

Judicious use of antimicrobials in the feedyard

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Abstract

Antimicrobial use in food animals has come under increased scrutiny over the past decade, due to concerns related to antimicrobial resistance. Some reports have indicated that the vast bulk of antimicrobial use occurs in food animals, although many question the accuracy of those reports. Beef cattle producers and veterinarians recognize that antibiotic use is a concern, and have taken steps to educate consumers about antimicrobial use. They have also taken steps to evaluate how they use antimicrobials, and worked to use antimicrobials in an even more judicious manner. Cattle Empire, a large cattle feeding company, has taken a proactive approach to judicious use principles in its animal health program.

Key words: beef cattle, antimicrobials, feedyard

Résumé

L'utilisation d'antimicrobiens chez les animaux destinés à l'alimentation a été l'objet d'une surveillance accrue ces dix dernières années en raison de l'inquiétude grandissante quant à la résistance antimicrobienne. Des rapports ont indiqué que la grande majorité des antimicrobiens était utilisée chez les animaux destinés à l'alimentation bien que plusieurs se questionnent quant à la véracité de ces rapports. Les producteurs de bovins de boucherie et les vétérinaires reconnaissent que l'utilisation des antibiotiques est inquiétante et ont pris des mesures afin d'informer les consommateurs sur l'utilisation des antimicrobiens. Ils ont aussi pris des mesures afin d'évaluer comment les antimicrobiens sont utilisés et fait des pas pour utiliser les antimicrobiens d'une façon encore plus judicieuse. Une grande entreprise d'engraissement des bovins, *Cattle Empire*, a adopté une approche proactive pour son programme de santé animale en se fondant sur des principes d'utilisation judicieuse.

Introduction

Beef producers have historically responded positively to consumer demands related to how they raise cattle. In the past decade, consumers have become increasingly concerned about antimicrobial resistance and the manner in which antimicrobials are used in beef production. As new antimicrobials with longer durations of therapy have become available, there has been

increased interest by beef cattle veterinarians and their clients to apply more aggressive judicious use principles to therapeutic regimens. Software specifically designed for tracking animal health in feedyards has helped to assess antimicrobial treatment success and the effects of various judicious use applications. Cattle Empire, LLC, a large cattle feeding company in southwest Kansas, has approached judicious use of antimicrobials with a broad-scope methodology that includes frequent reporting, employee training, post-treatment intervals, and goal setting.

Discussion

Feedyards employ a large staff of people whose primary focus is animal health. These employees include their herd health/consulting veterinarian, members of processing crews, pen riders (a.k.a. cowboys, pen checkers), and hospital managers. Coordinating efforts and procedures between these groups of employees is crucial to any animal health program. Most of these employees are busy enough in their focus area that there isn't a great deal of opportunity for inter-crew communications. In order to improve the "big picture" view of the animal health program, inter-crew educational meetings are held on a monthly basis. Pen riders receive daily and monthly reports on the cattle they pull for treatment. Post-treatment intervals have been established for the antibiotics used for treatment to prevent overuse. Goals for animal health are set and used as benchmarks so constant improvement can be achieved. Each of these will be discussed in more detail.

Educational Meetings

These monthly inter-crew meetings generally have a short agenda, and then the floor is opened for discussion of any topic pertaining to animal health. A frequent agenda item is a general review of the pharmaceuticals used in the feedyard, in which drug action, mechanism of action, duration of therapy, withdrawal times, safety and side effects are discussed. As employees learn more about the different products that are administered to cattle, they develop a better understanding and acceptance of the programs and procedures used to improve the health of the cattle. Issues such as post-treatment intervals, treatment guidelines, new regulations or restrictions on specific drugs, and disease pathogenesis and pathology are also discussed and explained.

Daily and Monthly Reports for Pen Riders

Every morning at approximately 4 am, each cattle foreman (supervisor of pen riders) receives an email with an attachment from the animal health tracking software system. The attachment includes an individual report for each pen rider that lists their prior day's pulls for treatment. Each animal is individually identified and its lot, pen number, diagnosis, and body temperature are included in the report. This report is distributed to each respective pen rider before he or she goes out to ride pens that morning. This allows the pen rider to evaluate each of the animals that were pulled for treatment the prior day. If, for instance, the pen rider pulled three calves from Pen 321 and all of them had a temperature above 105°F (40.6°C), that pen rider may want to spend more time examining that pen, due to the fact that the fevers were high on all the pulls. On the other hand, if a pen rider finds that all the cattle pulled from a pen for treatment were under 103°F (39.4°C), he or she may need to be less aggressive in that pen. Pen riders also receive a monthly report on their performance. These reports are for the individual pen rider, and encompass all cattle that were pulled for treatment for the prior month. It includes total pulls and total mortalities, from which an overall case fatality rate is calculated. It also includes a total of the respiratory pulls and respiratory mortalities from which a respiratory case fatality rate is calculated. Finally, it includes the percentage of respiratory pulls that had a fever of 104°F (40°C) or higher, and the percentage of respiratory mortalities that died in the pen without treatment or died within three days of being pulled to the hospital. These reports offer the pen rider feedback on a daily and monthly basis so he can make better decisions on the animals pulled for treatment and learn to make more effective pulls for antimicrobial treatment.

Post-Treatment Intervals

When extended-duration-therapy antimicrobials became available, the question arose as to how to take full advantage of these long-acting drugs. Pharmaceutical companies had conducted some work on post-treat-

ment intervals (PTI) that indicated some antimicrobials could provide therapy for 10 days or more with a single injection. Possibly the biggest hurdle to establishing a PTI is achieving collaboration and cooperation from pen riders and hospital managers. When their performance is being evaluated as described in the above section, they prefer fewer restrictions on antimicrobial use for the sick animals they pull for treatment. Persistence in education and feedback eventually allays these concerns and, because the pen rider understands that there are restrictions on how soon a sick animal can be re-treated, he or she uses the reports and other feedback more effectively to fine-tune their skill set. The importance of feedback to the pen rider cannot be overstated for the success of the program and for the cooperation of the employee. In the author's experience, PTIs have not altered mortality percentage, but treatment success has improved and treatment costs have decreased.

Goals and Benchmarks

Setting realistic goals for the employees to achieve provides guidance and a sense of achievement once the goal is reached. One simple and obvious goal for pen riders, for example, is to not have any animals die of respiratory disease in their home pen (pen dead respiratory) for a month. Other goals include achieving a certain percentage of respiratory pulls that have a fever of 104°F or higher, or achieving a certain percentage of new cases treated before noon each day. Eventually, these goals may routinely be achieved, at which time new goals can be established for further improvement.

Conclusion

Judicious use of antimicrobials requires a comprehensive plan to keep key employees informed and engaged. Establishing post-treatment intervals is a small piece of the plan. A great deal of effort must be directed at feedback, education, and training. When all these elements work together, antimicrobials can be used more judiciously, efficiently, and effectively.