GGT and TBIL levels following the acute phase of infection, suggesting multiple organ tissue damage (e.g., liver and renal failure). There were clear and significant differences in clinical presentation between non-vaccinated animals and vaccinated animals.

### Significance

These results demonstrate that infection with 1373 resulted in reliably severe clinical disease that can easily be tracked based on febrile response, circulating lymphocyte counts and platelet counts. Clinical disease could be ameliorated by vaccination. Differences in clinical presentation between vaccine protected animals and non-vaccinated animals were clear, distinct and significant. These finding support the use of this strain as a challenge virus in efficacy studies.



# Risk Factors Associated with *Neospora caninum* Herd Serological Status in Beef Cow-Calf Herds in Canada

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### Introduction

*Neospora caninum* (*N. caninum*), a protozoan parasite, is a major cause of reproductive failure in cows all over North America and in other regions of the world. Infected cows are at risk of early embryonic death, abortion, stillbirth, birth of a weak or abnormal calf and birth of a calf with no obvious defect, depending on previous exposure and the phase of gestation–early, mid or late. The dog has been implicated as a definitive host of *N. caninum* and contributing to fecal-oral (horizontal) transmission. It has been suggested that neonates become infected while *in-utero* (vertical transmission). The role of wild canids, coyotes and foxes in transmitting infection in beef cow-calf is still not clear. Although suggested, it is not known if extensive husbandry and management methods employed in beef cow-calf plays a role in *N. caninum* infection, transmission and disease occurrence in beef cow-calf herds. The objective of this study was to determine seroprevalence of *N. caninum* in beef cow-calf herds in Canada and to identify potential risk factors contributing to seroprevalence.

### Materials and Methods

Two mailings were sent during the winter and spring of 2003 to a total of 3000 randomly selected cow-calf herds from the Canadian Cattle Identification Agency list of cow-calf herds in Canada. Producers that agreed to cooperate on the study were sent a 19 page questionnaire to be filled out by the herd manager. The questionnaire included questions on the farm profile, breeding management, calves and calving management, feeding management, veterinary procedures and vaccinations, and biosecurity practices. During the fall of 2003, blood samples were collected from 30 randomly selected cows from each herd at fall round-up time. These samples were centrifuged and serum was frozen. Serology for *N. caninum* was performed using the IDEXX ELISA test kit. Herds were considered positive for *N. caninum* if at least two cows were seropositive. The Chi square test was performed for categorical variables and T-test for continuous variables in screening for potential risk factors for bovine neosporosis; significance was set at $P \leq 0.05$. Significant variables were further ana-

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 seeing 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 conjuction 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 intramam-mary 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.