

OHIO STATE UNIVERSITY EXTENSION



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Location

Department of Veterinary
Preventive Medicine

Chair: Dr. William Saville

Research

Step, D. L., & Krehbiel, C. (2014). **Evidence-based approach to improving immunity to manage cattle health.** *Animal Health Research Reviews*. Advance online publication. doi: 10.1017/S1466252314000206

This publication highlighted ongoing research regarding bovine respiratory disease (BRD) to evaluate how common practices intended to improve immunity in high-risk calves impact health and productivity.

EXPERIMENT 1:

BACKGROUND: One of the concerns expressed by veterinarians and producers is that stressed cattle may not respond to vaccination with optimal immunity. Thus a common practical approach is the recommendation to administer a second dose of MLV vaccine, commonly referred to as 'REVAC' (revaccination), to allow more animals to develop immunity and thus protection when they are exposed to respiratory pathogens under normal field situations.

PURPOSE: The objective was to compare the effects of administration of a MLV vaccine containing bovine herpesvirus-1 (BHV1), parainfluenza type 3 virus (PI3 V), bovine viral diarrhea virus types 1a and 2a (BVDV1a–BVDV2a), and bovine respiratory syncytial virus (BRSV) once or twice on the health and performance of high-risk cattle.

RESULTS: 612 crossbred beef cattle from auction markets were randomly assigned to groups vaccinated once or vaccinated twice (11 days apart) during the 60 day preconditioning backgrounding period. Half of each group were vaccinated again upon entry into the feedlot. For both the preconditioning and finishing phases, there were no significant differences in performance between the groups. There were some differences between groups in morbidity and feed to gain ratios during preconditioning, but they could not be attributed to the second vaccination. No cattle exhibited any clinical signs consistent with BRD during the finishing phase of production.

CONCLUSIONS: The authors concluded that because no cattle showed signs of BRD in the finishing phase, it is likely that the preventive health protocol administered in the preconditioning backgrounding phase of production provided health benefits during the finishing phase of production.

EXPERIMENT 2:

BACKGROUND: Observations indicate that commingling cattle from multiple sources

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with unknown health histories contributes to BRD involving complex interactions between respiratory pathogens and stressors.

PURPOSE: The objectives were to determine the health and performance of ranch-origin calves administered various preventive health protocols and to evaluate the effect of commingling ranch-origin calves with calves of unknown health histories.

RESULTS: 509 crossbred beef steers came from either multiple auction markets or from a single ranch. All ranch cattle were eventually comingled with various market cattle upon entry into the feedlot. The ranch cattle were divided into study groups as follows: weaned and sent directly to the feedlot, weaned and given a 45-day preventive health protocol prior to entering the feedlot, or weaned and held for 45-days without a preventive health protocol prior to entering the feedlot.

CONCLUSIONS: The management of steers held for 45-days with or without a preventive health protocol yielded similar benefits and an economic benefit with lower average health care costs, as compared with the management of steers sent directly to the feedlot and immediately comingled with steers from auction markets.

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Wells, J. E., Berry, E. D., Guerini, M. N., & Varel, V. H. (2014). **Evaluation of essential oils in beef cattle manure slurries and applications of select compounds to beef feedlot surfaces to control zoonotic pathogens.** *Journal of Applied Microbiology*. Advance online publication. doi: 10.1111/jam.12689

BACKGROUND: Direct treatment of manure with antimicrobials could curb emissions, improve the fertilizer value, and control pathogen transmission to the environment. Plant essential oils contain high levels of terpenes and are natural antimicrobials that could be useful for application to manure. Previous research involving thymol had mixed results and supply concerns; however, woody plants are potential sources of essential oils, and terpenes are waste products of the pulp industry that have not been tested for antimicrobial activity in animal production environments.

PURPOSE: To evaluate natural terpene compounds for antimicrobial activities and determine if these compounds could be used to control microbial activities and pathogens in production animal facilities.

RESULTS: Thymol, geraniol, glydox, linalool, pine oil, plinol, and terpineol were all tested in the laboratory. Thymol is a terpene phenolic compound and was most effective for reducing fermentation products and pathogen levels, followed by the extracts linalool, pine oil, and terpineol, which are terpene alcohols. Thymol, linalool, and pine oil were further evaluated in cattle pens. The reduction in fermentation products but not pathogens was dependent on the moisture present in the feedlot surface material. Thymol at 2,000 ppm reduced prevalence of *E. coli*, but not *Listeria*. Pine oil at 4,000 ppm reduced *E. coli*, *Listeria*, and *Campylobacter*. Linalool at 2,000 and 4,000 ppm did not affect pathogen levels.

CONCLUSIONS: Natural compounds bearing terpenes can control pathogenic bacteria in treated manures and when applied to the feedlot surface in production cattle systems. Waste products, such as pine oil extract, from the pulp wood industry may have application for treating feedlot pens and manure to reduce the pathogen load. Also, pine oil is a cheaper alternative to thymol.

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Bates, A., Eder, P., & Laven, R. (2014). **Effect of analgesia and anti-inflammatory treatment on weight gain and milk intake of dairy calves after disbudding.** *New Zealand Veterinary Journal*. Advance online publication. doi: 10.1080/00480169.2014.982739

BACKGROUND: In New Zealand, removal of the horn buds is usually carried out without the use of analgesia when the horn buds are 5–10 mm long and can be removed with a heated disbudding iron alone. Evidence that the provision of analgesia provides benefits such as increased weight gain, in addition to pain relief at the time of the procedure, could be useful for persuading stock owners to use analgesia for disbudding. The evidence for an impact of analgesia on weight gain compared to no analgesia is equivocal, but the use of non-steroidal anti-inflammatory drugs (NSAID) at the time of scoop dehorning increased growth rate. However, in previous studies small numbers of animals has meant that biological differences have not been statistically significant.

PURPOSE: The aim was to assess the effect on daily weight gain and milk consumption of the addition of the NSAID, meloxicam, to two disbudding protocols in calves: standard farmer disbudding with no analgesia, and standard veterinary disbudding with S/C injection of local anesthetic over each horn bud after sedation with xylazine.

RESULTS: Four disbudding protocols were used on 3- to 6-week-old Friesian-Jersey calves. Farm staff disbudded 101 calves without sedation or local analgesia, of which 51 received 20 mg meloxicam S/C. Veterinary staff disbudded 101 calves with sedation and local analgesia, of which 51 also received 20 mg meloxicam S/C. For the first 30 days after disbudding, if meloxicam was not used veterinarian-disbudded calves grew faster than farmer-disbudded calves; however, if meloxicam was used there was no difference in growth rate between veterinarian- and farmer-disbudded calves. Milk consumption for the 11 days after disbudding was greater for calves disbudded by veterinary staff than by farm staff with no effects from meloxicam treatment.

CONCLUSIONS: The authors concluded that this study demonstrated that analgesia can have significant benefits for farm productivity other than reducing pain at the time of disbudding. Such data should be useful in persuading farmers and regulators that analgesia should be routinely used when disbudding calves. The addition of meloxicam did not make any difference to the growth rate and milk intake of calves receiving sedation and local anesthetic, but the combination of sedation, local anesthetic, and NSAID remains the optimal method of reducing the behavioral and physiological consequences of pain associated with disbudding.

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Calendar



A full calendar of all upcoming events and continuing education opportunities offered by the College of Veterinary Medicine is available on the website at <http://vet.osu.edu/>

[Ohio Dairy Health and Management Certificate Program](#)

Module 3 – Basic Dairy Cattle Nutrition
December 4-6, 2014

Module 4 – Advanced Dairy Cattle Nutrition
March, 2015 (TBD)

Modules 3 and 4 of this cohort will be focused on nutrition. Space is still available under the specific-module option.

The *Ohio Veterinary Newsletter* began in October of 1974 as a way for Veterinary Extension to

relay relevant information to practicing veterinarians in Ohio. The aim is to communicate pertinent news from the Veterinary Extension Unit; unbiased, research-based information with practical relevance for veterinary practitioners working in food animal, equine, and shelter medicine; and a calendar of upcoming opportunities. Please feel free to provide your feedback and let us know what information is most helpful to you and your practice.

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