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The 2009 Allen D. Leman conference proceedings book is made possible by the generous support of **IDEXX**.

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Formatting

Tina Smith

CD-ROM

David Brown

Logo Design

Ruth Cronje, and Jan Swanson;
based on the original design by Dr. Robert Dunlop

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Practitioner's approach to neonatal diarrhea

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Introduction

When challenged with an outbreak of diarrhea in the farrowing house, your best approach as a veterinary practitioner is to collect multiple samples and initiate therapy at the same time. When on-farm to investigate an outbreak of scours my approach includes diagnostics, the initiation of treatment, and a review of on-farm prevention programs. It is very common that I will break these three apart and review them over the course of the coming 710 days, but most critical is the need to initiate therapy to prevent losses and further evaluate the risks of the worst case scenarios.

Diagnostics

Diagnostics begin with evaluation of the age of piglets at the onset of diarrhea. Early bacterial infections of *E. coli* and *Clostridium* create watery diarrhea within the first few days of life. Reports have noted scouring piglets within that first 24 hours when piglets are not receiving appropriate colostrum and sanitation levels have suffered. The age of the piglet is critical because two other common causes of diarrhea in the piglet require additional time to create the disease symptoms.

Namely coccidia and rotavirus are common in many production systems today, but rotavirus takes at least five days to initiate destruction of the villi and create diarrhea and coccidia even further with a 5-9 day infectious period in the cells, but a 7-10 day presence of scours.

Once new information is collected about the age of piglets, then the appearance of the scouring material itself is important. Watery diarrhea the first two or three days will cause the entire litter to be covered with the watery material. These piglets may look the same if rotavirus is present, but rotavirus will initiate later and can at some point create vomiting in piglets as the virus moves quickly and the destruction of intestinal tissue creates nausea and malaise throughout the body system.

Most important to the long-term picture is complete diagnostic work-up with the collection of fresh fecal samples from piglets that have just begun to scour as well as tissue samples of multiple segments of small and large intestines.

It is critical to collect fecal's from piglets that are early in the infection as both coccidia and rotavirus can be quite clearing of the infectious organism after the scours have been present for a couple of days. Early infectious piglets within the first day of diarrhea and piglets that have not yet been treated with antibiotics are going to be your best candidate for your selection for diagnostic sampling. Many farm staff can even collect this material quickly, but it is important that the rapid transit on ice be achieved as *Clostridium A* and *Clostridium difficile* may be competitively overgrown by other non-specific *Clostridium*. Your ability to identify the appropriate diagnostic sample is challenging at best.

Treatments

Immediate treatments include antibiotic standard operating procedures as I have outlined with a Sample Baby Pig Treatment Chart (See Table 1). These treatments at least initiate therapy to reduce losses, but in the event of chronic diarrhea's that do not resolve or lead to more severe outbreaks of multiple litters, a combination of both a treatment program as well as prevention is critical.

Antibiotic treatments are commonly initiated with an aminoglycoside such as Gentamicin as an injectable in the case of *E. coli* or Spectinomycin oral in the case of *Clostridium*'s. In my hands, many of these antibiotic treatments are secondary to a good solid prevention program and may be a crutch in those cases where we have been ineffective in establishing appropriate colostrum uptake and immune prevention of disease. Nonetheless, these treatments are common in most farrowing houses and need to be on the shelf and initiated in the event we have litters that are wet and scouring. The faster we get on these treatments and quickly initiate follow-up for these litters, the less likely they will spread.

I reviewed this proceedings paper with two of my colleagues at Carthage Veterinary Service, Ltd. Dr. Lowe has an exciting and challenging perspective on baby pig treatments. The injectable therapies may actually make *Clostridium* diarrhea worse in those herds that are chronic *Clostridium A* herds. He has gone so far as to rely more heavily on drying powders and elevated room temperatures. In fact, even

Table 1: Sample baby pig treatment chart

Problem	Images	Treatment and dosage	Management considerations
<p><i>E. coli</i></p> <ul style="list-style-type: none"> • Scours can occur throughout farrowing • Most common secondary bacterial infection 		<p>Gentocin – injectable (GT at labeled dose)</p> <ul style="list-style-type: none"> • 1 cc per 3 lb (5 mg per lb) 	<p>Immunity/vaccination</p> <p>Split-suckle</p> <p>Gilt feedback</p> <p>Dry powder</p>
<p><i>Clostridium</i></p> <ul style="list-style-type: none"> • Scour between Days 1 and 3 		<p>Spectinomycin – oral pump</p> <p>SpectoGard™</p> <ul style="list-style-type: none"> • orally 1 cc orally 	<p>Immunity/vaccination</p> <p>Split-suckle</p> <p>Gilt feedback</p> <p>Sanitation</p> <p>Dry powder</p>
<p>Coccidia</p> <ul style="list-style-type: none"> • Protozoan parasite present in the environment • Yellow paste at 7 to 10 days 		<p>Ponazuril – oral preventative</p> <p>Cocci-Halt at three days of age for control</p> <ul style="list-style-type: none"> • Can administer as treatment 	<p>Sanitation</p> <p>Humidity</p> <p>Prevention product</p>
<p>Rotavirus</p> <ul style="list-style-type: none"> • Vomiting and watery diarrhea at greater than Day 5 		<p>Feedback to sows three weeks pre-farrowing (must get approval from vet)</p> <ul style="list-style-type: none"> • Expose all sows in group to scours, leftover feed, and feces from sows • Must not sit out overnight <p>GT at labeled dose</p> <ul style="list-style-type: none"> • 1 cc per 3 lb (5 mg per lb) 	<p>Immunity</p> <p>Feedback</p> <p>Dry powder</p>
<p>Facial lacerations</p> <p>Joint infections</p> <p>Navel infections</p>		<p>Excede™</p> <ul style="list-style-type: none"> • 1 cc per 44 lb in muscle 	<p>Processing clean-up</p> <p>Split-suckle</p> <p>Multiple agents</p>
<p>Fallback pigs</p>		<p>Excede™</p> <ul style="list-style-type: none"> • 1 cc per 44 lbs in muscle <p>Move to litter where they can eat with or without treatment</p>	<p>SOP management</p> <p>Multiple agents</p>
<p>Greasy pigs</p>		<p>Excede™</p> <ul style="list-style-type: none"> • 1 cc per 44 lb for three days in a row 	<p>Gilt litter teeth cutting</p> <p>Sow health</p> <p>Humidity</p>

Advanced Knowledge

Practitioner's approach to neonatal diarrhea

stopping washing and sanitizing farrowing crates for two full turns of the farrowing house in order to spend time and energy focusing on Day 1 care and colostrum uptake of piglets. Drying powders are used to keep the piglets from chilling, keep the farrowing crates dry, and then individual injections are only given when whole litters are continuing to scour.

Dr. Groth had a similar experience with Clostridium A whereby if it is straight Clostridium A with no other rotavirus or *E. coli* he will stop all individual treatments, and focus on whole litter swaps followed by the initiation of feedback. When the decision is made to feedback, it is also important to remember this must be done prior to two weeks pre-farrow to initiate immune prevention and not create a more severe diarrhea problem.

Three veterinarians can agree on the fact that the management procedures are most critical in long-term prevention of neonatal diarrhea. We agree that whole litter swaps are effective and that individual movement of piglets or a great deal of piglet handling and transmission of scouring litters can lead to outbreaks that are management driven.

Increasing room temperature in order to dry the rooms and focusing your farm staffs attention on Day 1 care with split-suckle boxes and colostrum management is the most critical.

Prevention

Long-term prevention includes both the focus on gilt development for these females into your breeding herd with appropriate feedback of fecal material from scouring piglets as well as vaccination programs during the gesta-

tion period. Two vaccinations with an *E. coli* product and Clostridium if present in your herd will be critical long-term. Several clients have enjoyed success with rotavirus vaccination as part of the gilt development program. However, scientists remind us that the best rotavirus protection is only achieved through oral exposure to the rotavirus organism. This can be accomplished with the live oral vaccination or through the collection of feedback material and timely exposure to both gilts and sows in the event of rotavirus activity in farrowing.

Sanitation is also critical where we are allowing exposure through no washing, but using drying powder to occur in chronic cases, or going to the opposite and allowing farm staff the time necessary to completely sanitize the farrowing house and follow-up with drying time for individual farrowing crates. This is quite costly in the wintertime when we are trying to dry an empty farrowing room, but also critical in the summer when we are challenged with coccidia and know that humidity and challenging environments are going to lead to an explosion of this organism within many of our systems.

In final summary, a thorough review of the sanitation and disinfection, an implementation of immunity evaluation of vaccination protocols, as well as the need for intervention with treatments and management in the farrowing house will lead to a long-term sustainable environment for the piglets and improved piglet survivability in the farrowing house.

