, and straw infected with the virus.
- Contaminated equipment, including boots, clothes, trucks, tractors, and anything that may have been exposed to the virus.
- Breathing contaminated air.
- Eating the carcass of an infected animal.

## **Is there a vaccine to protect against pseudorabies?**

Modified live virus vaccines as well as killed vaccines have been licensed by USDA. However, the use of vaccines is limited by State law and is subject to requirements established by the State veterinarian.

Vaccines should be used with caution because vaccinated animals react to serological tests in the same way as infected animals. Also, vaccines do not prevent swine from becoming infected or from spreading the disease. However, vaccines do help swine producers by reducing clinical signs and death losses. Consult your veterinarian for more details and advice on the pros and cons of vaccination in your situation.

A subunit, or fractionated vaccine, is now under development by vaccine manufacturers. Unlike pigs vaccinated with standard vaccines, pigs given the subunit vaccine can be differentiated from infected pigs by special tests.

## **Is there a cure or treatment?**

No. Swine that survive the disease may become carriers. They must be considered carriers and potential spreaders for the rest of their lives. Pseudorabies-free herds are subject to becoming infected as long as a reservoir of virus remains in neighboring infected herds.

Strategies have been developed whereby infected herds can become pseudorabies free. Appropriate herd cleanup strategies for a given herd vary with the herd type, facilities, and management practices. Some are compatible with infected herds.

Pilot projects are being conducted in five States to evaluate cleanup strategies, to determine if pseudorabies can be eradicated from a State or area, and to analyze the economic effects of this action.

## **Can the virus be killed?**

Yes. Boiling, as well as many disinfectants, will kill the virus.

## **What can I do to help control the spread of the disease?**

The major means of spreading pseudorabies is through the movement of infected swine. Veterinary officials recommend the following measures:

- Don't buy the disease. Be sure breeding stock is free of the disease before purchase. Isolate for 30 days and retest. Most States now require tests before sale.
- Don't mix feeder pigs with breeding stock.
- Keep infected swine away from other hogs and livestock.
- Report any outbreak of the disease to your veterinarian or to Federal animal health officials immediately.

Cooperation of all hog producers is needed to prevent pseudorabies from becoming a disaster to the swine industry.

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**U.S. Department of Agriculture**  
Animal and Plant Health Inspection Service  
700 Federal Building  
Hyattsville, MD 20782

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