Animal Behavior and Well-Being

223 Calf welfare views and dairy consumption habits of parents compared with their children. R. Perttu*, B. Ventura, and M. Endres, Department of Animal Science, University of Minnesota, St. Paul, MN.

The objective of this study was to explore views of dairy calf welfare and dairy product consumption habits among American parent/child pairs. Parents and their children (n = 188 pairs) independently completed a mixed-methods survey administered in-person at the Minnesota State Fair. The survey included a series of multiple-choice questions related to demographics, an open-ended question on ‘what dairy calves need to have a good life’, and multiple-choice questions about participants’ consumption of dairy products and plant-based beverages. Content analysis was used for responses to the open-ended question, and themes were created to describe calf welfare values. The relationship between parent and child responses to the question on ‘what dairy calves need to have a good life’ and the questions on consumption habits were investigated using Cohen’s Kappa analysis. Median age range of the parent participants was 34–44 yr, 70% were female, 79% urban residents, 82% did not have prior experience with agricultural animals, and 71% had visited a farm. For children, the median age of participants was 10 yr, 63% were female, 79% were urban residents, 60% did not have prior experience with agricultural animals, and 82% had visited a farm. In response to ‘what dairy calves need to have a good life’, parent participants mentioned themes related to biological functioning (80% of respondents), followed by natural living (62%), humane care (26%), and affective state (3%). Children participants mentioned elements related to biological functioning (91%), followed by natural living (55%), humane care (34%), and affective state (5%). The parent/child relationship was associated with natural living (Kappa = 0.21; P = 0.004; overall agreement = 61%). In addition, the parent/child relationship was a factor for predicting the consumption of plant-based beverages (Kappa = 0.14; P = 0.05; overall agreement = 57%). It appears that parents and children are influencing each other mostly on views related to natural living of calves. However, we suggest that elements related to biological functioning, such as feed, water, shelter, were considered essential to the welfare of dairy calves by the majority of participants.

224 Disbudding and dehorning practices for pre-weaned dairy calves by farmers in Wisconsin. J. Saraceni*,1, J. Van Os2, C. Miltenburg3, E. Nelson4, D. Renaud5, C. Winder6, M. Akins7, T. Ollivett8, T. Kohlman4, H. Schlessers9, B. Schley9, S. Stuttgen9, and J. Versweyveld9,1 Department of Population Medicine, University of Guelph, Guelph, ON, Canada, 2Department of Dairy Science, University of Wisconsin-Madison, Madison, WI, 3Ontario Ministry of Agriculture, Food and Rural Affairs, Guelph, ON, Canada, 4Department of Sociology and Anthropology, University of Guelph, Guelph, ON, Canada, 5School of Veterinary Medicine, University of Wisconsin-Madison, Madison, WI, 6Division of Extension, University of Wisconsin-Madison, Madison, WI.

The objective of this study was to understand common disbudding and dehorning practices in Wisconsin to better target extension education programming to encourage adoption of best practices. A survey was distributed in 2019 to dairy farmers and calf raisers, both online and at extension events. Of all Wisconsin respondents (n = 188), producers reported milking a mean of 486 cows and had a mean of 110 heifer calves being fed milk. Respondents could select more than one method of disbudding or dehorning if used on their calves. A total of 126 producers (67%) reported using cautic paste for disbudding, with application most commonly occurring on the day of birth (64; 51%) or between 1 d to 1 wk of age (52; 41%). Hot iron disbudding was reported by 112 producers (60%) and disbudding occurred most commonly at 8 weeks of age or older (39; 35%) followed by between 4 to 8 weeks of age (38; 34%), and between 1 to 4 weeks of age (30; 27%). Of 40 producers reporting surgical amputation methods, 37 (93%) reported disbudding at 8 weeks of age or older. Response rate for the question regarding pain control was 99% (187/188). A total of 85 (45%) respondents reported using pain control, with 28 (33%) using a combination of medications. When each medication was evaluated individually, 40 respondents reported using a local anesthetic (21%), 65 reported using an NSAID (35%) and 10 reported using a sedative (5%). Response rate for questions regarding changes to pain control was 90% (170/188). Over half of the respondents (96/170) reported their use of pain control medications had changed in the last 10 years, with the most common cited influence of change being their veterinarian (66; 68%), and public perception/consumer demand (28; 29%). Results of this study demonstrate a proportion of surveyed farmers continue to perform disbudding without pain mitigation. These findings suggest a need for targeted extension education programming to encourage the implementation of best practices for pain-control and to motivate farmers to perform disbudding at an earlier age.

Key Words: survey, welfare, anesthetic

225 Use of a shelter in group-housed calves shows consistency over time and is affected by disbudding. K. N. Gingerich*, E. E. Lindner, L. M. Coll-Roman, and E. K. Miller-Cushon, University of Florida, Gainesville, FL.

Changes in social behavior may provide insight into individual experiences of pain. We provided group-housed calves two 3-sided, open top shelters (1.2 × 1.2 m), constructed from corrugated plastic, and examined how shelter use was affected by disbudding. Holstein bull and heifer calves (n = 16) were housed in groups of 8 (4 focal calves/pen in addition to 4 non-study calves; 4 pens total). Calves were randomly assigned within pen to be disbudded (DB; n = 8) or receive handling only (CON; n = 8) at 41 ± 3 d. Calves received local anesthetic and analgesic before disbudding. Behavior was recorded continuously from video for 24 h at 30 ± 5 d of age, during the week before treatment, and for 72 h after treatment to characterize the number of visits to the shelter (>50% of body inside shelter) and visit duration. Data were summarized by day and analyzed in a general linear mixed model with fixed effects of treatment (DB or CON), day as a repeated measure, and pen as a random effect. Shelter use on the observation day preceding treatment was included as a covariate, and we examined correlation between shelter use in both weeks by treatment using linear regression. All calves entered a shelter at least once during the observation period but there was considerable individual variability in use duration (min = 1.4 min/d; max = 13.6 h/d) and visit frequency (min = 1, max = 25 visits/d). Disbudding did not affect frequency of shelter visits (8.8 visits/d; SE = 1.5; P = 0.56), but visits tended to be longer for DB calves (32.5 vs. 19.2 min; SE = 8.9; P = 0.07). Behavior during the week before treatment was a significant predictor of shelter visit frequency and duration (P < 0.05). Specific regression outcomes suggested that shelter use duration and visit characteristics were consistent between weeks for CON calves (P < 0.002) whereas shelter visit characteristics for DB calves were not correlated between weeks, further suggesting that disbudding altered shelter use. These results suggest that use of a shelter is affected by disbudding, possibly reflecting a changing motivation for social contact, and that facilitating broader behavioral expression may improve welfare.

Key Words: dairy calf, disbudding, social behavior

226 The effects of xylazine sedation in 2- to 6-wk-old calves disbudded with a cautery iron. C. N. Reedman*, T. F. Duffield1, T. J. DeVries2, K. D. Lissemore1, and C. B. Winder1, 1Department of Population Medicine, University of Guelph, Guelph, ON, Canada, 2Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada.

The use of local anesthesia and nonsteroidal anti-inflammatory drug (NSAID) analgesia can reduce indicators of pain and inflammation and support self-rewarding behaviors in calves following disbudding. Al-
though the use of sedation may be recommended as best practice for disbudding, there is little research in this area. The objective of this study was to evaluate the effects of xylazine sedation given with a local anesthetic and NSAID in calves following cautery disbudding. Outcomes included automated feeder parameters, pressure sensitivity (measured by a pressure force algometer) and struggle behavior (by blinded observer). One hundred and twenty-two female and male Holstein calves aged 13 to 44 d were enrolled over 9 blocks and randomly allocated to 1 of 2 treatments: 1) sedated: lidocaine cornual nerve block, meloxicam and xylazine, or 2) non-sedated: lidocaine cornual nerve block and meloxicam. Data were analyzed using mixed models with a fixed effect for baseline values and a random effect for trial block. Linear regression was used to assess continuous outcomes and logistic regression to assess binary outcomes. Sedated calves had reduced average drinking speed at 0 to 24 h and 24 to 48 h following disbudding compared with non-sedated calves (24 to 48 h: −40.9 mL/min, 95% CI −76.8 to −4.9, \( P = 0.03 \)) but there was no difference between groups in total amount of milk consumed daily (\( P = 0.86 \)). Sedated calves had reduced pressure sensitivity (\( P < 0.01 \)) at 0, 60- and 240-min post-disbudding (0 min: −0.37 kgf, 95% CI −0.49 to −0.25; 60 min: −0.69 kgf, 95% CI −1.03 to −0.35; 240 min: −0.72 kgf, 95% CI −1.16 to −0.28) but there were no detected differences among groups 24 h after disbudding (\( P = 0.42 \)). During the disbudding procedure, non-sedated calves had 4.5 (95% CI 1.5 to 13.2, \( P = 0.006 \)) times the odds of struggling more than twice compared with sedated calves. The results indicate that xylazine sedation, in conjunction with a local anesthetic and NSAID, can reduce behavioral indicators of pain in calves disbudded with a cautery iron, but also appears to impact suckling behavior for at least 48 h following sedation.

Key Words: dairy calf, disbudding, behavior


Dairy bull calves kept for beef production are usually castrated to reduce aggression, mounting behaviors, and to improve meat quality. Two common methods of castration are surgery (resulting in complete removal of the testes) and application of a rubber ring (causing constriction of the blood flow, leading to tissue death and eventual slough off). The aim of this study was to assess the outcomes of two methods of castration on the growth and intake of dairy calves. Holstein bull calves (\( n = 22 \)) were enrolled and randomly assigned to treatment. All calves were castrated at 28 (±1) days old, and always with multi-modal pain mitigation (including the use of sedative, local anesthetic and NSAID). Feed intake and BW were recorded for 3 d before and after castration, and once weekly thereafter for 8 wk. Wound condition was evaluated the day after castration, and weekly thereafter for 8 wk. Wounds of surgically castrated calves healed 28 (±6) days after the procedure (i.e., incision no longer visible); in contrast, the necrotic tissues of the rubber ring calves sloughed off 50 (±9) days after the ring was applied, and the wound was not fully healed in the 2 weeks following slough off. Eight weeks after castration, surgically castrated calves had gained 51.1 (±11.5) kg versus 40.2 (±13.6) kg for those with a rubber ring (\( P = 0.019 \)). Average daily milk intake of all calves in each treatment was calculated, and 2 linear models were built: no significant difference was found between treatments (\( P = 0.057 \)). Similarly, quadratic models were built for grain intakes in both treatments, and ANOVA was carried out: there was a significant difference between treatments (\( P < 0.001 \)). Calves assigned to the rubber ring treatment consumed less grain than surgically castrated calves over the 8-wk period. These results indicate that calves recover more rapidly after surgical castration, as evidenced by improved wound healing, BW gain and feed intake in the weeks following the procedure.

Key Words: post-operative pain, banding, growth

228 Effects of pair or single housing on performance of dairy calves in outdoor hutches. R. Salter* and J. Van Os, University of Wisconsin-Madison, Madison, WI.

Social housing of pre-weaned dairy calves indoors has shown benefits for their welfare, growth, and solid feed intake, which is important for rumen development. Recent research has begun to explore pair raising calves using adjacent outdoor hutches with a shared fence. Our objective was to evaluate pair vs. individual hutch housing effects on performance before and during weaning. Eighty Holstein heifers were individual (\( n = 16 \) calves) or pair housed (\( n = 32 \) pairs). Calves had ad libitum access to starter. During the pre-weaning period (up to 41 ± 1 d of age, mean ± SD), calves were fed 3.8 L of pasteurized milk 2 times/d. Calves were weaned in a step-down fashion and fed 1.9 L of milk 2 times/d for 7 d, 1.9 L 1 time/d for 4 d, and were completely weaned by 52 ± 1 d of age. Body weights, body-frame dimensions (wither height, hip height, body length, and heart girth) and starter intakes (adjusted for DM%) were measured weekly and averaged within each pair for pair-housed calves. For final BW and body-frame dimensions, linear mixed models were used to evaluate treatment effects, with baseline measurements at 0 d old (BW) and 11 ± 2 d old (body-frames) as a covariate. For starter DMI and ADG, treatment and week effects and their interaction were evaluated separately for the pre-weaning and weaning periods (both measures), and 1 week post-weaning (DMI); overall treatment effects were evaluated for the entire period when each measure was collected. Overall, paired calves tended to have higher starter DMI (pair vs. individual: 0.71 ± 0.03 vs. 0.59 ± 0.05 kg/d, \( P = 0.07 \)), driven by differences during the weaning period (pair vs. individual: 1.31 ± 0.07 vs. 1.01 ± 0.10 kg/d, \( P = 0.03 \)). During the pre- and post-weaning periods, DMI did not differ between treatments (\( P > 0.31 \)). ADG did not differ overall or during either milk-feeding period (\( P > 0.58 \)). Final BW and body-frame dimensions did not differ between treatments (\( P > 0.97 \)). Paired and individual calves had similar growth performance, but during weaning paired calves consumed more solid feeds. These results suggest that calves reared in hutch-es with a social companion transition better to solid feeds during weaning.

Key Words: social housing, growth, weaning