

Results

Of the 330 cows enrolled, 216 have completed the trial with complete culture and milk somatic cell count records. No significant differences were found in milk somatic cell counts between the three groups. Bacterial cure of gram-positive intramammary infections was significantly better ($P=0.03$) for the group receiving systemic therapy plus an intramammary non-lactating antibiotic, with 54 cures of 68 infections (79%) as compared to controls with 11 cures of 21 infections (52%). The tylosin group had the greatest reduction of intramammary infection, with 34 cures of 39 infections (87%), $P=0.007$. No difference was found between oxytetracycline group (20 cures of 29 infections) and control ($P=0.35$), although cure rates for oxytetracycline was greater (69% and 52%, respectively). A positive bacterial culture was not correlated with death/health events, which contradicts a previous study. New infection rates were not different between the groups. Reproductive data has shown a trend towards improved conception rates and days to first service for the oxytetracycline group, although more data is needed to substantiate these findings.

Significance

Intramammary treatment alone is limited in its ability to eliminate gram-positive pathogens during the dry period. In this study an antibiotic given systemically significantly reduced the number of gram-positive intramammary infections at the beginning of the next lactation. Tylosin produced the best reduction in the number of gram-positive intramammary infections at calving. Although the milk somatic cell counts of parentally treated cows were not different from those given intramammary treatment alone immediately after calving, the reduction in the number of persistent infections could reduce milk somatic cell counts over the subsequent lactation. In this study, both groups of systemic antibiotic performed better, but the pharmacokinetics of tylosin may be important in allowing it to penetrate udder tissue, giving it an advantage over some other drugs. Although the numbers of animals in the data set were not sufficient in this study to demonstrate a significant reproductive benefit for systemic antibiotics, differences observed when oxytetracycline was used suggest that reproduction could be affected as measured by improved conception rates and days to first service. More data is needed to confirm this observation.

Summer Externship Program in Food Animal Medicine, Food Safety and Veterinary Public Health (FAME)

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Introduction

Though veterinarians play a vital role in producing an abundant, affordable and safe food supply, fewer veterinarians entering the profession are interested in this aspect of work. Our goal is to attract and train qualified professionals in these areas through experiential learning and real-world problem solving early in their training.

Materials and Methods

Competitively accepted participants entering their first or second year of veterinary college at Cornell University rotated through a series of two-week externships

for 10 weeks. They included: 1) food animal veterinary practice focusing on herd health issues, 2) on-farm food production and harvesting, 3) milk-processing and beef packing plants and dairy and beef retailers, such that the entire food production system from farm to table can be appreciated, and 4) a quality milk and diagnostic laboratory. They also conducted a collective research project while in the field that taught evidence-based medicine and investigative methodology. Students were provided a competitive stipend and housing. All participants completed an experience checklist, program evaluation and pre- and post-test discerning skills and attitudes acquired during the program. Program participants will be followed in their careers at intervals of one, five and ten years post-graduation.

Results

Through a partnership with two private practices (Perry Veterinary Clinic and Countryside Veterinary Clinic) and a large dairy producer organization (Northeast Dairy Producers Association), six selected participants from a pool of 28 applicants completed the program in its initial year. The USDA Higher Education Challenge program provided funding. This year's participants scored the program 4.66/5, and said they "gained mentors who will help to shape their careers". Details of the research project were presented at this year's National

Mastitis Council meeting; the participants made substantive contributions.

Significance

Our goal to attract and train highly skilled professionals in the areas of production animal medicine and veterinary public health is underway. This program may be a model for other commodity groups other than dairy, such as beef production. Further experience with the program should bolster these efforts.

Relationship Between Pre-fresh NEFAs, Fresh Butterfat Percentage, Progesterone Levels Following Pre-Synch and Pregnancy Rates

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Introduction

As herd size and milk production increase on modern dairies, it seems to be at the expense of fertility, increasing days open, declining pregnancy rates and rising cost associated with each pregnancy. To determine which service was the best time to use more expensive semen, a large commercial dairy in central Michigan investigated progesterone levels in cows following a Pre-synch protocol. This was followed by a prospective study, beginning with cows in the dry period, with the objective of relating pre-breeding progesterone levels to risk factors in the transition period.

Materials and Methods

PART 1: In April 2004, blood was drawn for progesterone measurements from 50 primiparous cows and 50 multiparous cows. Blood was drawn directly before the GnRH was given to start Ov-Synch, which was 11 days from the second prostaglandin injection of a Pre-synch program (two injections of prostaglandin two weeks apart). Serum was sent to Michigan State University Animal Health Diagnostic Laboratory for serum progesterone levels. Calving, health, breeding and production data was collected from the farm's Dairy Comp 305 program. Dystocias are classified on a 1 to 5 scale, with 1

being unassisted and 5 being a C-section. Cows are tested at 10-16 DIM for milk components and SCC. The farm also does random NEFA testing on cows less than three weeks before calving, and approximately 40% of the cows in the study had undergone NEFA testing. The data proved to be interesting and prompted a second study to further investigate the relationships between transition dry cow NEFAs and pre-breeding progesterone levels. PART 2: In September 2004, a prospective study was started using 75 multiparous cows in the transition lot (15 cows were randomly selected every other week). At the time of enrollment, a lameness score, BCS, ultrasound back-fat measurement and NEFA were collected. NEFAs and back-fat measurements were taken on a weekly basis during the pre-fresh and post-fresh period until cows were approximately 30 DIM. Cows were started on Pre-synch according to the existing farm protocol. At 52-58 DIM, on the day they were scheduled to start Ov-Synch, a lameness score, BCS, back-fat measurement and blood for serum progesterone were collected. Cows continued in the breeding program according to the farm protocol. Calving, health, breeding and production data were collected from the farm's Dairy Comp 305 program. (Breeding outcomes are not yet available for Part 2). Data from both studies was analyzed using Excel and SAS to perform T-tests, ANOVA, Chi Square, and Logistic regression.