

lyzed in an unconditional logistic regression to identify risk factors associated with *N. caninum* herd status

Results

A total of 179 herds were enrolled in the study, and 4778 cows were tested with an average of 27 cows tested in each herd. Breakdown of province, herds and cows enrolled in the study is as follows: British Columbia 44 (1196), Alberta 29 (833), Saskatchewan 32 (880), Ontario 40 (1037) and Maritimes 34 (832). Two hundred and ninety-four cows were seropositive for *N. caninum* (6.2%), and 42.5% (76/179) of herds had at least two cows were seropositive. Herds that used dry lots or corrals during the pre-calving period were 3.4 times more likely to be positive for *N. caninum* ($P = 0.001$). Herds that had access to natural standing water in the summer were 2.7 times more likely to be positive for *N. caninum* ($P = 0.005$). Herds in which the operator observed basic biosecurity practices, such as bootwashing, were 0.19 times as likely to be positive for *N. caninum* ($P = 0.008$), and herds in which operators reported see-

ing coyotes or foxes more than 25 times per year were 10 times more likely to be positive for *N. caninum* ($P = 0.036$).

Significance

A number of management factors were found to be associated with the likelihood of being positive for *N. caninum* in Canadian cow-calf herds. The use of confinement during the pre-calving period when abortions occur was a significant risk factor for *N. caninum* status of the herd. Access to natural standing water was also a significant risk factor, which might imply that water contamination may play a role in transmission of this pathogen. Boot washing, which is probably a surrogate measure of basic biosecurity practices in the herd, was protective for *N. caninum* seropositive herd status. In herds that reported higher numbers of sightings of wild canids there was an association with *N. caninum* seropositive status as well. This might imply a role for these wild canids in transmission.

Comparing the Use of Systemic Antibiotics with Intramammary Antibiotics in Dry Cow Therapy

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Introduction

The non-lactating (dry) period is well known as an important time for both the acquisition and treatment of intramammary infections. Although systemic use of antibiotic has been used in conjunction with intramammary therapy in lactating cattle, intramammary therapy alone has been routinely used for dry cow therapy. Previous studies have suggested that systemic therapy may be beneficial, but most producers rely solely on intramammary dry cow therapy (DCT). It has been suggested that systemic antibiotics possess pharmacokinetics that enable better penetration into the udder tissue and improves the success of DCT. This study was designed to compare the use of an intramammary antibiotic alone or in conjunction with either systemic tylosin (Tylan®, Elanco Animal Health) or oxytetracycline (LA 200®, Pfizer, Inc).

Materials and Methods

On a 3000-cow dairy cows selected for dry-off were assigned to one of three groups; tylosin, oxytetracycline or no systemic treatment in addition to an intramammary non-lactating antibiotic. All four quarters were infused with one tube of non-lactating antibiotics (Albadry®, Pfizer) and a teat sealer (Orbeseal®, Pfizer, Inc). The cows received either 12 grams oxytetracycline intramuscularly, 2 grams tylosin subcutaneously or no systemic treatment. Over a three month period, 330 cows were enrolled into the study. Composite milk samples were cultured and recorded at dry off, one week post-calving and two weeks post-calving. Mastitis and health events in early lactation were noted. Dairy Comp 305 records were utilized to evaluate milk somatic cell counts, reproduction and health records.

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.