

## Evaluation of an Interactive Workshop Designed to Teach Practical Welfare Techniques to Beef Cattle Caretakers and Decision Makers

### Abstract

The purpose of the project was to evaluate the use of an interactive workshop designed to teach novel practical welfare techniques to beef cattle caretakers and decision makers. Following training, respondents reported being more likely to use or recommend use of local anesthesia for dehorning and castration and were more inclined to use meloxicam for pain management. Respondents also reported improvement in performing all skills taught in the workshop. These results suggest instructional techniques used to teach practical concepts/techniques relevant to beef cattle welfare led to improvements in both perceived competency and estimated likelihood that the material will be used.

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## Introduction

Adult learners are usually most interested in learning about topics that are relevant to problems they regularly encounter (Knowles, Swanson, & Holton 2005; Merriam & Caffarella, 1999). Hands-on learning experiences are a preferred method of instruction for cattlemen (Strong, Harder, & Carter, 2010) as well as other adult learners (Dollisso & Martin, 1999; Richardson, 1994). Multimedia or other adjunct teaching materials should be designed to accommodate the diverse educational backgrounds

of adult learners (Dewell et al., 2009). The objective of the project described here was to determine if instructional techniques used to teach novel practical concepts/techniques relevant to beef cattle welfare could lead to improvements in both perceived competency and estimated likelihood that the material will be used.

## Workshop Design

A workshop was conducted during the 4th International Symposium on Beef Cattle Welfare in Ames, Iowa on July 16, 2014. Five topics relevant to beef cattle welfare were targeted:

- Local anesthesia techniques for dehorning/disbudding and castration
- Utilization of nonsteroidal anti-inflammatories (NSAIDs)
- Low stress handling techniques
- Decision making for compromised cattle
- Lameness evaluation and treatment

The workshop employed a combination of didactic classroom-based discussion, demonstrations, and hands-on instruction and experiences using models, cadaver specimens obtained from university laboratories, and/or live animals. Lectures were limited to 10-15 minutes (Ota, DiCarlo, Burts, Laird, & Gioe, 2006) because adults prefer minimal lecturing (Grudens-Schuck, Cramer, Exner, & Shour, 2003; Johnson, Carter, & Kaufman, 2008). To provide visual access to participants during the castration-technique demonstrations, a large LCD screen projected "live" HD video footage (GoPro Hero 3+ Black edition). Techniques were introduced and demonstrated by recognized experts (veterinarians and/or welfare scientists). Interaction and discussion were encouraged. Education included the proper use of extra-label-drugs in the context of a veterinary-client-patient-relationship. Participants were then provided opportunities to practice techniques and obtain feedback and mentorship as needed.

Participants completed a pre- and post-workshop questionnaire to 1) measure attitude changes towards welfare techniques as a result of participation and 2) compare perceived ability to perform or incorporate certain welfare-related procedures resulting from workshop participation. Attendees used a five-point scale to rate the likelihood that they would use or recommend the use of the following techniques prior to and following the workshop:

- Perform local anesthesia for dehorning/disbudding
- Perform local anesthesia for castration
- Utilize meloxicam for pain management
- Utilize low stress cattle handling techniques
- Euthanize cattle with a poor prognosis

The five-point scale was defined as follows:

- 1 = very unlikely
- 2 = somewhat unlikely
- 3 = neither likely nor unlikely
- 4 = somewhat likely
- 5 = very likely

Participants were also asked to compare their ability prior to and following the workshop to perform the following procedures:

- Perform local anesthesia for dehorning/disbudding
- Perform local anesthesia for castration
- Identify common causes of lameness
- Make a first level treatment decision for lame cattle
- Identify optimal point of entry for gunshot or captive bolt euthanasia
- Incorporate low stress cattle handling techniques
- Utilize meloxicam for pain management
- Appropriately care for and handle compromised cattle
- Properly identify compromised cattle
- Humanely use knots for restraint and handling

The following scale was used to assess ability:

- 1 = my ability has not changed
- 2 = I am somewhat better at this now
- 3 = I am much better at this now

Descriptive data including means, medians, minimum and maximum values, and standard deviations of the unadjusted data were calculated (IBM SPSS Statistics; IBM Corp. Released 2012. IBM SPSS Statistics for Windows, Version 21.0. Armonk, NY: IBM Corp.). Paired t-tests were used to compare

pre- and post- questionnaire data with significance set at  $p < 0.05$ .

## Workshop Impacts and Implications

One-hundred questionnaires were distributed to attendees. Eighty-six (86/100=86%) participants completed at least some of the questionnaire, and 65 (65/100=65%) completed the pre- and post-questionnaire. Data from partially completed questionnaires were used when possible.

Participants identified their occupations (Table 1), with cattle owners and cattle caretakers predominating. Because participants could choose more than one category, percentages are greater than 100%.

**Table 1.**  
Participants' Occupations

<b>Participant Occupation</b>	<b>Entire Sample N = 86</b>		<b>Sample with complete data N = 65</b>	
	<b>N</b>	<b>%</b>	<b>N</b>	<b>%</b>
Cattle Owner	29	34	22	34
Cattle Caretaker	33	38	23	35
Practicing Veterinarian (involves bovines)	14	16	12	18
Practicing Veterinarian (does not involve bovines)	0	0	0	0
Non-practicing Veterinarian	6	7	3	5
Veterinary Student	0	0	0	0
Other Student	12	14	11	17
Industry Representative	22	24	13	20
Academic Representative	17	20	13	20
Veterinary or Animal Technician	3	3	2	3
Other	13	15	8	12

Participants were asked "what is the likelihood that you will use, or recommend the use of, each of the following procedures in the future?" Table 2 contains the pretest and posttest mean scores, standard deviation, t-value, and associated  $p$ -values for selected procedures.

**Table 2.**

What Is the Likelihood That You Will Use, or Recommend the Use of, Each of the Following Procedures in the Future?

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Procedure	Pretest		Posttest		Paired t-test	
	Mean	s.d.	Mean	s.d.	t	P
Perform local anesthesia for dehorning or disbudding	3.43	1.510	4.09	1.208	-4.696	<.0001
Perform local anesthesia for castration	3.06	1.580	3.98	1.317	-5.821	<.0001
Utilize meloxicam for pain management	3.46	1.448	3.91	1.320	-3.139	.003
Utilize low stress cattle handling techniques	4.71	.805	4.88	.375	-1.896	.062
Euthanize cattle with a poor prognosis	4.49	1.106	4.72	.820	-1.962	.054

Participants reported a significant pretest to posttest increase for "likelihood of use or recommendation of use" for the following categories ( $p < 0.05$ ):

- Perform local anesthesia for dehorning/disbudding
- Perform local anesthesia for castration
- Utilize meloxicam for pain management

Respondents did not demonstrate a significant pretest to posttest change for two categories:

- Utilize low stress cattle handling techniques
- Euthanize cattle with a poor prognosis

The lack of a significant pretest-to-posttest difference for the cattle handling and euthanasia topics may be because both scores were already high (near 5) before the workshop. Thus, there was little room for further improvement.

Table 3 summarizes participants' self-ratings of ability prior to and following the workshop. Overall, participants reported that their abilities were improved following the workshop. Participants reported slightly less improvement in some areas, such as the ability to use restraint knots, likely because of pre-existing proficiency.

**Table 3.**

Please Compare Your Ability Prior to Participating in the "International Symposium on Beef Cattle Welfare Workshop" to Your Ability Now.

Procedure	Mean	SD
Perform local anesthesia for dehorning or disbudding	2.42	0.666

Perform local anesthesia for castration	2.30	0.684
Identify common causes of lameness	2.24	0.793
Make a first level treatment decision for lame cattle	2.24	0.786
Identify optimal point of entry for gunshot or captive bolt euthanasia	2.20	0.838
Incorporate low stress cattle handling techniques	2.18	0.778
Utilize meloxicam for pain management	2.14	0.785
Appropriately care for and handle compromised cattle	2.08	0.767
Properly identify compromised cattle	2.01	0.780
Humanely use knots for restraint and handling	1.95	0.685
1 = my ability has not changed; 2 = I am somewhat better at this now; 3 = I am much better at this now		

The interactive workshop resulted in improvements in perceived competency of potentially technically difficult techniques and estimated likelihood that the taught material will be used. Following training, respondents were more likely to use or recommend use of local anesthesia and more inclined to use a non-steroidal drug for pain management. Respondents also reported increased ability at performing taught skills. Although this teaching method was not compared directly to traditional didactic-teaching methods, these results support the use of interactive instructional techniques to teach adults practical concepts and techniques relevant to beef cattle welfare and are consistent with prior research (Dolliso & Martin, 1999; Knowles, Swanson, & Holton, 2005). Similar workshops could be developed to provide practical training and education to improve beef cattle welfare, and empower interested cattlemen and women.

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