ABSTRACT #141

UTILITY OF PRE-PARTUM PARAMETERS FOR PREDICTING INTRAMAMMARY INFECTION AT CALVING IN FIRST CALF HEIFERS ON A GRAZING DAIRY. DR Ringen, JR Middleton, TS Marshall. University of Missouri, College of Veterinary Medicine, Columbia, MO.

Primigravid dairy heifers are a source of entry for mastitis pathogens into the lactating herd. The average prevalence of intramammary infections (IMI) in heifers at calving ranges between 30-40%, with coagulase negative staphylococci as the predominant bacterial cause, followed by *S. aureus* or streptococci. Currently, there is no universally recommended procedure to predict IMIs in heifers at calving. Many producers are unwilling to collect prepartum secretions for fear of predisposing the mammary gland to an IMI. Some producers prophylactically treat all prepartum heifers to control IMI at calving. This study was designed to evaluate the utility of pre-partum samples (pre-partum mammary secretions and teat skin swabs) for predicting IMI in heifers at calving and to evaluate whether this sampling increases the likelihood of IMI post-calving.

Pre-partum samples were collected 2 weeks prior to expected calving date and quarter milk samples were collected once weekly for the 1st 3-weeks post-calving for bacterial culture. Heifers were systematically assigned to 1 of 3 study groups (n = 392 quarters each) as follows: 1) pre-partum secretions from all mammary quarters, 2) pre-partum secretions from two diagonal quarters, and 3) no pre-partum secretions collected. Skin swab samples were collected from all heifers. Bacteriology was performed according to NMC guidelines and isolates were categorized as coagulase negative staphylococci (CNS), coagulase positive staphylococci (CPS), streptococci, Gram-negatives, mixed infections (2 types) or contaminated samples ($\geq$ 3 types). Using phenotypic characterization of bacterial isolates the sensitivity (Se), specificity (Sp), positive (PPV) and negative predictive values (NPV) and accuracy were calculated to define the utility of pre-partum parameters for predicting IMI at calving. Mammary quarters sampled during the pre-partum period were compared with non-sampled quarters to determine if sampled quarters had a higher occurrence of post-calving IMI (Chi-square; $P<0.05$).

Data from 262 mammary quarters were used to calculate Se, Sp, PPV, NPV and accuracy of pre-partum secretions for predicting an IMI at calving. The results were 0.81, 0.67, 0.36, 0.94, and 0.70, respectively. No CPS were isolated from teat skin, 92% (102/112) of mammary quarters that had a CNS on teat skin did not have a CNS IMI at calving, 3% (3/112) had an IMI, and 5% (6/112) were infected with a different bacterial pathogen. A greater proportion of mammary quarters (26%; 103/396) that were not sampled pre-partum had IMIs at calving than quarters that were sampled (19%; 61/327) ($P = 0.024$). Based on the calculated Se (0.81), pre-partum secretion culture is marginally useful for predicting IMIs in heifers at calving. However, given that 52% of quarters were culture negative prepartum and only 6% of these culture negative quarters acquired new infections after calving, prepartum sampling would be useful to producers for preferentially treating mammary quarters prepartum. Pre-partum sampling did not increase the likelihood of IMI at calving.