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POSTER PRESENTATIONS

Animal Health I

M1 Parturient steroids and labor duration associate with dystocia and stillbirth. J. L. Burton*¹, P. S. D. Weber¹, A. A. Bush¹, L. Neuder¹, W. Raphael¹, R. J. Erskine¹, J. Carrier², and S. Godden², ¹*Michigan State University, East Lansing*, ²*University of Minnesota, St. Paul*.

Dystocia and stillbirth are important sources of economic loss for the dairy industry. The goal of this study was to assess parturient steroids and labor duration as potential risk factors for them. Close-up cows from a Transition Management Facility in Western Wisconsin (n = 78) and from a large dairy in Central Michigan (n = 50) were monitored hourly to identify animals in labor (e.g. mucoid vaginal discharge, calf limbs visible), which were moved into individual maternity pens for videotaping of parturition and recording of calf birth weight (BW) and status (alive, dead) and cow body condition score (BCS). In the Wisconsin cows, calving ease score (CES; 1 = easy to 5 = very difficult) was recorded and a venous blood sample collected within 1 h of delivery for enzyme immunoassay of serum cortisol and progesterone. In both herds, BCS and BW did not associate with calving difficulty. In the Wisconsin cows, progesterone was lower ($P \leq 0.05$) in CES 5 cows (378.8 ± 167.2) than in cows with CES 1-4 (mean 1085.6 ± 18.0 pg/ml) with little difference in cortisol, driving the cortisol:progesterone ratio higher ($P \leq 0.05$) in the CES 5 cows. All calves from CES 4-5 cows (n = 18) were born dead. In CES 1-3 cows, mean cortisol was higher ($P = 0.03$) in animals delivering live ($22,315 \pm 3,921$ pg/ml; n = 31) versus dead calves ($14,347 \pm 2,488$ pg/ml; n = 29). The same trend was observed for progesterone ($P = 0.11$). In the Michigan cows presenting with mucoid vaginal discharge, time to live assisted delivery was 212.2 ± 24.5 min and to dead assisted delivery was 293.1 ± 24.1 min ($P \leq 0.05$) but times to live assisted and unassisted deliveries did not differ. Collectively, these preliminary results suggested that parturient concentrations of cortisol and progesterone and labor duration are potential risk factors for dystocia and stillbirth. Future studies will determine if variations in serum steroids are linked to cervical dilation and labor duration, which may underlie dystocia and (or) stillbirth.

Key Words: Calving ease, Parturition, Calf health

M2 The association between hoof lesions and milk production in Ontario dairy cows. G. Cramer*¹, K. Lissemore¹, D. Kelton¹, C. Guard², and K. Leslie¹, ¹*University of Guelph, Guelph, ON, Canada*, ²*Cornell University, Ithaca, NY*.

Lameness in dairy cattle is one of the most important issues facing the dairy industry in terms of both production costs and consumer perception of animal welfare. The objective of this project was to determine the association between infectious and non-infectious hoof lesions and 305-day milk production in dairy cows. A convenience

sample of 5 hoof trimmers were trained and asked to record lesions on a standardized form for all cows they trimmed in a herd. Individual cow lesion data from 7300 cows in 173 herds were merged with dairy herd improvement (DHI) production data. To determine the association between individual lesions and milk production, the cow's projected and actual 305-day milk production were used as outcome variables in a linear mixed model. All models included breed, lactation, days in milk and hoof trimmer as fixed effects and herd as a random effect. From all recorded individual hoof lesions, only deep sepsis had a negative association with projected 305-day milk production (-1571 kg). The presence of white line separation (+302 kg), any non-infectious lesion (+109 kg), and any hoof lesion (+73 kg) all had a significant positive association with projected 305-day milk production. Similarly, the presence of a sole ulcer (+204 kg), any non-infectious lesion (+120 kg) and any lesion (+101 kg) all had a significant positive association with actual 305-day milk production. The positive association between hoof lesions and small increases in cumulative milk yields shows that cows with non-infectious lesions are genetically higher producing cows. It is likely that the hypothesized negative effect of these lesions on 305-day milk production is being masked by the higher production potential of the affected cows. To quantify this negative effect a more complex model using multiple individual test day measurements is required.

Key Words: Lameness, Milk production, Hoof lesions

M3 The association between hoof lesions and culling risk in Ontario dairy cows. G. Cramer*¹, K. Lissemore¹, D. Kelton¹, C. Guard², and K. Leslie¹, ¹*University of Guelph, Guelph, ON, Canada*, ²*Cornell University, Ithaca, NY*.

There is widespread concern within the dairy industry about the longevity of today's dairy cow. Considering the high prevalence of lameness it is surprising that the association between hoof lesions and culling has not been widely evaluated. The objective of this project was to determine the association between infectious and non-infectious hoof lesions and culling risk in dairy cows. A convenience sample of 5 hoof trimmers was trained and asked to record lesions on a standardized form for all cows they trimmed in a herd. Individual cow lesion data from 7610 cows in 173 herds were merged with dairy herd improvement (DHI) culling data. Using a Cox proportional hazard model, the association between individual lesions and culling risk was determined. All models included 305-day milk, breed, lactation, days in milk, linear score and hoof trimmer as fixed effects. Since cows are clustered within herd, herd was accounted for using robust standard errors. Additional disease information was unavailable for analysis.

2888(38%) of cows were culled over a 20-month period. Median time to culling from hoof trimming was 245 days. Cows identified as lame by the hoof trimmer had a 30% increased culling risk. The presence of any lesion significantly increased culling risk by 22%. However, this was mainly due to the effect of non-infectious lesions such as white line abscess, solar hemorrhage, white line separation and sole ulcers as they increased culling risk 46%, 32%, 69% and 34% respectively. None of the infectious lesions had a significant association with culling risk. The addition of a housing variable to the model did not change culling risks significantly. These results highlight the importance the dairy industry should place on lameness and hoof lesion prevention. Dairy producers cannot afford to ignore a problem that increases the culling risk of high producing cows by 30-70%. Since the majority of these lesions were found at a routine hoof trimming, there appears to be a need for earlier detection and more effective therapy in addition to ensuring proper housing and feeding.

Key Words: Lameness, Culling risk, Hoof lesions

M4 Effect of intrauterine infusion of ceftiofur on uterine health and conception rate in dairy cows. K. N. Galvao*, L. F. Greco, J. M. Vilela, and J. E. P. Santos, *University of California, Tulare*.

Objectives were to determine the effects of intrauterine infusion of ceftiofur hydrochloride on uterine health and conception rate in lactating cows. Holstein cows, 830, at 44 d in milk (DIM), were blocked by parity, treatment of any illness in the first 44 DIM, and treatment of acute puerperal metritis (PM) by intrauterine infusion of 2.5 g of oxytetracycline and, within each block, randomly assigned to one of two treatments: IUIC, intrauterine infusion of 125 mg of ceftiofur hydrochloride at 44 DIM; Control, no intrauterine infusion. All cows received two injections of 25 mg of PGF2a 14 days apart, at 37 and 51 DIM, and cows not detected in estrus and inseminated 14 days after the second PGF2a were enrolled in a timed AI protocol (d 65, 100 µg of GnRH; d 72, 25 mg of PGF2a; d 73, 1 mg of ECP; d 75, timed AI). Body condition was scored in all cows at 44 DIM. A subset of 206 cows had their vaginal mucus scored (0 = clear, 1 = mucupurulent or purulent) on d 44, and had uterine fluid harvested on d 51 for cytology and bacteriology. Pregnancy was diagnosed on d 38 after AI. Pregnancy data is available for 486 cows. The conception rate was similar ($P = 0.29$) for the IUIC and Control groups (42.9 vs 47.2 %). Conception was greater ($P = 0.05$) for primiparous than multiparous (49.7 vs 35.8%) and for cows that did not have PM (45.6 vs 43.8 %). When only cows that had PM were evaluated (n=146), those infused with oxytetracycline early postpartum tended ($P = 0.09$) to have greater conception rate than cows not infused (47.1 vs 28.0 %). The proportion of cows with positive uterine culture at 51 DIM was similar ($P = 0.26$) between IUIC and controls (25.3 vs 32.4 %), but IUIC decreased ($P = 0.04$) the proportion of cultures positive for *Archanobacterium pyogenes* (1.0 vs 7.4 %). Cows with mucus score 1 had greater ($P < 0.05$) proportion of *A. pyogenes*, *Escherichia coli* and overall positive cultures. Intrauterine infusion of ceftiofur hydrochloride reduced prevalence of infection by *A. pyogenes*, but did not improve conception rate of dairy cows.

Key Words: Metritis, Uterine infusion, Dairy cow

M5 Evaluation of high concentrations of non-esterified fatty acids in plasma around parturition as a risk factor for occurrence of subclinical ketosis. S. O. Juchem*, J. E. P. Santos, R. L. A. Cerri, E. J. DePeters, and M. Villaseñor, *University of California, Davis*.

Data from two studies conducted in different dairy farms in the Central Valley of California were compiled in order to investigate the relationships between high plasma NEFA concentrations and the incidence of subclinical ketosis. Cows that had at least one plasma sample with concentration of B-hydroxybutyrate (BHBA) above 1.4mMol/L during the first 4 wk of lactation were considered positive. Data from 85 primiparous cows were obtained from study 1, while study 2 provided information from 175 primiparous (P) and 290 multiparous (M) cows. Concentrations of plasma NEFA were categorized for P (<0.50, 0.50 to 0.65, and >0.65 mMol of NEFA/L) and M cows (<0.46, 0.46 to 0.90 and >0.90 mMol of NEFA/L) according to concentrations at the first week postpartum. The mean (0.834 and 0.819 mMol/L) and median (0.749 and 0.754 mMol/L) concentrations of NEFA in plasma at one week postpartum were similar for P cows across study 1 and 2, respectively. Mean and median for M cows in study 2 were 0.865 and 0.787 mMol/L of NEFA, respectively. A logistic regression model that included the effects of NEFA category and study was utilized, while the two parity groups were analyzed separately. Concentration of NEFA in the first week of lactation had a major impact ($P < 0.01$) on the incidence of subclinical ketosis. Primiparous cows that had concentrations of NEFA in plasma greater than 0.65 mMol/L (n=154) at week 1 postpartum were 7.6 (OR) times more likely to experience high plasma concentrations of BHBA during the first 28 d in milk than herdmates in the < 0.50 mMol category group (n=47). Similar result was observed for M (OR=5.0; $P < 0.01$) cows. Incidence of subclinical ketosis in the lower category group was 25.5 and 40.7%, for P and M, respectively. Management and nutritional practices that can alleviate the peak of NEFA could be a useful management tool to decrease the incidence of subclinical ketosis in early lactation.

Key Words: Transition, Subclinical ketosis, Dairy cow

M6 Evaluation of clinical mastitis therapy used on commercial dairy farms. K. J. Hohmann*, D. A. Rhoda, and P. L. Ruegg, *University of Wisconsin, Madison*.

The objective of this study was to evaluate cow level clinical outcomes of commercial intramammary treatments for clinical mastitis. Treatment records from two commercial dairy farms (n = 2900 cows) were assessed. Outcomes of the first case per cow per lactation (n = 1009) were evaluated. Results of on farm cultures were used to assign intramammary (IMM) treatments (50 mg pirlimycin, 125 mg ceftiofur, 62.5 mg ampicillin or no treatment). The 4 IMM treatments were used in 8 separate protocols that varied by duration of treatment. Cases classified as Gram positive (n = 557), no growth or Gram negative (combined n = 391) were included in the analysis. Outcomes included recurrence of mastitis in the cow within 14 days or 15 days after treatment or no second case of mastitis. Somatic cell count response was defined as test-day SCC <250,000 cells/mL during at least 1 of the 3 test dates subsequent to the mastitis case. Chi-square analysis using Statistix vers. 8 was used to assess the association between intramammary treatment and clinical outcomes. The choice of intramammary treatment was associated with recurrence ($P < 0.001$) of mastitis caused by both Gram positive and negative pathogens. Of Gram positive infections, no recurrence occurred in 44%, 34% and 50% of cases treated with ampicillin, pirlimycin or ceftiofur, respectively. Of Gram negative and no growth infections, no recurrence occurred in 48%, 50%, 58% and 37% of cases treated with ampicillin, pirlimycin, ceftiofur or no treatment, respectively. SCC response was associated with treatment for Gram negative and no growth ($P = 0.02$) but not Gram positive infections ($P = 0.24$). Of Gram negative infections, SCC responses were not identified for 34%, 30%, 47%

and 33% of cases treated with ampicillin, pirlimycin, ceftiofur or no treatment, respectively. This data suggests there are differences between common therapies used to treat clinical mastitis in dairy cows.

Key Words: Mastitis, Dairy cow, Treatment

M7 Use of producer-recorded health data in determining incidence risks and relationships between health events and culling.

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Studies of disease incidence among dairy cows have typically relied on data collected in a research setting, or by veterinarians. Little use has been made of producer-recorded data. The spread of computerized on-farm recordkeeping has increased the opportunity to collect and analyze these data. Dairy Records Management Systems (Raleigh, NC) provided producer-recorded health data for 1834 herds from 1997 through 2003. Of 3.7 million event records, 34% were categorized as health disorders (36 categories) and 59% as health maintenance or management events. Disorder records were matched with records from the national dairy database (DB) for lactations which began before July 2002. Data from lactations 1 to 7 were used, and herd-years were required to have at least 20 cows and 80% of records passing edits for the DB. The resulting 43,489 lactations from 440 herds (1244 herd-years) were combined with 135,659 lactation records of herdmates. Milk fever during the first 7 DIM (MF), retained placenta during the first 7 DIM (RP), metritis (MET), displaced abomasums (DA), and ketosis (KET) were reported in 8, 5, 54, 41, and 23 percent of herd-years, respectively. Cystic ovaries (CO), mastitis (MAST), and foot/locomotion problems (LOCO) were reported in 65, 59, and 43 percent of herd-years. Lactational incidence risk (LIR) or incidence density (ID) was calculated for herds reporting each disorder. Overall, LIR was 2.9% for MF, 3.7% for RP, 9.8% for MET, 4.2% for DA, and 6.6% for KET; ID was 12.0% for CO, 13.4% for MAST, and 20.9% for LOCO. In general, LIR and ID increased with increasing parity. Risk of culling for mastitis was 2.76 times greater in lactations with at least one reported MAST event. Culling for reproduction was 2.05 times greater in lactations with at least one RP, MET, or CO event. These results suggest that producer-recorded health data can be used to investigate disease incidence and relationships, and warrant further research.

Key Words: Culling, Field data, Health

M8 Effects of nutrition, weaning age and incidence of subclinical mastitis on colostrum and milk quality of santa inês breed.

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Twenty nine multiparous Santa Inês ewes, all of them at the same reproductive age, were submitted to four treatments in the last gestation month and during lactation. A factorial delineation (two nutrition levels and two weaning ages), was used as follows: treatment 1: corn silage diet and weaning at the age of 45 days; treatment 2: corn silage plus concentrate diet and weaning at the age of 45 days; treatment 3: corn silage diet and weaning at the age of 70 days; treatment 4: corn silage plus concentrate diet and weaning at the age of 70 days. Colostrum samples were collected after parturition, 24 and 48 hours later, to determine immunoglobulin concentration by Faey & Mc Kelvey (1965) method. Milk samples were collected weekly, starting in the second

week after parturition to somatic cell count. It were analyzed both in colostrum and milk, the contents of protein, fat, lactose and total solids. There was diet effect ($P < .05$) for colostrum protein, fat and total solids. The ewe group fed with corn silage plus concentrate presented the lowest values of colostrum contents. For milk fat percentage the higher result ($P < .05$) was obtained only for weaning at 70 versus 45 days of age (5.51 and 4.32 respectively). The milk chemical composition was similar to the values obtained by other authors for milk production breeds. Somatic cell count (1,535,138 cell/ml) did not affect milk quality (5.26 % for lactose, 4.83 % for fat, 4.78 % for protein and 16.03 % for total solids).

Key Words: Milk chemical composition, Immunoglobulin, Sheep

M9 Mastitis treatment practices on organic dairy herds. M. Pol and P. L. Ruegg*, *University of Wisconsin, Madison*.

The objective of this project was to determine mastitis treatment practices on organic dairy herds. Organic (ORG) dairy herds ($n = 20$) were required to be certified organic for at least 3 yr. Data on treatment practices were obtained during a farm visit using an 84-question survey instrument. Half of ORG farmers reported using non-antimicrobial products to improve udder health at dry-off. Three farms used three different products, 4 farms used 2 products, and 2 farms used one product to treat cows at dry-off. Ultrafiltered bovine whey products were administered orally and parenterally on 5 farms. Other products used by ORG farmers were vitamin supplements (oral, 2 farms), microbial supplements (intramammary; 2 farms), vitamin C (intramammary; 2 farms), and aloe vera (oral; 2 farms). About 80% of the farmers were satisfied or very satisfied and 20% were somewhat satisfied with the products used at dry-off. Only one ORG farm reported the use of antimicrobials to treat a few (1%) quarters at dry-off. No ORG farmer reported using antimicrobials to treat clinical mastitis. Most organic farms ($n = 19$) reported using organic products to treat clinical mastitis. Bovine whey products were administered orally or parenterally on 9 farms. Other products commonly used were garlic tincture (oral, *in vulva*; 7 farms), aloe vera (oral, intramammary, parenteral, *in vulva*; 6 farms) and vitamin C (intramammary, parenteral; 5 farms). Compounds used on 4 farms included aspirin (oral), homeopathy (oral, *in vulva*), vitamins (oral), and vegetable oils (topical). Almost 74% of ORG farmers using compounds to treat clinical mastitis were satisfied or very satisfied with the product used while the rest was somewhat dissatisfied. A variety of compounds are used for treatments of cows at dry off or after a case of clinical mastitis. Numerous routes are used to administer these compounds. Organic farmers should be made aware that the use of intramammary aloe vera is prohibited by FDA regulations.

Key Words: Organic farm, Mastitis, Treatment

M10 Age-specific prevalence of *Mycoplasma* spp. in the nares of calves in the San Joaquin Valley, California.

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The objective of this study was to determine the weekly prevalence of *Mycoplasma* in the nares of calves from the first to the eighth week of life. Two dairy farms (A, B) and two calf ranches (C, D) with different feeding practices were selected to participate in this study between June and August 2005. Milk fed to the calves was available in the form of milk replacer (calf ranch C), waste milk (pasteurized: farm

A, not pasteurized: farm B) and a combination of milk replacer and pasteurized waste milk (calf ranch D). All dairy operations were located in the southern San Joaquin Valley and ranged in size from 500 to 4000 calves. Calves were housed in outdoor individual hutches. Physical contact with neighbor calves was not allowed only in farm B. Fifteen healthy Holstein calves less than five days old were randomly selected on each farm/calf ranch for enrollment (farm B had only fourteen calves). Only eight calves (13.6%) were male (from calf ranch C). Three calves (5.1%) died during the study period. Alternate nostrils were sampled with sterile cotton tipped swabs weekly for eight weeks. Samples were immediately cooled after collection and processed at the VMTRC - Milk Quality Laboratory (UC Davis - Tulare) in the same day. The laboratory procedures to isolate *Mycoplasma* followed National Mastitis Council recommendations. The bacterial colonies from positive cultures were checked against seven strains of *Mycoplasma* by fluorescent antibody. The weekly prevalence of *Mycoplasma* spp. in the nares of the calves from week 1 to 8 was, respectively: 1.7%, 10.3%, 35.1%, 60.7%, 73.2%, 83.9%, 89.3% and 92.9%. Only three species of *Mycoplasma* were identified: *M. bovirhinis* (77.7% of samples), *M. bovis* (12.4%) and *M. alkalescens* (9.9%). *M. bovirhinis* was isolated in all operations while *M. bovis* was isolated from calves on both dairies but not from either calf ranch. *M. alkalescens* was only found in farm B. The results indicate *Mycoplasma* spp. are prevalent in the nares of replacement calves on these farms and that there may be farm-associated differences in the distribution of the types of *Mycoplasma* between farms.

Key Words: *Mycoplasma*, Calves, Milk feeding management

M11 Effect of sampling protocol on plasma NEFA concentration.

A. E. Kulick*, R. R. Rastani, and R. R. Grummer, *University of Wisconsin, Madison*.

The objective was to determine effect of sampling protocol on plasma non-esterified fatty acid (NEFA) concentration. Plasma NEFA concentration is often used as a tool to assess metabolic status of dairy cows during the periparturient period. In experiment 1, 8 non-lactating, non-gestating dairy cows were blood sampled (basal), moved to an exercise lot for 15 min, returned to stanchions, and sampled immediately and at 5, 15, 30, 60 and 120 min following return. Following 15 min of exercise, cows displayed an increase in plasma NEFA concentration, peaking at 5 min (225 μ Eq/L) and returning to basal (84 μ Eq/L) by 30 min (110 μ Eq/L; $P < 0.001$). Cows were moved to box stalls overnight and 24 h after basal sample, they were locked up and sampled again. Housing cows in a box stall overnight and locking them in headlocks increased plasma NEFA concentration (184 μ Eq/L; $P < 0.01$). In a second experiment at a large freestall commercial dairy, 11 late gestation dairy cows were locked in headlocks at feeding, blood was sampled (0 min), and cows were released and allowed to finish eating and return to stalls. Cows were then herded into headlocks and sampled immediately (120 min), and at 135, 150, and 180 min. Plasma NEFA concentration was highest at initial lockup (284 μ Eq/L), lowest at 180 min (178 μ Eq/L) and intermediate at time points in between ($P < 0.05$). A second group of 10 late gestation dairy cows were locked in headlocks at feeding and blood sampled immediately, and at 5, 15, 30 and 60 min. Plasma NEFA concentration was highest 15 min after being placed in headlocks and lowest at 60 min (221 and 113 μ Eq/L, respectively; $P < 0.05$). At each time point, a behavior score was given (1 to 10; 1=calm; 10=extremely excited). There was a significant correlation between plasma NEFA concentration and behavior score ($r=0.55$ for experiment 1, $r=0.31$ for

experiment 2; $P < 0.05$). In conclusion, plasma NEFA concentration was altered with different sampling protocols.

Key Words: Non-esterified fatty acid, Sampling protocol, Behavior

M12 Bacteremia not detected during experimental coliform mastitis infection. J. Goff*¹, H. Springer², D. Bannerman³, and M. Paape³, ¹NADC, USDA-ARS, Ames, IA, ²Iowa State University, Ames, ³BARC, USDA-ARS, Beltsville, MD.

A bacteremia, caused by diverse species, was associated with about one third of acute coliform mastitis cases occurring in a field study report. However, blood is typically a very hostile environment for bacteria. Using blood from normal cows we demonstrate that when 2000 CFU of *Escherichia coli* or *Staphylococcus aureus* were added to 1 ml blood, more than 97% of bacteria were killed within 3 h, suggesting normal blood cells are efficient at killing bacteria entering the blood. However this may not be the case during acute mastitis if blood immune cells are compromised. We tried to recreate the field conditions by inoculating one quarter of the udder of 20 cows with 220 CFU *E. coli*, which caused an acute mastitis with bacteria and somatic cell counts in the milk each exceeding 1 million/ml milk. Rectal temperatures were elevated by 18 h in all cows ($P < 0.05$) and remained elevated for another 18 h. *E. coli* infection caused an acute decline in blood neutrophil and lymphocyte numbers and neutrophil function by 24 h of infection ($P < 0.05$), which could be indicative of generalized immune suppression. All cows cleared *E. coli* from milk without treatment in 5-10 d. Blood (1 ml) obtained aseptically at 0, 6, 12, 18, 24, 30, 36, 48 and 60 h of infection from each cow was added to 10 ml Brain Heart Infusion Broth and incubated for 48 h. With the exception of 2 cultures suspected of *Bacillus* sp. contamination, all other cultures were negative for aerobic growth, despite evidence of systemic effects of challenge on the immune system. Bacteremia observed in field cases of mastitis could not be recreated in this experimental coliform mastitis model using the culture technique described. Field case cows may also have more severe compromise of the immune system than cows in this experimental model.

Key Words: Mastitis, Bacteremia, Coliform

M13 Changes in feeding behavior but not dry matter intake identify dairy cows as risk for metritis. J. M. Huzzey*¹, D. M. Veira², D. M. Weary¹, and M. A. G. von Keyserlingk¹, ¹Animal Welfare Program, University of British Columbia, Vancouver, BC, Canada, ²Pacific Agri-Food Research Centre, Agassiz, BC, Canada.

Dairy cows experience a high incidence of disease during the transition period. Early identification of cows most at risk for disease could help reduce this incidence. Previous work by our group has shown that cows most at risk of metritis after calving are those with reduced feeding times in the days before calving, but it is not clear if this association was due to reduced DMI. The objective of the current study was to determine if changes in DMI could also be used to identify cows at risk for metritis. We followed behavior and intakes of 52 Holstein dairy cows beginning 3 weeks before and ending 3 weeks after calving. Every 3 days after calving the severity of metritis was rated on a five-point scale that incorporated rectal body temperature and condition of the vaginal discharge. Data were analyzed using a mixed model in SAS where period (pre- and post-calving) and health (healthy and sick) were treated as fixed effects and cow was treated as a random effect. During the experiment 21% of the cows were diagnosed with metritis. After calving, DMI were lower in metritic cows (14.4 ± 0.79 kg/d)

compared to healthy animals (18.8 ± 0.41 ; $P < 0.001$), and the metritic cows also spent less time feeding (164.2 ± 11.04 min/d compared to 204.9 ± 5.72 min/d for healthy animals; $P = 0.002$). As in our previous work, metritic animals spent less time feeding during the pre-calving period (185.3 ± 11.04 min/d) compared to cows that remained healthy (214.8 ± 5.72 min/d; $P = 0.002$). However, there was no difference in DMI between these two groups before calving. These results indicate that reduced time at the feeder pre-calving is a better indicator for identifying dairy cows at risk for metritis than reduced DMI.

Key Words: Feeding, Transition, Metritis

M14 The impact of colostrum supplement processing on serum IgG levels in Holstein neonates. K. J. Whitman^{*1}, J. R. Wenz¹, F. B. Garry¹, A. N. Merritt², A. N. Putnam², and J. H. Crabb², ¹Colorado State University, Fort Collins, ²Immucell Corp, Portland, ME.

Efforts to change current processing methods of colostrum supplements to increase absorbable immunoglobulin levels are being evaluated. Commercially available spray-dried (SD) product may provide less available immunoglobulin G (IgG) for absorption than freeze-dried (FD) product, due to a loss of heat labile IgG during the spray drying

process. The objective of this study was to evaluate the impact of pasteurized colostrum supplement processing (SD vs FD), and blood gas effects on serum IgG levels of newborn calves. Thirty singleton Holstein bull calves (43 ± 3.6 kg) born without assistance were used. Whole blood was collected via jugular venipuncture at birth (0h) and 48h, and radial immunodiffusion was used to determine serum levels of IgG. At 0h, arterial blood was collected from the brachial artery for immediate blood gas analysis. At approximately 1h after birth and at approximately 12h after birth, calves were fed either a FD or SD powdered colostrum supplement in 1.4L of warm water via a bottle or esophageal feeder. At 0h, 53% of calves were hypoxic ($pO_2 < 58$ mmHg), and 30% were acidemic ($pH < 7.3$), however, when compared to normal calves, these blood gas parameters had no impact on passive transfer ($P = 0.70$). There was no difference in mean IgG of SD (1110 mg/dl) vs. FD (981 mg/dl) fed calves or % calves with failure of passive transfer at 48hr. Results of this study indicate that serum IgG was similar, regardless of processing method, and hypoxemia or processing method had no impact on passive transfer. The impact of pasteurization in colostrum supplement processing on absorbable IgG should be investigated in the future.

Key Words: Colostrum supplement, IgG, Processing

Beef Species

M15 Impact of feedlot morbidity on performance, carcass characteristics and profitability of New Mexico ranch to rail steers. J. W. Waggoner^{*1}, C. P. Mathis¹, C. A. Loest¹, J. E. Sawyer², and F. T. McCollum, III³, ¹New Mexico State University, Las Cruces, ²Texas A&M University, College Station, ³Texas A&M University, Amarillo.

Records from steers enrolled in the New Mexico Ranch to Rail program (n = 813) from 2001 to 2004 were utilized to evaluate feedlot morbidity effects on performance, carcass characteristics and profitability. Steers were classified based on number of medical treatments during the finishing period. Classifications were: zero medical treatment (HEALTHY), one medical treatment (ONE), and two or more medical treatments (TWO(+)). Data were analyzed by analysis of variance and contrasts evaluated differences between HEALTHY and sick (ONE and TWO(+)) steers and between ONE and TWO(+). Initial calf market value, carcass grid value structure, and unit feed cost were standardized to remove market variation. Steers were assigned to marketing groups based on ultrasonographic prediction of individual optimum marketing dates. Twenty-two percent (177 hd) of 813 steers received medical treatment. Net income (Table 1) was greatest among HEALTHY steers and declined among steers for ONE and TWO(+) (HEALTHY vs. sick, $P < 0.01$; ONE vs. TWO(+), $P < 0.01$). Sick steers (ONE and TWO(+)) exhibited lower ADG, spent more days on feed, and had lower carcass values than HEALTHY steers (HEALTHY vs. sick, $P < 0.01$). Total cost of gain increased as the number of medical treatments increased (HEALTHY vs. sick, $P < 0.01$; ONE vs. TWO(+), $P < 0.01$). Analysis of records from steers in the New Mexico Ranch to Rail program confirms and quantifies the effects of morbidity on feedlot performance, carcass value and profitability.

Table 1. Effects of morbidity on performance and profitability of steers

Item	HEALTHY	ONE	TWO(+)	SEM	H vs S	1 vs 2+
Days on feed	192	197	209	7.0	<0.01	0.11
ADG, kg	1.45	1.39	1.26	0.77	<0.01	0.12
Cost of gain, \$/kg	1.26	1.43	1.76	0.06	<0.01	<0.01
Carcass value, \$/kg	2.51	2.39	2.18	0.10	<0.01	0.06
Net income, \$/hd	14.01	-69.63	-253.70	25.93	<0.01	<0.01

Zero (HEALTHY), one (ONE), or two or more (TWO(+)) medical treatments. Contrasts: H vs S = HEALTHY vs. sick (ONE and TWO(+)); 1 vs 2+ = ONE vs. TWO(+).

Key Words: Morbidity, Feedlot, Steers

M16 Management factors affecting selling prices of Arkansas beef calves. T. R. Troxel^{*}, B. L. Barham, S. Cline, J. Foley, D. Hardgrave, R. Wiedower, and W. Wiedower, University of Arkansas Cooperative Extension Service, Little Rock.

The objective of this study was to determine how management factors affected the selling price of beef calves. Data were collected from January 1 to December 31, 2005 at fifteen Arkansas livestock auctions. The database consisted of 52,401 lots consisting of 105,542 head of cattle representing 18.2% of the total calves sold. Information was collected by experienced livestock market news reporters and included body condition, castration, horn status, fill, health, and individual or group selling. Each factor was analyzed using GLM procedures using weight as a covariate, and least-squared means were generated and separated using the pdiff option. All prices are based on dollars per 45.45 kg of live weight. Body condition affected selling price ($P < 0.0001$) with very thin, thin, average, and fleshy and fat calves selling for \$119.55, \$116.80, \$118.14, \$112.28 and \$101.98, respectively. The