Judicious Use of Antimicrobials for

Pork Producers

Judicious Use Guidelines For Pork Production

Consumers are increasingly concerned about how the use of antimicrobials by producers affects the safety of their food supply. The use of these products is beneficial both for the health of the animal and for human health. But antimicrobials and other animal health products should be used to assist good management, not to cover up poor management.

Physicians and their patients and veterinarians and their clients share responsibility to properly use antimicrobials. Whether antimicrobials are used for therapeutic or production purposes, pork producers and their veterinarians should carefully consider if they are really needed for their particular situations. The Pork Quality Assurance Program is an example of the proactive approach producers take to enable the production of a safe, quality product.

The American Association of Swine Veterinarians (AASV) developed the following judicious use of therapeutic antimicrobial guidelines for swine veterinarians. They expand on the Judicious Use of Therapeutic Antimicrobial Principles written by the American Veterinary Medical Association. Inserted in the text of the AASV's Judicious Use Guidelines are comments to help pork producers understand how these guidelines apply to them. Following the Glossary is a checklist for producers to use to evaluate if their handling and use of therapeutic antimicrobials complies with judicious use guidelines.

Putting all the guidelines into practice in all pork production operations is essential to maintaining public trust; the timely, cost-efficient availability of effective products; and the growth of the industry.

POINTS TO REMEMBER:

Adapted from NPPC/AASP Pork Safety Fact Sheet, Vol. 2, No. 3, March 2000

1. *Bacteria have the ability to adapt in multiple ways to decrease the effectiveness of antibiotics. Bacterial antimicrobial resistance can be an outcome of evolution and is a natural phenomenon. One must remember that bacteria can naturally develop new traits, in this case the ability to fend off the action of an antimicrobial.*

2. *The driving force behind the emergence and spread of antimicrobial resistance in bacterial populations is from selection pressure due to antimicrobial use in human and veterinary medicine.*

3. *Some antimicrobials used in food animals are also used for human therapy.*

4. *Antimicrobials are important for animal welfare, food safety and the environment, but they need to be used judiciously.*

5. *Therapeutic antimicrobials should be used for as long as needed, for as short a time as possible, at the appropriate dosage and with the appropriate withdrawal to market. This will help maintain their effectiveness on the farm.*

6. *Records should be kept regarding the administration of all antimicrobials. The Pork Quality Assurance Program can help.*

7. *Veterinary supervision and coordination is essential for the appropriate use of antimicrobials in animals. A valid Veterinarian-Client-Patient Relationship is a must.*

8. *When possible, an accurate diagnosis with susceptibility testing of the bacteria causing the condition should be done before antimicrobials are used.*

9. *Surveillance to look for the emergence of antimicrobial resistance is an essential tool for its containment.*

10. *There is no single solution for minimizing antimicrobial resistance; rather, a coordinated approach using Judicious Use Guidelines, surveillance and research will be required to address this issue.*

11. *Preventive strategies, such as appropriate husbandry and hygiene, routine health monitoring, and immunization, should be emphasized.*

Pork Producer Guide for Compliance with the American Association of Swine Veterinarians' Basic Guidelines of Judicious Therapeutic Use of Antimicrobials In Pork Production

1. Preventive strategies, such as appropriate husbandry and hygiene, routine health monitoring, and immunization, should be emphasized.

Implementation of PQA GPP #7: Establish an Efficient and Effective Herd Health Management Plan

Maintaining a healthy herd will minimize the need for therapeutic antimicrobial use. A comprehensive herd health plan is the key to maintaining animal health and productivity. This includes talking with your veterinarian about the health status of your herd – how it can be improved and how it can be protected.

Consult with your veterinarian to establish a herd health plan that includes:

1. Periodic herd health monitoring,
2. Review of genetic sources, their associated traits and the potential utilization in your herd,
3. A professional review of your herd's nutritional program,
4. Review of space, temperature and other environmental considerations appropriate for the phase(s) of production in your operation, and
5. Review of management protocols to ensure an appropriate level of biosecurity for your herd.

Resources include breeding stock supply companies, NPPC Genetic Evaluation Terminal Line and Genetic Maternal Line Programs, University Extension services and, NPPC On-Farm Odor/Environmental Assistance Program.

2. Other therapeutic options should be considered prior to antimicrobial therapy.

Antimicrobial treatment may or may not be an effective or cost-beneficial strategy. Question whether there are other non-antimicrobial options that could

be as or more effective than therapeutic antimicrobials. These could include acidification of feed or water, electrolyte therapy and other care as directed by your veterinarian. Even if antimicrobials are needed, other supportive therapies may increase the effectiveness of the treatment plan.

3. Judicious use of antimicrobials, when under the direction of a veterinarian, should meet all requirements of a valid veterinarian-client-patient relationship.

Implementation of PQA GPP #4: Obtain and Use Only Veterinarian Prescription Drugs Based on a Valid Veterinarian-Client-Patient Relationship (VCPR)

Refer to the glossary for the definition of a VCPR but remember:

1. Medical decisions about your animals should be made by you and your practicing or consulting veterinarian;
2. The veterinarian must visit your facilities regularly enough to have sufficient knowledge of your animals and their keeping and care;
3. The veterinarian must be readily available for follow-up treatment/consultation.

4. Prescription, Veterinary Feed Directive (VFD), and extra-label use of antimicrobials must meet all the requirements of a valid veterinarian-client-patient relationship;

For your understanding as well as your protection, make sure to keep written records of all treatments. This includes identification of the animals; the drug, its route and dosage; the withdrawal time; the name of the veterinarian prescribing the drug; and whether the drug is on-label, extra-label or VFD. Also, remember that the law prohibits extra-label use of antimicrobials in the feed.

5. Extra-label antimicrobial therapy must be prescribed only in accordance with the Animal Medicinal Drug Use Clarification Act amendments to the Food, Drug, and Cosmetic Act and its regulations;

The Food and Drug Administration approves the use of animal health products according to their specific labeled directions. Any time a drug is used in a manner not in accordance with the approved drug labeling a veterinarian MUST direct its use. This includes:

- **T** increasing or decreasing the dosage,
- **T** changing the frequency, route or site of administration,
- **T** increasing or decreasing the duration of treatment,
- **T** using the drug for a disease or condition that is not specifically included in the label, and
- **T** using the drug in an animal species that is not listed on the label.

There are also drugs for which extra-label use is specifically prohibited. It is unlawful to use them in any way other than that on their labels. These products include chloramphenicol, clenbuterol, diethylstilbestrol, dimetridazole, ipronidazole, other nitroimidazoles, furazolidone (except for approved topical use), nitrofurazone (except for approved topical use), sulfonamide drugs in dairy cows (except approved use of sulfadimethoxine, sulfabromomethazine, and sulfaethoxypyridazine), fluoroquinolones, and glycopeptides. Ask your veterinarian if you are not absolutely sure whether or not these products are being used in your operation.

6. Veterinarians should work with those responsible for the care of animals to use antimicrobials judiciously regardless of the distribution system through which the antimicrobial was obtained;

Just as your nutritionist is your best source for advice about appropriate feeding and nutrition and an ag engineer is the appropriate source for advice about your facilities and their ventilation, your veterinarian is the professional source for advice about the use of animal health products on your farm. It is their responsibility to clearly communicate written and adequate directions for antimicrobial use. If you don't understand their directions, make sure you ask for clarification.

Even though it is legal to obtain and use some veterinary antimicrobials "over-the-counter" (OTC), pork producers must protect consumer confidence and public health. Getting the advice of a veterinarian before purchasing and using OTC products will meet this obligation, and, in the long run, save you money because treatment and time won't be wasted. And remember, even if a product is available OTC, a veterinarian still must direct its use if that use is not specifically indicated on the label.

7. Regimens for therapeutic antimicrobial use should be optimized using current pharmacological information and principles;

Much of this information is included on the package insert that comes with the therapeutic antimicrobial. If there is any question about the appropriate regimen (dosage, frequency, route of administration) ask your veterinarian.

Some products are not compatible when administered or mixed with others. This can affect the products' efficacy, the withdrawal time to market and/or cause animal welfare concerns from product reactions and muscle scarring. Never mix medications in the same syringe or in the drinking water without detailed instructions only from your veterinarian. And again, it is illegal to mix or use for feed medications other than according to its labeled directions.

8. Antimicrobials considered important in treating refractory infections in human or veterinary medicine should be used in animals only after careful review and reasonable justification. Consider using other antimicrobials for initial therapy.[1]

Ask your veterinarian which antimicrobials are recommended for any disease condition on your farm and how they could impact antimicrobial resistance and human health. Have a written action plan that includes the product and the dosage, used to administer in the face of a bacterial infection. Reserve those antimicrobials important in treating refractory human infections for use in animals only when absolutely needed.

9. Utilize culture and susceptibility results to aid in the selection of antimicrobials when clinically relevant;

Insist on an accurate diagnosis, including culture and sensitivity results when appropriate. Also, keep a detailed record of diagnoses, treatments and outcomes so you and your veterinarian can establish a history of treatment successes and failures. This will save you money by saving time in treatment and by establishing a pattern of bacterial susceptibility on your farm.

10. Therapeutic antimicrobial use should be confined to appropriate clinical indications;

Not all diseases and conditions in your animals will respond to antimicrobial treatment. Viral or fungal infections, parasites, nutritional imbalances and environmental factors could all be an underlying cause of disease or loss of

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[1] In this context, this principle takes into account development of resistance or cross-resistance to important antimicrobials.

productivity. An accurate diagnosis is an important consideration in judicious use of therapeutic antimicrobials.

11. Therapeutic exposure to antimicrobials should be minimized by treating only for as long as needed for the desired clinical response;

The dose and duration of antimicrobial use should only be for as long as necessary as indicated on the product's label or by your veterinarian. Make sure there is a valid reason for any use of therapeutic antimicrobials. Is the condition that was initially diagnosed and that required antimicrobial treatment still present? Don't let antimicrobial therapy become so routine that it continues to be used when it is no longer needed.

12. Limit therapeutic antimicrobial treatment to ill or at-risk animals, treating the fewest animals indicated;

Decisions to administer individual or herd therapy should be based on experience, farm history and the prevalence or risk of disease in the group. Judicious use of therapeutic antimicrobials includes using these drugs only when necessary to treat, prevent or control disease. There may be times when using antimicrobials to prevent disease will mean ultimately less antimicrobials will need to be used.

13. Minimize environmental contamination with antimicrobials whenever possible;

Make sure water medicator and feeders are properly adjusted to deliver the desired dose and to avoid spilling and wasting product. This makes sense because it prevents medications from entering the environment and it saves money in medication costs.

14. Accurate records of treatment and outcome should be used to evaluate therapeutic regimens.

Implementation of PQA GPP #2: Maintain Medication and Treatment Records

Written records are essential for verifying that you are using therapeutic antimicrobials wisely. In this instance, the job isn't done until it is written down. Protect yourself and the confidence consumers and government agencies have in you, by completing the job and keeping a written record of every therapeutic antimicrobial used on your farm. The example records provided by the Pork

Quality Assurance[SM] Program can either be used directly or serve as a guide in developing your own record keeping system for your operation.

Keeping adequate records will help you to ensure disease control, prevention and treatment protocols are being followed, to evaluate their effectiveness and to follow adequate withdrawal times and prevent violative residues.

GLOSSARY:

These terms are important for a thorough understanding of how to use antimicrobials judiciously. If you are not familiar with them or if you have any questions, ask your veterinarian. He/she is the appropriate source of information about all uses of antimicrobials in your operation.

Antibiotic – a chemical substance produced by a microorganism. It has the capacity, in dilute solutions, to inhibit the growth of or to kill other microorganisms.

Antimicrobial – an agent that kills bacteria or suppresses their multiplication or growth. This includes antibiotics and synthetic agents, but excludes ionophores and arsenicals.

Narrow Spectrum Antimicrobial – an antimicrobial effective against a limited number of bacterial genera; often applied to an antimicrobial active against either Gram-positive or Gram-negative bacteria.

Broad Spectrum Antimicrobial – an antimicrobial effective against a large number of bacterial genera; generally describes antibiotics effective against both Gram-positive and Gram-negative bacteria.

Antibiotic Resistance – a property of bacteria that confers the capacity to inactivate or exclude antibiotics or a mechanism that blocks the inhibitory or killing effects of antibiotics.

Extra-label – Actual use or intended use of a drug in an animal in a manner that is not in accordance with the approved labeling. This includes, but is not limited to, use in species not listed in the labeling; use for indications (disease or other conditions) not listed in the labeling; use at dosage levels, frequencies, or routes of administration other than those stated in the labeling; and deviation from the labeled withdrawal time based on these different uses.

Immunization – the process of rendering a subject immune or of becoming immune, either by conventional vaccination or exposure.

Monitoring – includes periodic health surveillance of the population or individual animal examination.

Therapeutic – treatment, control, and prevention of bacterial disease.

Veterinarian-Client-Patient Relationship (VCPR) – a VCPR is a result of all of the following conditions:

1. The veterinarian has assumed the responsibility for making clinical judgements regarding the health of the animal(s) and need for medical treatment, and the client has agreed to follow the veterinarian's instructions.
2. The veterinarian has sufficient knowledge of the animal(s) to initiate at least a general or preliminary diagnosis of the medical condition of the animal(s). This means that the veterinarian has recently seen and is personally acquainted with the keeping and care of the animal(s) by virtue of examinations or by medically appropriate and timely visits to the premises where the animal(s) are kept.
3. The veterinarian is readily available for follow-up evaluation or has arranged for emergency coverage in the event of adverse reactions or failure of the treatment regimen.

Veterinary Feed Directive (VFD) Drug – The VFD category of medicated feeds was created by the Animal Drug Availability Act of 1996 to provide an alternative to prescription status for certain therapeutic animal pharmaceuticals used in feed. Any animal feed bearing or containing a VFD drug shall be fed to animals only by or upon a lawful VFD issued by a licensed veterinarian in the course of the veterinarian's professional practice.

This checklist corresponds with the Basic Guidelines of Judicious Therapeutic Use of Antimicrobials in Pork Production for Swine Practitioners (Pork Safety Fact Sheet, Vol. 2, No. 4, July 2000). Use it as you consult with your veterinarian to ensure that your operation is using Judicious Use Guidelines to contain antibiotic resistance and to help maintain the availability and effectiveness of these products. Putting all the guidelines into practice in all pork production operations is essential to maintaining public trust and the timely, cost-efficient availability of effective products.

- Everyone responsible for the care and husbandry of the operation's pigs is a current Pork Quality Assurance Level III producer.

- Preventive strategies, such as appropriate husbandry and hygiene, routine health monitoring and immunization are in place and practiced (reference PQA GPP #7).

- With the advice of the operation's veterinarian, other therapeutic options are considered prior to using antimicrobial therapy.

- When indicated, supportive care is used to replace or increase the effectiveness of antimicrobial treatment.

- A valid Veterinarian-Client-Patient Relationship (VCPR) is in place (reference PQA GPP #4).

- At some point in the decision making process, the operation's veterinarian is consulted about the use of antimicrobials, including those available over-the-counter.

- Prescription, Veterinary Feed Directive (VFD) or extra-label use of antimicrobials is done only under the advice and direction of the operation's veterinarian.

- Written records of all treatments:

    - Are kept for at least 12 months following the marketing of the medicated animal.

    - Are used to evaluate the success of a treatment regimen and include identity of the animal(s) medicated, date(s) and amount of treatment, name and amount of medication administered, who administered the

medication, withdrawal time prior to slaughter, and name of the veterinarian giving directions, if use is other than what is on the label.

- Any antimicrobial used in the feed is used only according to labeled directions.

- Written feed mixing records are used to record feed medication use (reference PQA GPP #2).

- A written antimicrobial treatment action plan has been developed with the advice of the operation's veterinarian (reference PQA GPP #2).

- The antimicrobial treatment action plan is regularly reviewed with the operation's veterinarian to ensure it is up-to-date.

- When antimicrobials are used, as per the advice of the operation's veterinarian, they are used only for as long as needed to reach the desired clinical outcome.

- Antimicrobial treatment is limited to ill or at-risk animals.

- Feeders and waterers are properly adjusted to minimize environmental contamination (when antimicrobials are delivered by these routes).

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