Swine Dysentery– Pork Industry Handbook
Michigan State University Extension Service
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pork industry handbook

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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, 90-100% of these pigs are 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.

Due to unapparent infections 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.

Cause

An anaerobic (growing only in the absence of oxygen) bacterium, *Treponema hyodysenteriae,* has been found to cause swine dysentery. Pathogenic (disease-producing) types of *T. hyodysenteriae* act synergistically with other anaerobic bacteria, which are normally present in the intestinal tract of pigs, to produce the disease. The interaction of pathogenic *T. hyodysenteriae* and the other anaerobic bacteria such as *Bacteroides vulgatus* causes excretion of fluid, electrolytes and excess mucus from the large intestine. 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 a nonpathogenic type of *T. hyodysenteriae.* Although this type is very similar to the pathogenic type, nonpathogenic *T. hyodysenteriae* does not cause disease in pigs. The two types of *T. hyodysenteriae* can be identified by laboratory tests and oral inoculation into experimental pigs. A definitive diagnosis of swine dysentery should only be based on the isolation and identification of pathogenic *T. hyodysenteriae.*

Transmission

Pathogenic *T. hyodysenteriae* is present in the feces of pigs which either are 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 pathogenic *T. hyodysenteriae.*

It has been shown that sows may harbor pathogenic *T. hyodysenteriae* without having clinical evidence of swine dysentery. The organism is shed in the feces of the sow and 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 over 1 month. Exact survival time is not predictable because of the influences of variable environment 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 pathogenic *T. hyodysenteriae* in their feces for over 2 months.

Infectious organisms can be transmitted from farm to farm in feces carried on contaminated boots or vehicle tires. There is also some evidence that other animals such as dogs, birds and flies may carry *T. hyodysenteriae* for periods adequate to permit movement from one premise to another.

Diagnosis

Typical outbreaks of swine dysentery may be diagnosed by observation of 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 pathogenic *T. hyodysenteriae* to make a definitive diagnosis of swine dysentery.

Several other diseases commonly confused with swine dysentery are: salmonellosis, trichuriasis (whipworm

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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		Preventive Level	Withdrawal time (days)
	Level	Duration (days)		
Bacitracin	100 g/ton feed	6	50-100 g/ton feed	None
Carbadox	50 g/ton feed	continuously	50 g/ton feed	70
Chlortetracycline	100-200 g/ton feed	3-5	50-100 g/ton feed	None
Dimetridazole†	0.025% in water	5	100 g/ton feed	ND‡
Furazolidone	300 g/ton feed	10-14	100 g/ton feed	5
Gentamicin†	50 mg/gal	3-5	ND	ND
Ipronidazole†	0.005% in water	7	100 g/ton feed	ND
Lincomycin	100 g/ton feed	21	40 g/ton feed	6
Neomycin	140 g/ton feed	3-5	100 g/ton feed	20
Oxytetracycline	100 g/ton feed	3-5	50 g/ton feed	None
Ronidazole†	0.006% in water	5	ND	ND
Sodium arsanilate	4.5 grains/gal water	5-7		5
	225-360 g/ton feed	5-6	90 g/ton feed	5
Tylosin	0.25 g/gal water	5-6	100 g/ton feed	None
	200 mg/da (injectable)	3		4
Virginiamycin	100 g/ton feed	14	25 g/ton feed	None

* From *Diseases of Swine*, ed. H.W. Dunne & A.D. Leman, 4th ed. Ames, Iowa; Iowa State University Press, 1975. Chapter 28 "Swine Dysentery," by D.L. Harris & R.D. Glock.
† These compounds were not approved for administration to swine in the United States at the time this table was compiled.
‡ Not determined.

infestation), necroproliferative enteritis (hemorrhagic bowel syndrome) and gastic 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 re-exposure to pathogenic *T. hyodysenteriae*. The severity of outbreaks appears to be less if electrolytes are administered via the water and the feed is changed to a low-energy, high-fiber content.

Table 1 lists the various drugs which are being 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. Carbadox, Virginiamycin, and Lincomycin are the drugs which have been approved most recently by the Food and Drug Administration.

Prevention

No vaccine has been developed for the prevention of swine dysentery. Since the disease is so economically devastating, great care should be taken to prevent introduction into a noninfected herd. Pathogenic *T. hyodysenteriae* can be carried into a herd on boots, farm implements and trucks. Isolation of the herd and rodent and dog control are essential to reduce this potential hazard.

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 pathogenic *T. hyodysenteriae*. Unfortunately, no 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 subclinically affected animals as a result of stress due to 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. The time often recommended as a suitable waiting period before introducing new stock on dirt lots is 90 days. The lots involved should be plowed prior to introduction of new animals. Swine waste lagoons and pits also present potential hazards because swine dysentery can apparently persist for at least a few days in these systems. The period required for waste lagoons and pits to become completely safe is not known.

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, pathogenic *T. hyodysenteriae* may be eliminated from pigs by certain medications. To accomplish this, survival of pathogenic *T. hyodysenteriae* in the environment must be prevented. During treatment, pens should be cleaned and disinfected daily. After treatment, the pigs are then moved to thoroughly disinfected premises. It is possible that this method could be utilized to eliminate the disease from a herd, but no documented attempts have been reported.