Transition to Antibiotic-Free Production: On-Farm Management Strategies

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Growing concern over the impact on antimicrobial resistance in human pathogens related to the use of antimicrobials in livestock production has led some consumers to choose pork produced in antimicrobial-free farm systems. This in turn has opened up new marketing opportunities for pork producers to capture increased revenue and secure market share.

South West Vets' objective is to equip our clients to raise antimicrobial or antibiotic free pigs with the same cost and biological performance, including mortality rate, as conventionally raised pigs. Achieving this goal requires a highly collaborative approach and depends on innovative thinking to tackle some of the typical barriers to success. The following list of priority issues may help to focus on the biggest bottlenecks preventing successful transition to antibiotic-free production.

1. Measurement and review of biological and economic performance is a standard operating procedure for most pork producers, and is especially critical during transitions, such as the move to raising pigs without antibiotics. Changes to performance could be so significant as to jeopardize the sustainability for the farm,

if not addressed quickly. Therefore, the attributes of a good data management and performance monitoring system include:

- Simple to keep up to date, with minimal or no requirement for duplicate data entry

- Accurate, with logical calculations, and high quality data input

- Web-based, allowing for the whole production team and advisory team to review

- Batch or time period closeouts to monitor progress and track changes in performance relative to health program/nutrition/management changes

- Robust inventory tracking to follow 'treated' and 'program' pigs within a single batch or group

- Allow for accurate benchmarking within a system and between systems if appropriate

2. **Elimination and control of critical diseases** is essential in antibiotic-free pig production. PRRS virus most obviously drives antibiotic use and infection with PRRS virus is a serious disadvantage or barrier to effectively withdraw antibiotics. Vaccination of growing pig flows mitigates some cost of PRRS, but PRRS elimination and prevention of subsequent infection, should be "Plan A" when undertaking antibiotic-free production.

Mycoplasma hyopneumonia (Mh) elimination is possible and cost effective and is a second strong consideration for antibiotic free production. Elimination of PRRS

and Mh from breeding herds can often be accomplished at the same time, which strengthens the economic considerations.

For the many other bacteria and virus which we do not normally consider for elimination from the farm, the most important control technique is clearly effective gilt acclimation. SIV, 'suis-cide' bugs, etc. all respond favorably to early, structured, verified gilt acclimation.

Any bug that leaves the piglet with a compromised gut epithelium on weaning day is a major challenge in antibiotic-free production, especially if animal byproducts such as spray-dried plasma protein are also restricted. Therefore, control of pathogens such as rotavirus and coccidiosis takes on a greater importance and may warrant interventions that may be less cost effective under conventional schemes.

Finally, the best way to manage a new pathogen is to ensure that it doesn't ever arrive at the farm! Therefore, biosecurity focus needs to be sharpened to make antibiotic-free production sustainable. Any site with a track record of new infections over time should start the conversation about transition to antibiotic free with a discussion about biosecurity.

3. Weaning age is a critical issue for certain bacterial pathogens that can make antibiotic-free production either unsustainable from a productivity point of view, or unethical, from the pigs' point of view. *Streptococcus suis* infection in the nursery

has been demonstrated to be significantly easier to manage with older weaned pigs. Certain herds experience improvements in post-weaning diarrhea or *Mycoplasma hyorhinis* infections when pigs are weaned older as well.

4. Sustained management effort, focus and fine-tuning is a requirement for successful antibiotic-free production, and includes, but is not limited to, the following areas of daily management:

- Colostrum management to effectively control early infections
- Fostering protocols to minimize horizontal disease transmission in the farrowing room
- Processing hygiene and efficacy to reduce infections without antibiotic 'coverage'
- Iron/anemia status monitoring and control to ensure thrifty pigs are weaned
- Transport care and auditing, shipping room and nursery setup to receive weaned pigs
- Individual pig treatment (targets, protocols) to reduce transmission of pathogens and ensure high quality care
- Water quality and treatment to minimize infectious pressure from contaminated water supply or equipment, and to maximize water intake.

All of these focus areas can be routinely audited, observed and reviewed, which prevents slippage and contributes to the sustained management effort required to raise pigs without the usual "Band Aid" of antimicrobials.

Finally, the key ingredient in the antibiotic-free system is communication. Results from batch deliveries, finisher closeouts, or harvest events need to be shared back up the system to the sow herd managers to fully understand the impact of changes on the system. For example, antibiotic-free finisher group mortality, in our experience, often can be linked to chronic lesions such as valvular endocarditis, due to treatment failure or lack of treatment during the pigs' earlier life. Regular structured communication, feedback and teamwork to resolve new and unexpected issues will prevent productivity or cost problems from going unchallenged for too long in the antibiotic-free farm.