pork industry handbook

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# Swine Coccidiosis

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## Introduction

Regardless of the specific causes, baby pig scours continue to be one of the most important problems confronting the swine producer. With the addition of coccidia to the list, the number of recognized causes continues to grow.

Although infections by swine coccidia are believed to be wide spread, such infections have received little attention over the years primarily because they didn't appear very important. Recent studies, however, have started to change our thinking. Current research findings now indicate that some species of coccidia, such as *Isospora suis*, are potent, primary pathogens. Considering the evidence accumulated the last few years from our southeastern states and portions of the Midwest, indications are that baby pig scours associated with coccidia have been on the increase. Based on one Illinois report it has been estimated that perhaps 10-15% of the baby pig scours may actually be related to a coccidia infection.

## Causative Organisms

Coccidia are microscopic, one-celled animals commonly referred to as protozoa. As such, they are quite unlike the bacteria and viruses more commonly responsible for scours. Presently, 13 species of coccidia are reported to infect swine. Of the 9 species known to exist in the United States, 8 have been classified in the genus Eimeria. The remaining agent has been placed in the genus Isospora (*Isospora suis*) and appears to be a principle swine pathogen. Over the years the role of many swine coccidia as agents of disease can best be described as controversial, but today there is little doubt where *I. suis* is concerned.

## Life Cycle

Most species of coccidia tend to be very animal specific in that they will infect only their natural host. They all have relatively complex life cycles with both asexual multiplication and sexual phases occurring within the hosts. Infection occurs with the ingestion of a sporulated oocyst (the infectious stage). Once in the pig's intestine sporozoites are released, invading the cells lining the intestinal tract and giving rise to the production and release of large numbers of invasive merozoites. After one or more additional generations and the potential involvement and destruction of many of the pig's intestinal cells, large numbers of macrogametes (female) and lesser numbers of microgametes (male) stages are formed. The microgametes are released and fertilize the macrogametes resulting in the formation of another new oocyst. Shortly thereafter, the oocysts are released into the intestinal tract and pass out with the feces. The time required from ingestion of a sporolated oocyst to the formation and release of a new oocyst in the case of *I. suis* is approximately 5 days with oocysts shedding occurring for approximately 7 days. Newly shed oocysts, however, are not infectious. To become so they must undergo further development (sporulation) outside the host. This process requires oxygen (air) and takes about four days under ideal conditions of 86° F (30° C) temperature and 80-85% humidity.

Outside the host the sporulated oocysts are extremely resistant to environmental conditions and consequently may remain viable under varying conditions for months. With their ingestion by another susceptible pig the cycle is repeated.

## Clinical Signs

Coccidiosis in the newborn piglet is chiefly a diarrhea (scours). Although it has been reported to occur as early as 3 days of age, most cases will occur between 7-10 days of age. The feces are usually fluid and range in color from yellow to a light gray-green. The scouring will generally persist 4-7 days. The severity of the attacks and dehydration depend upon the number of sporolated oocysts ingested and the possible presence of other potential enteric pathogens. In severe cases, considerable dehydration may occur with death losses running from 10-50% or higher.

## Diagnosis

We cannot assume that baby pig scours are always caused by enteropathogenic *Escherichia coli*, transmissible gastroenteritis (TGE) or Rotaviruses.

The discovery of oocysts in the feces is helpful in determining the cause. Unfortunately, oocysts are shed in large numbers for a relatively short period of time early in the disease, during the first day or two of the diarrhea, and may not be present at other times of examination. As a consequence, help is needed from a diagnostic laboratory where necropsy findings, herd history and histopathologic examination of appropriate intestinal tissues for the presence of the different developmental stages will generally suffice to make a positive diagnosis.

## Treatment

While there are presently no federally licensed or approved coccidiostats for swine, several sulfa drugs and coccidiostats employed experimentally have been reported to be of some value. In situations where coccidiosis is known to exist, these drugs have reduced oocyst shedding by sows and gilts and even piglets if given early before clinical signs (scours) occur. Once the piglets are scouring, the damage to their intestinal tract has already occurred and specific treatment at that time is now of little value.

Consultation with your local veterinarian is recommended if coccidiosis is suspected.

## Prevention and Control

Since the oocysts are shed in the feces and sporolate on the ground or floor of the farrowing unit, special efforts must be made to clean and maintain hygienic conditions in the farrowing area. Management practices then play a critical role in control. In this regard, it appears that some of our modern management practices, such as continuous farrowing, may actually be contributing to the problem.

Because a minimum of 4-5 days is generally required for the oocysts to become infective, manure removal and separation from the piglets with proper clean up between farrowing appears necessary. Since adult swine are the most likely source of new infections, pregnant sows and gilts should be washed prior to entering the farrowing area with special attention to the teats and under side.

Since the oocysts are resistant to most disinfectants, the prevention of a build up of oocysts from previous litters is essential. Thorough steam cleaning followed by the use of 5-10% solution of soapy ammonia (one of the few effective disinfectants) appears to be the most successful means to remove and reduce the number of infective oocysts.

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