from all 48 animals (treated and controls) were collected one week prior to antibiotic administration, and daily for one week following antibiotic administration. Fecal samples were also collected weekly for three additional weeks to monitor changes in antimicrobial resistance over time, as well as prior to the movement of the animals out of state for feeding, to determine pre-market presence of resistant organisms. Fecal samples were tested for non-specific *Escherichia coli,* and antimicrobial susceptibility patterns of five isolates from each sample were determined using the disk diffusion method. Fecal samples were considered to have resistant *E. coli* organisms if at least one of the five isolates exhibited resistance against a particular antimicrobial.

Results and Conclusions

Overall, 2807 *E. coli* isolates were tested for resistance against ceftiofur, tetracycline and enrofloxacin. Prior to treatment, 13 to 17% of fecal samples from steers contained *E. coli* isolates resistant to tetracycline. No resistance to ceftiofur or enrofloxacin was detected in any isolates from either group of animals at baseline. Little resistance to ceftiofur occurred following treatment with ceftiofur hydrochloride. Only 4% of samples contained ceftiofur-resistant *E.coli* organisms in the three days following treatment. Only one animal, a control, had more than one resistant sample during these three days. No resistance to ceftiofur was detected after three days post treatment, or in the pre-market samples taken four months after antibiotic administration. Resistance to tetracycline changed daily and did not appear to occur in any apparent pattern. At no time during the monitoring period did any isolates exhibit resistance to enrofloxacin. Preliminary findings support our hypothesis that food-producing animals properly treated with antimicrobials may develop only transient antimicrobial resistance, and therefore may pose little risk towards development of antimicrobial resistance in the human food supply. In addition, it is possible that untreated animals can acquire transient antimicrobial-resistant organisms, which can be subsequently lost when removed from the contaminated environment. Understanding the ecology of antimicrobial resistance in food animal populations may help the veterinary practitioner and the producer make well informed decisions regarding the health of food animals, potentially leading to effective and practical intervention programs based upon scientific evidence.

Cryptosporidium and *Giardia* species – Prevalence and Risk Factors in Western Canadian Cow-Calf herds. Are Cow-Calf Herds an Important Reservoir for These Parasites?

Sheryl Gow, *BSc, DVM;* **Cheryl Waldner,** *DVM, PhD;* **Brent Wagner,** *BSA, MSc*
Large Animal Clinical Sciences, Western College of Veterinary Medicine, Saskatoon, Saskatchewan, Canada

Abstract

The protozoan parasites *Cryptosporidium* species and *Giardia* species are commonly found in cattle feces and can present important risks to human health, with especially serious consequences when immunocompromised individuals become infected. The purpose of this study was to examine the infection prevalence of *Cryptospordium* species and *Giardia* species in cow-calf herds at calving, and to determine risk factors associated with infection. Fresh fecal samples were collected from individually identified heifers/cows and calves in the spring of 2002. Samples were collected from 578 heifers and cows on a total of 61 farms, and 608 calves on 100 farms. Fifty-two of the 100 farms used for calf sample collection matched the heifer and cow herds sampled. The mean herd size was 150 head. The fecal samples were scored on a scale of 0 to 3 (0= firm, 3=watery) to identify fecal consistency. Data were collected to assess risk factors for parasite shedding, including herd management factors, age, sex, breed, health status/clinical signs and treatment history. A quantitative sucrose gradient immunoflourescent antibody test was conducted on the fecal samples to identify *Cryptosporidium* species oocysts and *Giardia* species cysts. The number of oocysts/cysts per gram of feces was

calculated. The median number of samples collected per herd was 10 for the heifers/cows and six for the calves. Overall the percent of herds with at least one positive heifer or cow was 67.0% (41/61) for *Giardia* species and 4.9% (3/61) for *Cryptosporidium* species, while in the calves the herd prevalence was 53.0% (53/100) for *Giardia* species and 14% (14/100) for *Cryptosporidium* species. In the calves, 12% (12/100) of the herds were positive for both *Cryptosporidium* species and *Giardia* species, whereas in the cows only 1.6% (1/61) of the herds were positive for both parasites. Calculation of an age specific prevalence of 8.7% (4/46) indicated that calves 16-20 days of age were the most commonly affected age group. In the cows age, specific prevalence calculations indicated 19.8% (52/262) of the animals between two and five years of age were infected with *Giardia* species. Individual animal prevalence for *Giardia* species in the heifers/cows was 20.6% (119/578), and for *Cryptosporidium* species was 1.0% (6/578). Similarly, 23% (140/608) and 2.8% (17/608) of the calves were positive for *Giardia* species and *Cryptosporidium* species, respectively. Overall, only 1.48% (9/608) of the calves were positive for both parasites, whereas none of the cows had both parasites at the time of sample collection. The prevalence of *Giardia* species in cow-calf herds seems to indicate that they are an important reservoir for this protozoan parasite. In this study *Cryptosporidium* species seems to be less prevalent. Association between these parasites and factors which lead to increased shedding were investigated.

Abstracts

Preliminary Findings Regarding the Reproductive Performance in First Calving Dairy Heifers Associated With the Prevalence of Milk Antibodies to Bovine Viral Diarrhoea Virus and *Leptospira hardjo*

Whitehead J.G.M., Smith R.F., Murray R.D., Cripps P.J.

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Heifers calving into a dairy herd are at risk of exposure to pathogens that may adversely affect their fertility. Bovine Viral Diarrhoea virus (BVDv) and *Leptospira hardjo* have an important economic impact on dairy herd fertility. In order to investigate the possible effect of these pathogens on heifer fertility, milk samples were collected from 2S7 heifers calving in 23 herds in Southwest England at calving and 120 days later. Antibodies to BVDv and L *hardjo* were measured in each sample. Bulk milk samples were collected at the beginning and end of the investigation in each herd to indicate the disease status of each herd. The disease status of each heifer was defined as milk antibody negative, milk antibody positive or having a rising titre on the basis of the two milk sample antibody results. Fertility data were collected for each heifer during the first lactation. There was no effect of presence of antibodies to or rising titre to BVDv or *L hardjo* on the fertility of the heifers during their first lactation. Neither was there an effect of herd size or herd milk yield on fertility. However, there was a marked difference between farms on the performance of heifers . Whilst the control of infectious diseases may have an impact on fertility, improving farm management such as nutrition, stockmanship and housing may he more beneficial to the fertility of first calving heifers.

Visits to Farm Buildings and Cattle Troughs by *Badgers (Meles meles)*: a Potential Route for Transmission of Bovine Tuberculosis 1 (*Mycobacterium bovis*) Between Badgers and Cattle

Roper T.J., Garnett B.T., Delahay R.J.

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Radio-telemetry and video surveillance were used to record nocturnal visits by wild badgers (*Mele meles*) to seven cattle farms. Three farms were regularly visited by badgers (mean: 2.65 visits/night) and a fourth was occasionally visited (0.14 visits/night). Frequency of visits peaked shortly after midnight and was negatively related to amount of rainfall in the preceding 24 h. Badgers visited farm buildings and feed troughs in order to consume a variety of foods, of which cattle feed cake was the most frequently exploited. In the course of visiting farms, badgers defecated and urinated directly onto cattle feed, and they sometimes came into close direct contact with cattle. Foxes (*Vulpes vulpes*} and domestic cats (*Felix sylvestris*) also visited farms. We suggest that transmission of bovine tuberculosis (*Mycohacterium bovis*) between badgers and cattle may take place on farm premises and at cattle troughs. Improvements to farm bio-security. aimed at making anthropogenic food resources less accessible to badgers and other wildlife, could therefore play a part in combating the disease.