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# Post weaning diarrhea

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Post weaning diarrhea continues to be a common issue in veterinary practice. Diarrhea that occurs from day 1-10 impacts nursery exit weight, pig variability and limits average daily gain potential of the group. Although it can be an issue throughout the entire population, it is certainly intensified in the population of smaller pigs at weaning.

## Causes of post weaning diarrhea

### Infectious causes

The leading infectious causes of post weaning diarrhea continue to be

- Rotavirus
  - Type A
  - Type C
- *E. coli*'s – Toxin producing – LT, STa, STb, STx2e
  - K88
  - F18
- Salmonellas
  - Group B4, 5's

### Non-infectious causes

- Not getting pigs to eat quickly
- Poor sanitation
  - Sow farm
  - Nursery
- Feed issues
- Cold drafts
- Water quality
- Wean age influence

## Solutions

### Rotavirus

Recent work at the University of Minnesota has shown that Rotavirus is a leading cause of post wean diarrhea. Rota PCR diagnostics have shown a pig is often infected with both Type A & C Rota virus.

Typical clinical presentation is 1 or 2 pigs that have a yellow to watery diarrhea at weaning. By three days post weaning, 5-10% of the population have diarrhea. The diarrhea typically peaks at about 5-7 days post weaning and gradually improves. Due to the fact that post weaning diarrheas are often mixed infections of both bacterial and viral agents, treatment with antibiotics can show some minor improvement but generally is unrewarding when dealing with post weaning Rotavirus.

Clinically, the mixed A and C infections tend to be the most severe, however we can see some very severe post weaning Rotavirus diarrheas with Type A only. Having all pigs weaned with similar levels of immunity seems to be critical. Focus on the following:

- Use frequent quality feedback of scour material from the farrowing crate to sows and gilts pre-farrowing.
- Parity segregation of gilt offspring
- Increase wean age. This changes the pigs' response to infectious agents as well as getting the pig an increased opportunity to see and develop Rotavirus immunity prior to the wean event.
- Sanitation of the farrowing crate, sow and load out area.
  - Wash the sow prior to loading into the farrowing crate
  - Make sure the farrowing crate is washed, cleaned and dried prior to sow entry.
  - Routine wash and disinfection of the weaned pig load out area.
  - Although Rotavirus tends to be difficult to kill disinfectants such as Synergize and DC&R will kill the virus.
- Nursery sanitation
  - It is important to make sure that the Rotavirus is not coming from the nursery itself.
  - It is necessary to wash, clean, inspect and rewash. Disinfection and allowing a final dry is also important.

## Post weaning diarrhea

- Extra focus should be placed on areas that are difficult to clean and disinfect such as water cups, feeder lips, gate feet, cracks and crevices.
- All water cups should be emptied, blown out and allowed to dry then disinfected and dried.

### ***E. coli***

The most common *E. coli* that we see post weaning is toxigenic K88 followed by a toxigenic F18.

- Oral vaccination: Oral vaccination is done with both non-toxicogenic K88 and non-toxicogenic F18 to produce both local immunity and competitive inhibition of intestinal binding sites. Often, the K88 is administered pre-weaning to the piglets and the F18 is administered sometime within the first seven days post weaning. As the F18 post wean diarrhea tends to occur after 25 days of age or 1 week post weaning.
- Wean age: In general the amount of post weaning diarrhea is intensified in the smaller weaning weight pigs. Therefore when we wean an older pig, the smaller end of the weaning weight distribution is heavier. These heavier pigs tend to go on feed easier and more quickly and therefore have fewer issues with both Rotavirus and *E. coli*.

### **Salmonella**

By far the most common post weaning Salmonella is in the Group B4, 5's. Of the B4, 5's, the true pathogens tend to be Salmonella typhimurium however we do have a lot of B4, 5's that are causing diarrhea issues but probably are secondary to management factors leading to excess exposure and contamination issues.

Salmonella Type C which includes Salmonella choleraesuis is rarely seen today. Routine vaccination of most pigs with Salmonella choleraesuis oral vaccine has dramatically reduced the incidence of this disease.

Salmonella can quickly become a sanitation issue in which a number of organisms overwhelm the pig. This can occur easily in sick and hospital pens. A post mortem of the small fallout pigs in these pens will reveal severe ulcerative colitis.

### **Feed**

It is clear that different feed types have an affect on post weaning diarrhea. If you are experiencing post weaning diarrhea and have gone through the routine control measures noted above yet still having concerns, it is good to set up a feed trial. Use many different pre-starter and starter feeds then evaluate and score the diarrhea index on each feed. Clearly this will need to be evaluated against both feed efficiency and average daily gains of the feeds.

It is critical that pigs get on feed as soon as possible after weaning. Management strategies such as getting pigs up every 1-2 hours, multiple mat feeding daily for the first 3-5 days, using feed bowls placed in the middle of the pen, gruel feeding pigs multiple times a day for the first 3 days and finding the most palatable feed that pigs like to eat help the pigs eat quickly all help. If the pig does not eat quickly, intestinal vilus length shrinks; leading to diarrhea once Rotavirus, *E. coli* and Salmonella are involved.

### **Cold and draft**

A pig that is chilled will have decreased gut motility and therefore increased intestinal transit time which lead to increased proliferation of the Rotavirus, *E. coli*'s and Salmonella's within the gastrointestinal tract.

Maintaining a warm, dry and draft-free environment in which the pig can sleep is critical. This typically includes a lay mat, brooder or heat lamp over the sleeping area as well as a solid divide that will cut down draft throughout the pen. Minimum ventilation and temperature set point of the room needs to be evaluated based on age and weight of the weaned pig as well as the floor type. Typically 1-2 cfm/pig at entry (12-18 lbs) and a lay zone of 85-95% provides needed comfort.

### **Water quality**

Ideally we would like to have clean and cool water flowing at a rate of 1 pint to 1 quarter per minute at a pH of 4-5 with no bacteria present in the water. Occasionally an alternate water source will need to be available for the first several days post weaning with a transition back to site water after that to help control post weaning diarrhea.

Water lines frequently get contaminated with biofilm build up. Routine treatment of the water line should occur between and during each turn. Acidifiers, peroxides and other commercial water treatments are available. Many of these can be used when pigs are in the barn.

### **Summary**

When dealing with post weaning diarrhea it is critical that you get an accurate diagnosis of the infectious agent and manage the cofactors that intensify these agents in order to have a successful outcome.

