Swine Dysentery– Pork Industry Handbook

Michigan State University Extension Service


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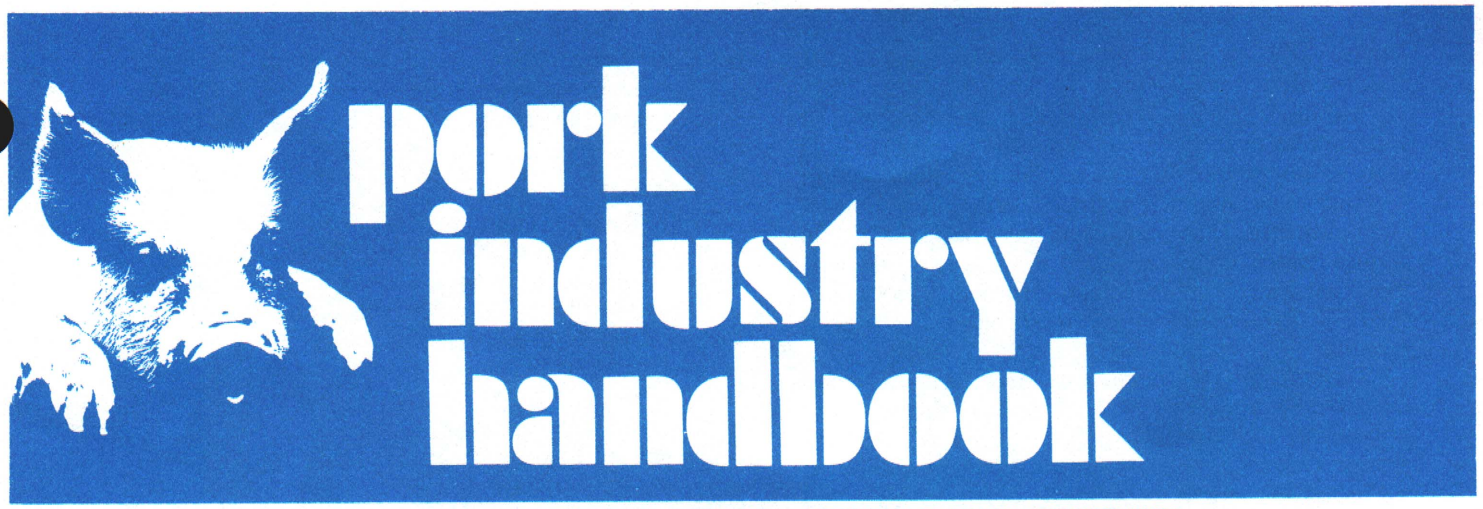


COOPERATIVE EXTENSION SERVICE • MICHIGAN STATE UNIVERSITY

# Swine Dysentery
# (Bloody Scours, Vibrionic Dysentery, Black Scours)

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Swine dysentery occurs most frequently in 8-14 week-old pigs, although all ages may be affected with the disease. Typically, the pigs pass loose stools containing blood and mucus. When swine dysentery occurs in young weaned pigs, up to 90-100% of these pigs may be affected and 20-30% may die if an effective treatment is not administered. The disease may also appear in suckling pigs or adult swine. In such cases, the disease is usually mild and may not be readily diagnosed. Often, when the disease has been present in a herd for a time, the clinical picture is less dramatic, especially when drugs are routinely used to control swine dysentery. In such cases, only sporadic diarrhea is seen.

Due to the inapparent infectiousness of the disease, the economic significance is difficult to assess. In typical outbreaks, losses result from poor rate of gain and feed efficiency, medication costs, and death. The Livestock Conservation Institute estimates that swine dysentery causes an annual loss of $64 million to the U.S. swine industry. A recent survey conducted at Iowa State University indicated that 40% of the herds in Iowa, Missouri, and Illinois were affected with swine dysentery.

## Cause

An anaerobic (growing only in the absence of oxygen) bacterium, *Treponema hyodysenteriae,* is the cause of swine dysentery. As the disease progresses, blood may be lost through the damaged intestinal wall. Death usually results because of dehydration and a loss of electrolytes.

Most herds of pigs harbor another type of bacterium, *Treponema innocens*. Although this type is identical in appearance to *T. hyodysenteriae*, *T. innocens* does not cause disease in pigs. The two types of bacteria can be identified by laboratory tests and oral innoculation into experimental pigs. A definitive diagnosis of swine dysentery should only be based on the isolation and identification of *T. hyodysenteriae* in a qualified laboratory.

## Transmission

*Treponema hyodysenteriae* is present in the feces of pigs that are either affected with or have recovered from swine dysentery. After susceptible pigs ingest the organism, symptoms of swine dysentery usually occur in 2-21 days; however, longer incubation times have been reported. The incubation period is usually shortened by the ingestion of higher numbers of *T. hyodysenteriae*.

It has been shown that sows may harbor *T. hyodysenteriae* without having clinical evidence of swine dysentery. The organism lives in the feces of the sow and is transmitted to the suckling pigs. Often, it appears that most pigs are not susceptible to the

disease while nursing the sow but subsequently are affected after weaning.

Although *T. hyodysenteriae* is an anaerobe, it will survive in feces for 1-2 months. Exact survival time is not predictable because of the influences of variable environmental factors such as temperature and moisture. The organism has been found in lagoon water collected from an infected premise. Pigs that have recovered from swine dysentery may shed *T. hyodysenteriae* in their feces for over 2 months.

*Treponema hyodysenteriae* has been isolated from the feces of field mice. Mice are considered an important reservoir of the organism. Experimentally, mice may remain infected for over 200 days.

Infectious organisms can be transmitted from farm to farm in feces carried on contaminated boots or vehicle tires. Dogs, birds, rats, and flies may carry *Treponema hyodysenteriae* for periods adequate to permit movement from one premise to another. In contrast to mice, —dogs, birds, rats, and flies are not long-term reservoirs of the organism.

## Diagnosis

Typical outbreaks of swine dysentery may be diagnosed by observing several pigs with watery feces (containing blood and mucus) and by the presence of appropriate lesions at necropsy. If possible, samples should be submitted to a laboratory for isolation and identification of *T. hyodysenteriae* to make a definitive diagnosis of swine dysentery.

Several other diseases commonly confused with swine dysentery are: salmonellosis, trichuriasis (whipworm infestation), porcine proliferative enteritis (necroproliferative enteritis, ileitis, hemorrhagic bowel syndrome), and gastric ulcers. An accurate diagnosis of gastrointestinal disorders must be based on a thorough examination of the entire pig at necropsy and submission of samples for microscopic and cultural evaluation.

## Treatment

Pigs that are gaunt and depressed due to swine dysentery should be treated with drugs in the water. Usually, affected pigs in the early stages of disease consume very low amounts of feed. Therefore, treatment via the feed alone is not always effective. Pigs with swine dysentery may also be treated by injection of drugs, but this is usually impractical unless very few animals are affected.

If possible, during treatment, the pigs should be dispersed into a larger area and the floor of the pens should be cleaned daily to decrease reexposure to *T. hyodysenteriae.*

Table 1 lists the various drugs used for the treatment of swine dysentery. As with other infectious diseases, drugs that have been available for a number of years are often less effective.

## Prevention

Vaccines are available for prevention of swine dysentery. Usually, these must be used in combination with drugs to completely suppress the clinical signs of the disease. Vaccines do not eliminate *T. hyodysenteriae* from pigs and therefore cannot be used alone to eradicate the disease from a herd.

Since the disease is so economically devastating, great care should be taken to prevent introduction into a noninfected herd. *Treponema hyodysenteriae* can be carried into a herd on boots, farm implements, and trucks. Isolation of the herd and aggressive rodent control are essential in reducing potential hazard.

**Table 1. Dosage level, duration of administration, and withdrawal time for various drugs used for the treatment and/or prevention of swine dysentery.**

| Compound | Treatment | | Control or preventive Level* | Withdrawal time (days) |
|---|---|---|---|---|
| | Level* | Duration (days) | | |
| Bacitracin MD | 1 g/gal water,<br>500 g/t feed | 7<br>21 | 250 g/t feed | None |
| Carbadox | 50 g/t feed | Continuously | 50 g/t feed | 70** |
| Gentamicin | 50 mg/gal | 3-5 | ND† | 3 |
| Lincomycin | 100 g/t feed | 21 | 40 g/t feed | 6 |
| Lincomycin | 250 mg/gal | 7-10 | ND† | 6 |
| Tiamulin | 0.006% in water | 5 | 227 mg/gal | 3 |
| Tylosin | 0.25 g/gal water,<br>1.0-4.0 mg/lb body wt<br>(injectable) | 3-10 | 100 g/t feed | 0 (feed)<br>2 (water) |
| Virginiamycin | 100 g/t feed | 14 | 25 g/t feed*** | None |

* g = grams; t = ton; mg = milligram; gal = gallon.
** also up to 75 lb. bodyweight.
*** Up to 120 lb. of body weight.
† Not determined.
Adapted from Diseases of Swine, Ed., Leman et al. 1986. Chapter 42 - Swine Dysentery and Spirochetal Diseases, Harris, Glock, pages 494-507.

Introduction of new stock is an even greater hazard. At present, a reliable history of the source herd is the only assurance of safety. Research is being conducted to develop cultural and/or serological procedures to detect herds infected with *T. hyodysenteriae*. Unfortunately, no accurate methods are available to screen individual herd additions for the disease. Quarantine of all new animals is an excellent procedure, especially since clinical signs often appear in normal appearing but affected animals as a result of stress from transportation.

Losses in affected herds can also be reduced or prevented by various management procedures. Outbreaks of swine dysentery are often associated with conditions that produce stress such as handling, transportation, severe weather, or dietary changes. Minimizing stress or using preventive levels of various approved compounds may be useful aids. Sanitation is also extremely important since the severity of the disease within an individual or a herd is directly related to the quantities of contaminated feces that are ingested. Reducing crowded conditions and providing a clean, dry environment can produce dramatic results. Conversely, poor sanitation will greatly enhance the distribution and severity of the disease within a herd. An example of this may be seen occasionally in herds in northern latitudes where severe outbreaks have followed overfilling of waste pits under slatted floor systems where outlets became frozen.

Depopulation is a rather drastic but frequently necessary measure taken to eliminate chronic swine dysentery. Because the causative agent is anaerobic and susceptible to heat, oxygen, and drying, it is recommended that depopulation be done during warm, dry weather, if possible. Thorough cleaning and disinfection should be followed by fumigation of enclosed buildings. *Treponema hyodysenteriae* does not survive over 7 days in soil in warm seasons of the year. It is recommended that manure be removed from dirt lots and that they are idled for at least 1 month prior to repopulation. Swine waste lagoons and pits also present potential hazards because *T. hyodysenteriae* can persist in these systems. The period required for waste lagoons and pits to become completely safe is at least 6 months. Rodents must be eliminated from all buildings and feed storage areas before bringing in a new herd of swine.

Repopulation is extremely critical because any preventive procedures are useless if carrier pigs are introduced into the herd. Only primary SPF stock or animals from reliable sources should be considered as replacement stock.

Serious losses may be prevented even in exposed herds by the use of preventive levels of various therapeutic compounds (Table 1). The judicious use of these compounds as described in the section on therapy may be very beneficial, but these compounds should not be relied upon as a substitute for good management.

## Elimination of the Disease from a Herd

Experimentally, *T. hyodysenteriae* can be eliminated from pigs by certain medications. To accomplish this, *T. hyodysenteriae* must be eliminated from the environment simultaneously to prevent the organism from reinfecting the pigs once therapy is stopped. General guidelines for eradicating swine dysentery from a herd without depopulation are:

1. A warm season in which temperatures are higher than 15 C (59 F) is preferable.
2. The number of animals in the herd should be decreased to as few as possible.
3. If farrowings occur in batches, the recommended time to eradicate the disease is when no suckling pigs are on the farm.
4. An effective rodent control program, including renovation of buildings should be instituted.
5. All liquids should be removed from pits within the buildings in which pigs are housed.
6. Any buildings that do not contain pigs should be cleaned, disinfected, and fumigated.
7. All pigs on the farm should be medicated simultaneously for a period of 3-10 weeks with drugs in conjunction with a vaccination program. Consult with a veterinarian to determine the appropriate drugs and dosages. All pigs should receive medication a minimum of 3 weeks. If suckling pigs are present and are not individually medicated, the whole-herd medication period should be 3 weeks plus the suckling period.
8. After 1 week of medication, all equipment used for handling pigs, feed, and manure should be cleaned and disinfected.
9. During the medication period, an attempt should be made to clean and disinfect floors of buildings frequently. Animals should not be housed in over-crowded conditions.

This method of elimination of swine dysentery is not always successful. To determine if the disease has been eliminated, it is recommended that for 3-6 months following medication no drugs be used that are efficacious for the treatment of the disease. Clinical evidence of the disease will usually reappear if the organism is still present.

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Reference to products in this publication is not intended to be an endorsement to the exclusion of others which may be similar. Persons using such products assume responsibility for their use in accordance with current directions of the manufacturers.

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