

Piglet health

E. coli and clostridium

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We are entering a new era where control of disease is becoming the number one priority for swine farmers and veterinarians. Prevention is the key word and strategies on how to face different challenges will continuously evolve in the coming years. As antimicrobial use will be more restricted and allowed only for therapeutic purposes (and no longer for prophylactic or metaphylactic purposes), a better understanding of the various diseases will be needed to try and outsmart them.

I remember vet students visiting farms with me and asking to see an E. coli case. Unfortunately farms do not have simple E. coli cases and when farmers talk about it, they talk about diarrhoea in the farrowing units. We do not often know if we are facing E. coli, clostridium, rotavirus, or a combination of all of them.

Neonatal diarrhoea occurs in many pig farms, especially those with relatively young sows. It is known that enterotoxigenic E. coli (ETEC) plays an important role in this disease and that Clostridium perfringens can also contribute. The pathogenicity of Clostridium perfringens in pigs is related to its ability to produce toxins (α , β , ϵ and $\beta 2$). Nowadays, the vast majority of pig isolates are type A, most of which are able to produce the $\beta 2$ as well as the α -toxin. Piglets become infected through the environment, other scouring piglets and most importantly the sow herself. As farrowing time approaches the sow excretes E. coli at a greater rate.

As a first step, we have a fast and cheap in-farm test to discriminate whether we have a bacteria or a virus involved in the diarrhoea case. This is a pH-measuring test (with pH strips): viral diarrhoea tends to be acidic, while bacterial diarrhoea tends to be alkaline.

Regardless of the type of pathogen involved, the main issue when we face neonatal diarrhoea is the cost associated for the farm. Neonatal diarrhoea acts like a snowball with different factors adding up. Things like antibiotic use, piglet mortality, and effect on sow lactation will add to this snowball, bringing the economic impact of the disease up to \$1.29 per head.

The fact that we have more or less diarrhoea problems will be, in the end, a matter of balance, as always happens with our health system. A good balance between health improvement and reduction of pathogen load will always give good results.

Improved sanitation focus

- **Using soap detergents:** the use of detergents allows for better cleaning and also removal of dirty areas.
- **Washing sows before entering the farrowing house:** a lot of people think that having clean facilities is enough in order to achieve high hygiene, but we also need to clean the sow because if she becomes dirty she will contaminate the farrowing house again.
- **Having the correct drying time:** to properly dry can be more powerful than cleaning and disinfecting.
- **Applying disinfectants correctly:** disinfectants have a dose and also an application regime, consequently we need to know the kind of disinfectant that we use and also if its application needs to be on a wet or dry surface. Not all disinfectants are the same.

- **Implementing AIAO farrowing process.**
- **Reducing food traffic in crates:** Japan and USA, after the PED outbreaks, realised how important biosecurity and special care of food traffic has become in controlling disease.

Antibiotics

Antibiotic use will be more controlled and restrained, if not eliminated, as a curative strategy, so for:

- **E. coli:** enrofloxacin, gentamicin
- **Clostridium:**
 - BMD to sows pre-farrowing
 - Oral antibiotics: Penicillin, Tylosin, BMD, Tiamulin

Any action to improve overall piglet health will be crucial, such as:

- **Improving the microenvironment:** we all know sow and piglet needs are really different, so we need to adapt each environment to the needs of its hosts, in terms of temperature, speed of air and humidity. All these factor will play an important role.
- **Feedback exposure:** even if this is a very good general strategy, if it is applied without any control it may become a source of danger. As an example, I remember a case where feedback was applied and while it was a good solution for E. coli, it was a real disaster for coccidia. To properly do feedback we need to consider that:
 - For E. coli + Rota + PED virus, feedback could be the best solution.
 - For some other diseases it may become a problem.
- **Reducing other diseases:**
 - 8-10 week gilt acclimatisation: because gilts have a weaker immunity any strategy that increases their immunity level will help.
- **Assuring colostrum and milk intake:** we need to differentiate colostrum and milk immunity or protection, but both are needed and interesting to help the piglet.
- **Vaccinating:**
 - Vaccinating the sow can effectively prevent ETEC infections in neonatal piglets. Immunity is passively passed on through the colostrum and milk.
 - There are several vaccines on the market, which have been extensively used to prevent this disease. The aim of these vaccines is to induce the sow to produce antibodies against the bacterial adhesion factors, preventing their binding and hence diarrhoea and dehydration. Some also offer protection against clostridium.
 - Sows and gilts are vaccinated during gestation, according to product protocols. For gilts, first vaccination is 6-8 weeks prior to farrowing and a booster four weeks later. Sows and gilts are vaccinated 2-4 weeks before each farrow.