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Practical medication tips - Developing and utilizing a treatment plan of attack

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In a market hog climate where every animal costs \$20 - \$30 above breakeven prices just to get to market, health challenges drive more salt into an already gaping wound. When health presents challenges and the disease in question cannot be quelled quickly and efficiently, mortality increases and performance decreases resulting in deeper per animal losses. There is no margin for delay or improper medication in swine populations at any time, but especially when economics of the market place are already extremely punishing.

Practitioners, owners/producers, and caretakers need to maintain a familiarity with the system from which pigs are arriving and environment where pigs will be grown. A general comfort level with the abilities of those that will be observing, caring for, and treating these animals daily should be sought and instilled on all involved with these activities. Hesitation in identifying conditions causing illness and the most efficient treatment can lead to delay in delivery, ineffective treatment, and ultimately further profitability lost through poor performance and increased mortality. This discussion will primarily focus on wean-to-finish production, as this is where the highest level of daily intervention occurs. There are more limitations when dealing with pregnant and lactating animals, but developing and implementing a treatment plan for these animals is important also.

Know the pigs

Early intervention is a critical aspect in development of a medication plan for nursery and finishing production. Intervention that can begin at the sow farm is ideal for anticipating, preparing for, and reducing disease challenges that may arrive with the animals. This may or may not always be a possibility, as many pigs are purchased off the open market or received only on a rotating basis from the source farm. Regardless of the history of the animals prior to receiving them, a good diagnostic work-up will go a long way towards saving pigs and potentially maintaining profit.

A general example for starting an otherwise healthy group of nursery pigs may include the following:

Feed medication – tiamulin and chlortetracycline (35 grams and 400 grams per ton)

Water medication – amoxicillin for the first 3 days post-arrival (1 - 37.5 gram pack per gallon of stock solution)

Injectable medication – ceftiofur (1cc per 44 pounds)

Road blocks to success can quickly be erected if the animals received are Porcine Reproductive and Respiratory Syndrome (PRRS) positive or come in contact with the disease through other means once at the destination farm, encounter *Streptococcal* meningitis in the first several days to weeks post-weaning, have post-weaning *E. coli* diarrhea, or a cough from *Bordetella bronchiseptica* (*Bb*) at weaning.

The arrival medication plan may look as follows if post-weaning *E. coli* scours and *Streptococcal* meningitis are the main challenges in a group of nursery pigs:

Feed medication – tiamulin and chlortetracycline (35 grams and 400 grams per ton)

Water medication – gentamicin for the first 3 days post-arrival (1 scoop per 2 gallons of stock solution)

Injectable medication – penicillin/dexamethasone (1cc per 20 pounds of body weight per day for three consecutive days)

Some producers elect to limit the feed medications if there is no immediate reason for their use, but in most instances, the performance benefits through the nursery outweigh the medication costs. The same is not the case in the finishing barn where feed consumption and therapeutic dosages are higher, resulting in drastic increases in medication cost when they are not entirely necessary.

Should a new or unfamiliar challenge arise at any stage of production, resubmit samples in an attempt to obtain a diagnosis. A newly identified disease may come up again or may be the new baseline that subsequent populations are going to experience in a particular flow or site (Edema disease comes to mind). Only by identification and monitoring of diseases a particular group of animals is dealing with, will the most therapeutic and cost effective medications be put in place.

Education and training

With disease identified and an effective treatment plan in place, it is the charge of the practitioner to continually educate and train all of those that will be daily caring for the pigs. The opportunity to view and demonstrate what are normal behaviors, eating and drinking habits, sleeping/resting patterns, and environmental conditions will help caretakers more readily identify conditions and situations that are becoming or have the potential to become problematic.

Early and proper intervention goes a long way in control of diseases in a pig population. Encourage aggressive identification and treatment of individual animals and early recognition of signs of disease. Tolerable levels of disease prior to the entire population being medicated should be established. These will vary with the skill and ability of each individual charged of caring for the pigs. One caretaker may have no issue giving 0.5-1.0% of the population an injectable treatment for 3-4 consecutive days. Another caretaker may struggle to identify pigs that need the early individual treatment and notice the entire population needs to be treated when 3-5% of the population is ill on the same day. Practitioners should continually strive to simplify and standardize treatment protocols within a flow or system regardless of caretaker ability, at the same time building confidence in the caretaker's ability to identify diseased animals and take prudent action.

There are many differing comfort levels with disease between practitioners, owners/producers, and the caretakers. As in the case of maintaining familiarity with the health of the animals, it is also important to understand the work ethic and general concern for the animals each individual will put forward. This will help to tailor a medication plan that best fits each site and/or individual caretaker and tip the practitioner of to the level of seriousness that comes with a phone call from each caretaker and an arising issue.

Caretakers should be made aware of the costs of each decision whether delivery of individual injections, water medication, or feed medication of the group. There will also be limitations and benefits of one selection versus another despite the cost associated with each. For example, use of one shot medication products simply because it is easier and less time consuming to deliver is not the greatest reason to avoid a more effective albeit cumbersome regime of treatment (example: *Strep* meningitis). Another example may be medication of entire populations with the first animal in a group that coughs. This may not affect anything for the healthy pigs, but individual treatment was bypassed for expedience or lack of understanding the situation at hand. A decision such as this can result in hundreds of dollars being spent when \$10-\$15 worth of injections could have held the issue at bay.

A general medication program should be simple and easy to follow. The decision making ideally permit only one or two effective drug choices with very specific uses for one and a more general for the other. This medication plan may look as follows for injectable treatments:

Condition	Treatment Choice/ Duration/Rate
Joint infection or <i>Streptococcal</i> meningitis	penicillin-dexamethasone/3 consecutive days/1cc per 20 pounds of body weight per day
All other ailments	Excede®/1 time/1 cc per 44 pounds of body weight

The same format could be used in a situation where *Bordetella bronchiseptica* cough hampers the population post-weaning making water medication necessary:

Condition	Treatment Choice/ Duration/Rate
<i>Bb</i> cough	sulfadimethoxazole- trimethprim/3 days/2 pints per gallon of stock solution
<i>E.coli</i> scours	Gen-Gard/3 days/1 scoop per 2 gallons of stock solution

Delivery methods

Methods of delivery, and their selection and appropriate use should be discussed when a treatment plan is developed. Any point in the future where medications are changed or the protocol is amended, the discussion on cost effectiveness, new techniques, or treatment durations will likely need to occur. The three primary methods of medication delivery are individual animal injections and water or feed medication of the population.

Injectable medications are by far the most direct method of delivering needed medication to the individual animal. There are challenges associated with the delivery of medications through injectable means such as the potential for personnel injury and broken needles found at slaughter. Compliance can be a serious concern with injectable delivery of antibiotics. This is especially true when caretakers determine what is best or easiest for them is also best for the pig. Under relatively stable health this may be the main route of antibiotic delivery. Aggressive treatment of individuals will help to reduce or eliminate the need for whole population treatments, and thus reduce and control per pig medication costs.

Water medications are rapid and easy means of delivering antibiotic to a large population at one time. Some of the challenges associated with water delivery are sub-therapeutic levels of treatment due to water quality, mixing consistency, and delivery to all animals (especially those most severely afflicted). There is no way to guarantee that all animals receive the water medication or receive the adequate dosages to treat their condition. As a result it is extremely important that severely affected individuals in the population be treated with injectable medications despite group water medication. Water delivered antibiotics are a critical tool in the control of acute disease situations. Caretakers must have full understanding of the goal and criterion for its use and not revert to population medication to cover poor husbandry practices.

Feed medications should provide a fairly consistent level of medication to an entire population. The main challenge of feed medication delivery is that appetite is usually the first to go when pigs are challenged with disease. If an infected animal is not completely off-feed, it is likely consuming at a reduced rate relative to its weight and stage of production. It is difficult to anticipate when the need for feed medication may arise or present itself, and it almost never fails that when it could be most useful, feed has just been delivered within the last 24-48 hours. Diseases that are more chronic than acute in their pathology and epidemiology are better and more cost effectively treated with properly timed feed medications. Examples of these may include ileitis, secondary invaders following PRRS or Swine Influenza infections, and *Mycoplasma pneumoniae*. Usually in a setting with more predictable disease patterns, feed medications will be of benefit.

Alternatives

It would not be appropriate to discuss medication techniques without addressing elimination, eradication, or vaccination for curbing or controlling medication costs over an extended period of time. Over a production cycle, small inputs can reap large benefits later in production.

A prime example of this is forgoing Erysipelas vaccinations to save some labor and a quarter per pig. If this unvaccinated group were to break with erysipelas, the cost will surely rise above \$0.25 per pig when the first 2-3 are found dead. In addition to the dead animals and 10-15% of the population with diamond-shaped lesions, many others will require injections and the entire group should be medicated to halt the progression of the disease.

A group of piglets arrive at a nursery with several being PRRS PCR positive. The source farm has started to leak virus and the results in the downstream nursery and finishers are not horrendous, but medication costs vary from \$0.50-\$3.50 more per animal group by group through the

production cycle. It does not take long to justify an eradication or elimination of the virus at these rates.

What is \$0.50 of a *Mycoplasma hyopneumoniae* eliminating medication worth if it prevents future seroconversion and subclinical disease? Not only is there a benefit for *M. hyo* stability downstream, but there are potentially weaned piglet benefits at the time of transitioning from the sow to the nursery. In many instances such as this, transition water medication has been eliminated with no detrimental effects.

Summary

Medications are not free, but not using them or using them improperly will surely eat into potential profits. It is imperative that practitioners work with their producers and caretakers and within the ability and skill sets of these individuals to develop the most efficacious and cost effective means of controlling disease within pig populations. Only through continued training, reviewing, and modification of medication protocols can performance be maximized and costs controlled.

Medications can be delivered in many different ways, but there are challenges associated with each method. Without a thorough understanding of the diseases at work in a population, performance will suffer and unnecessary or ineffective medication costs will mount. Any possibility to get ahead of or prevent a disease outbreak should be seized. Methods of disease control or elimination and eradication should be compared to the cost of battling disease through use of medications. The goal is to maximize performance and profit potential. A properly placed and effective medication plan will help accomplish the task at hand.

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