

Neonatal Diarrhea

Author
Adam Moeser, DVM PhD, North Carolina State University

Reviewer
Dr. Harry Snelson, American Association of Swine Veterinarians

Introduction

Diarrhea is one of the leading causes of morbidity and mortality in neonatal pigs. Diarrheal disease in neonates is often sudden in onset and causes a rapid decline in clinical condition as the pig becomes dehydrated and develops systemic infections. Thus prevention, early identification, and immediate initiation of supportive care and treatment in neonatal diarrhea cases are critical. This fact sheet will review the basic aspects of neonatal diarrhea in pigs including clinical signs, pathogenesis, diagnosis, and control strategies.

Clinical Signs

The most common clinical signs observed with neonatal diarrhea include watery to pasty stools, lethargy, and dehydration. Diarrheic stools are often observed along the walls, flooring, and on other pigs. However, at times diarrhea can be difficult to appreciate, especially if the diarrhea is watery and may not be visible in the pens. Therefore, careful examination of both the piglets and the pens is important to identify diarrheal disease. Additional clinical signs to look for are wet backsides, reddened perineal area, and huddling (see Table 1 and Figure 1). A characteristic odor from greasy, scouring pigs can also be noted when walking through a room.

Table 1. Common clinical signs associated with neonatal diarrhea in piglets.

- Watery to pasty stools
- Lethargy
- Wet backsides
- Dirty pens and pigs
- Reddened perineal area
- Huddling

Pathogenesis

The majority of neonatal diarrhea is caused by infectious pathogens which include bacterial, viral, and parasitic organisms. The most common infectious agents responsible for neonatal diarrhea are listed in Figure 2. The age at onset is helpful in ruling out some infectious causes of diarrhea. For example, *Clostridium perfringens* causes diarrhea predominantly in the first week of life and becomes much less common after 7 days of age. Coccidiosis, caused by *Isospora suis*, does not affect pigs younger than 6 days of age. However, other pathogens such as *E. coli* (K88) and Transmissible gastroenteritis (TGE) can cause disease in any age group, but the disease is more severe in neonatal animals.

Figure 1. Clinical presentation of neonatal diarrhea.



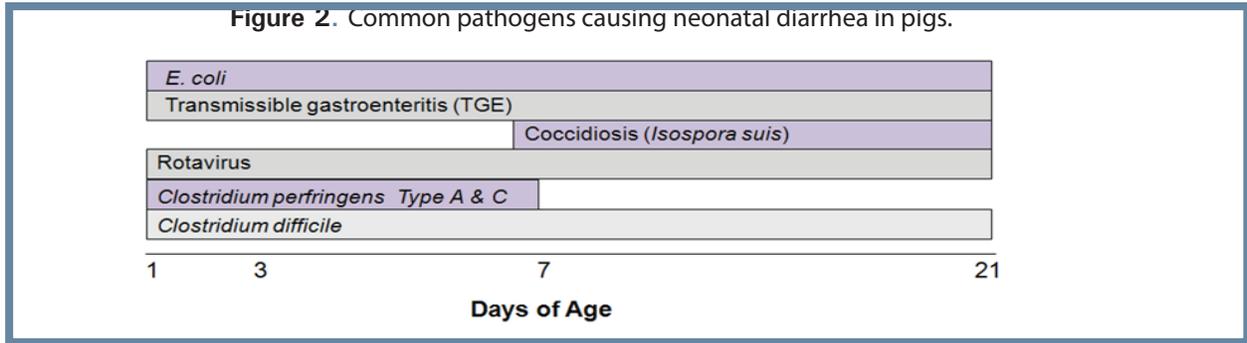
Figure 1. Legend.

Upper left panel: litter with diarrhea observed huddling.

Upper right panels: scours on walls of pens.

Lower left and right panel: different clinical presentations of diarrhea.

Figure 2. Common pathogens causing neonatal diarrhea in pigs.



Diagnosis

Although age at onset, morbidity, mortality, and past history on the farm can help develop a presumptive diagnosis, necropsy and sample submission to a diagnostic laboratory is necessary to confirm the causative agent and to aid in the appropriate treatment and control programs.

Prevention/Treatment

Many of the pathogens causing diarrhea in neonatal pigs are normal inhabitants of the gastrointestinal tract and do not cause disease in healthy piglets. This is due to innate defense mechanisms present in the healthy piglet. However, when defense mechanisms are compromised, infectious pathogens can take advantage of this and cause disease. There are several stress-related factors in swine production that contribute to impaired defense against pathogens and thus predispose piglets to infectious diarrheal disease. These include unsanitary environment, chilling or large fluctuations in barn temperature, stress, inadequate intake of colostrum and/or lack of protection of maternal antibodies transferred from the sow. With regards to the cleanliness of the environment, special adherence to All-In, All-Out pig flow is critical in the prevention of neonatal diarrhea. This includes washing rooms with soap/degreaser to remove biofilms, appropriate disinfection, and complete drying of rooms in between pig turns. For example, loading pigs into a wet farrowing room that has been hastily cleaned will increase the likelihood of neonatal diarrhea issues. As mentioned previously, inadequate barns temperature control is an important predisposing factor for neonatal diarrhea therefore provision of supplemental heat for at least the first three days is necessary due to the piglets inability to self regulate their body temperature.

Table 2. Predisposing factors for neonatal diarrhea.

- Unsanitary conditions
- Chilling
- Stress
- Drafts/fluctuations in temperature
- Inadequate passive transfer of maternal antibodies from dam

Another factor influencing the susceptibility of piglets to neonatal diarrhea is sow parity. Litters from low parity dams are more susceptible to infectious diarrhea due in large part to the lower passive immunity received from naïve dams. Sow vaccine programs have proven effective in the prevention and control of neonatal diarrheas such as *E. coli* and Clostridial disease. Sows are typically vaccinated twice during gestation to enhance the passive transfer of protective antibodies from the sow to the piglet through colostrum. Antimicrobials can also be included in sow rations in efforts to reduce the number of infectious pathogens shed in sow feces and therefore limit the environmental pathogen exposure to piglets.

Once diarrheal disease has begun, treatments often include antibiotics and supportive therapy including keeping pigs warm with heat lamps and hydrated with sugar-based electrolyte solutions provided in the water. However, it is important that treatments are based on a proper diagnosis and veterinary insight to ensure appropriate treatment and a successful outcome.

Summary

Neonatal scours continue to be a major cause of neonatal morbidity and mortality. Careful attention to both the piglet and environment is necessary for the timely identification of clinical disease and initiation of treatment. The impact of diarrheal disease can be largely reduced by eliminating predisposing stressors and instituting preventative and control programs.

Suggested Readings

Managing Pig Health and the Treatment of Disease. Michael R Muirhead and Thomas JL Alexander. 2002