Eradication programmes for swine dysentery

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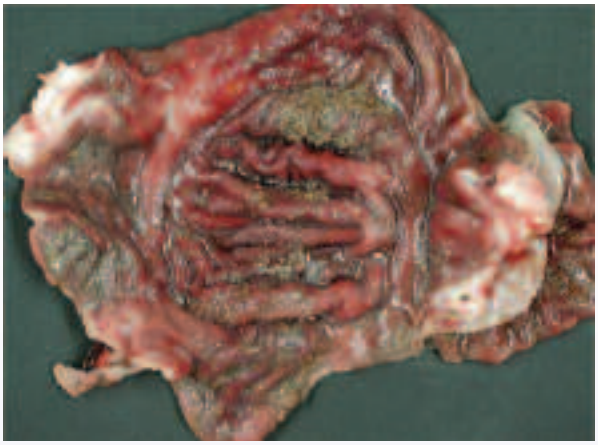
Swine dysentery remains a significant problem in all major pig producing countries. It causes scours, reduced weight gain, increases the food conversion ratio and causes some mortality plus expenditures for treatment.

Although not much is known about the true prevalence, surveys suggest that anywhere from 10-33% of swine herds around the world are affected by swine dysentery.

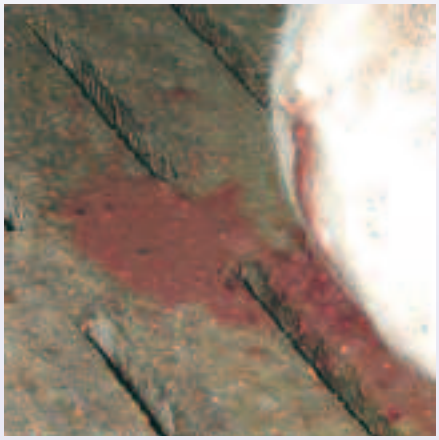
In Europe, there is conjecture that swine dysentery is on the increase due to the withdrawal of antibiotic growth promoters.



Large intestine from a pig with swine dysentery. Colitis with necrosis and haemmorhage.

Because swine dysentery can cause major economic losses for pork producers, eradication rather than mere control of the disease is preferable.

Experience in Denmark has provided models for eradication of swine dysentery. One method of eradication requires converting to a specific pathogen free (SPF) herd.



As the diarrhoea progresses stools will contain blood.

The other model is medical eradication, which must be coupled with cleaning, disinfection and some depopulation.

Converting to a SPF herd, however, is usually 10 times more expensive than medical eradication. Medical eradication is not quite as reliable as converting to SPF by restocking, but nevertheless can yield good results and is the method most often used in Denmark.

The specifics of medical eradication programmes in Denmark have varied widely, but the strategy outlined below is one that has been used extensively. It can cost effectively eliminate swine dysentery from almost 90% of herds on the first attempt and has proved to be the best of several strategies employed over the past 20-25 years.

Medical eradication

There is also a good correlation between the in vitro effect (minimum inhibitory concentration values) of antimicrobials and their ability to eliminate Brachyspira hyodysenteriae from pigs.

Tiamulin, carbadox and nitro-imidazoles can all eliminate Brachyspira hyodysenteriae, the pathogen that causes swine dysentery.

However, carbadox cannot be used in many countries around the world because of toxicity concerns in pigs and the farm staff, and nitroimidazoles have been removed from the US and EU markets due to meat safety issues. Consequently, tiamulin has been the medication most often used in Denmark and other countries for swine dysentery eradication.

Although swine dysentery is seen primarily in growers and finishers, it is imperative that breeders also be treated as well as suckling pigs and weaners.

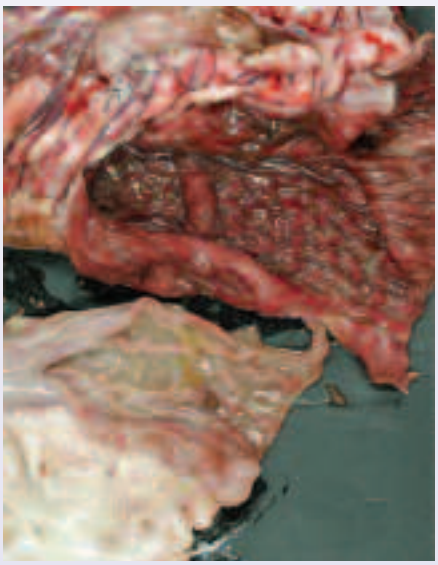
The most reliable strategy is medicating all breeders that are carriers and, in addition, piglets and weaners that are not older than six weeks.

Weaners older than six weeks and growers and finishers must be depopulated.

Grey diarrhoea can be the first sign of the swine dysentery.

Pre-eradication procedures

The clinical diagnosis of swine dysentery should be confirmed before undertaking the eradication programme. Brachyspira hyodysenteriae should be demonstrated by culture and the isolates tested for susceptibility to antimicrobials.



Large intestine from another pig with swine dysentery. With typical necrotic and haemorrhagic lesions.

Furthermore, a biosecurity programme should be established to avoid later reintroduction of infection.

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Mice and rats can carry Brachyspira hyodysenteriae and, therefore, effective rodent control should be established in good time before eradication is started.

Dogs and cats can also be carriers of the pathogen and should be kept away from the herd area. Houses should be renovated.

Cleaning and disinfection of premises is integral to the success of the medical eradication programme, so it is important that on the day eradication is started, all required disinfectants as well as medication are available and ready for use.

None of the carrier pigs should have clinical signs of swine dysentery before the eradication programme is initiated.

Pigs with clinical signs of swine dysentery and those that are chronically sick and unthrifty must be removed from houses in the unit.

None of the animals to be treated with tiamulin should receive ionophores for seven days before, during, or seven days after receiving tiamulin because serious adverse reactions could result.

Medical eradication treatment

Antimicrobials are used in doses that can eliminate Brachyspira hyodysenteriae from pigs. Breeding animals and weaners can be treated via the feed or water and suckling pigs only by intramuscular injection.

A standard plan, which has been used in more than 500 Danish herds, is as follows:

- Medicate breeders, which includes sows, gilts, young sows and boars. Also medicate suckling pigs and weaners that are not older than six weeks.

Medication of breeding animals and weaners should be started at the same time (day 1).

Medication of breeding animals should be ended on day 14, but medication of weaners should continue up to and including day 28.

Breeders are treated orally for 14 days with tiamulin (Tiamutin) either via the drinking water or feed. The dosage is 5mg/kg bodyweight/day.

Weaners are treated orally with tiamulin (Tiamutin) for 28 days either via the drinking water or the feed.

The dosage is 8-10mg/kg bodyweight/day.

Suckling pigs are treated with tiamulin (Tiamutin) injection three times during the treatment of breeding animals on days 2, 8 and 14.

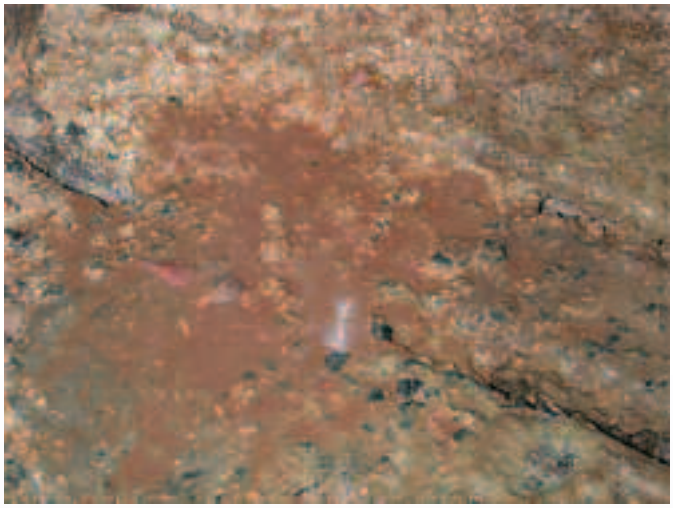
The dosage is 10mg/kg bodyweight. Treatment of suckling pigs under three days of age is not recommended.

Clean and disinfect the premises with 0.1% sodium hypochlorite every day during the medication period.

- Depopulate grower and finishing units, where infection pressure is high, through transfer, sale or slaughter. Then clean and disinfect with 0.1% sodium hypochlorite.

Never use sodium hypochlorite simul-

Another pig with bloody diarrhoea, typical for swine dysentery.




Two different pens with visible soft stools with blood and mucus in the farm with swine dysentery.

taneously with antibiotics in feed or drinking water, because it will destroy the antibiotics.

- If it is not possible to depopulate grower and finisher units totally before start of the eradication programme it is necessary to establish barriers between the medicated and non-medicated part of the herd.

At least one depopulated house is necessary to establish barriers between treated and non-treated areas. This way, the herd rotates as sections are cleaned and disinfected.

Preventing reinfection

Several additional measures can be taken to help ensure success of the eradication programme and prevent reinfection.

Barriers should completely isolate the eradication units from untreated units. Pigs should never be transferred across barriers.

In addition, tools, boots and boiler suits in units that are still infected must never be used in the eradication units.

Changing rooms and holding areas should be organised according to SPF guidelines.

Pens that are not depopulated should be cleaned thoroughly every day during the eradication programme, then disinfected.

New animals should not be introduced into the herd during eradication. After medication, new breeding stock must come only from farms that are free of swine dysentery and, preferably, should be SPF pigs.

This eradication plan gives only a general outline and makes no allowance for specific herd problems. A swine veterinarian should always prepare a herd specific programme for the eradication of swine dysentery.

If necessary, this should be done in cooperation with others who have professional expertise in pertinent areas, such as rodent control.

This medication strategy has proved to be a very reliable method for eradicating swine dysentery. Some years ago, a questionnaire was sent to Danish veterinarians in 22 randomly selected swine practices representing 266 herds managed with the programme; the success rate on first attempt was found to be 86% (228 of the herds).

In addition, an analysis showed that the cost of the medical eradication programme was usually recovered in less than one year due to better daily weight gain, improved feed conversion and lower mortality.

The analysis took into account factors such as the cost of veterinary care as well as the temporary stop in production while some of the pig houses were emptied. ■