Evaluation of the Effect of Vaccination Side on Subsequent Halter Breaking Side Preference in Cattle

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Summary and Implications

The quality of animal-human interactions is important, as negative interactions may result in an animal being difficult to handle. Halter breaking is used as a means to make the process of moving and securing a calf easier, and theoretically should minimize stress for both the animal and handler. There are numerous ways that people can halter break a calf, for example tying up the cattle in barns for a defined period of time, touching the cattle for the first time using combs or using a "*Talk and Touch*" method. Anecdotal evidence shows with halter breaking that cattle have a side preference and it has been hypothesized that this side preference may be related to the side that vaccinations were given. Therefore, the goal of this study was to determine if a calf indicates a side approachability preference during halter breaking that is dependent on vaccination side. A total of 20 crossbred Angus/Simmental steers from Iowa State University's (ISU) breeding herd were used. Steers were between 7 and 9 mo of age, averaging 272 kg BW. Steer was the experimental unit. A 2 (left or right neck side for vaccination) x 2 (left or right approach side) factorial arrangement of treatments was compared. One month after weaning, each steer had a nylon halter affixed to his head 2 d prior to the steer side preference test. Each handler was blind to vaccination side. Approach side for each steer had been randomly assigned prior to the beginning of the trial. Halter breaking methodology was conducted over five defined steps. Students were asked at the end of the 1-h period to conclude if the calf had a left, right, or no side preference. Data was analyzed using PROC GLIMMIX for the effects of vaccination side on subsequent halter breaking side preference. There was no difference observed between halter breaking side preference in relation to vaccination side ($P > 0.05$). In conclusion, with this data set there was no halter breaking preference side related to vaccines given, indicating that the calves did not negatively associate humans with restraint and injections. This is helpful in understanding animal/human interactions as well as ability to approach an animal after vaccinations. This also implies that strategies such as the "*Talk and Touch*" method are useful in keeping calves calm and comfortable during halter breaking

Introduction

At weaning, beef calves are typically vaccinated as part of the herd health program to prepare them for entry into feedlots. Feedlots consist of cattle coming from many sources and therefore, prevention of disease is necessary. Often when calves receive vaccines they undergo routine husbandry practices such as castration and de-horning. The combination of these procedures can add additional stressors to an already aversive experience for the calf. The quality of animal-human interactions is important, as negative interactions may result in an animal being difficult to handle. Previous work on shearing and tipping sheep has shown that sheep remember aversive experiences weeks after the procedure and will actively avoid the unpleasant stimuli. Cows subjected to electroimmobilization had elevated heart rates upon returning to the site of the procedure several months later. In some sectors of the beef industry, calves after weaning are prepared for showing. Part of showing requires the calf to wear a halter. Wearing a halter requires very close animal-human interactions that can be intense in nature (defined as person within the flight zone and touching the calf). Halter breaking is used as a means to make the process of moving and securing a calf easier, and theoretically should minimize stress for both the animal and handler. There are numerous ways that people can halter break a calf, for example tying up the cattle in barns for a defined period of time and/or touching the cattle for the first time using combs. A different halter breaking method is "*Talk and Touch*." There has been anecdotal evidence that calves during this process have a side preference. It has been hypothesized that this side preference may be related to the side that vaccinations were given. Therefore, the goal of this study was to determine if calves had a side approachability preference during halter breaking using Touch and Talk, based on previous vaccination side.

Materials and Methods

Treatments and experimental design: This project was approved by the Iowa State University IACUC.
A 2 (left or right neck side for vaccination) x 2 (left or right approach side) factorial arrangement of treatments was compared (Table 1). A total of 20 crossbred Angus/Simmental steers from Iowa State University's (ISU) breeding herd were used. Steers were between 7 and 9 mo

of age, averaging 272 kg BW. Steer was the experimental unit.

Table 1. Experimental design for the preferred approach side.

	Side of vaccination	
	Left	**Right**
Approach side		
Left	5	5
Right	5	5

Prior to weaning- vaccination procedures*:* Cows and their calves were moved 56 m from the maternity barn to a holding corral. Calves were separated from their dams using sorting paddles. Calves moved in single file line ~20 m to the Combo Artificial Insemination (AI) squeeze chute which measured 1 m width x 3 m length by 2 m height (Titan West Rolling B., Neola, IA). Each calf was vaccinated with two vaccines: (1) preconditioning shot, Pyramid-5 (Boehringer Ingelheim Vetmedica Inc., St. Joseph, MO) for infectious bovine rhinotracheitis, parainfluenza-3, and bovine viral diarrhea types 1 and 2, and (2) Vision-7 Somnus (Merck, West Point, PA) for clostridial diseases. The vaccinations were given subcutaneously. Exiting calves then proceeded to a holding pen. Once all calves had been vaccinated they were returned to the maternity barn and rejoined their dams.

Weaning*:* Calves were weaned using a two-step program at 7 to 9 mo of age. After weaning, calves were moved to the ISU Beef Nutrition Farm feedlot at the east end of the facility.

Steer side preference: One month after weaning, each steer had a nylon halter affixed to his head 2 d prior to the steer side preference test (Figure 1).

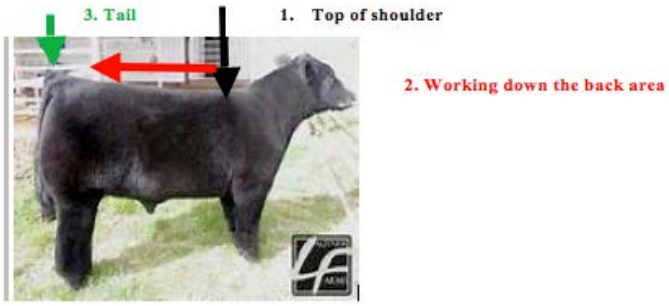
Figure 1. **Calf with proper halter placement.**

On the test day, steers were moved by the Beef Farm crew from the home pen to a separate pen that measured 5 m width x 10 m length. The floor was cement. Either 4 or 5 steers were moved and tied up at a time. Each halter was tied to the fence post using a slipknot, and the steers' heads were tilted upwards. Once steers were firmly secured, one handler per steer entered the pen. Each handler was blind to vaccination side. Approach side for each steer had been randomly assigned prior to the beginning of the trial. Halter breaking methodology was conducted over five defined steps (Table 1) and the anatomical regions of the calf for this halter breaking can be located in Figure 2. Students were asked at the end of the 1-h period to conclude if the calf had a ***left, right***, or ***none***.

Table 2. Halter breaking methodology.

Step	Measure	Defined	Time (mins)
1	Approach steer on the predetermined side	The handler stood 1 m perpendicular to the calf's shoulder and spoke quietly	5
2	Approach steer on the opposite side	The handler stood 1 m perpendicular to the calf's shoulder and spoke quietly	5
3	Return to the initial side	Handlers attempted to touch the steer's shoulder	5
4	If the steer did not move	If the steer did not move away and stood calmly, handlers continued to touch the calf from shoulder to tail with their hand	45
	If the steer was uncooperative	If the steer was nervous, demonstrated by tail swishing and attempting to move away, handler moved to the opposite side in an attempt to rub from shoulder to tail	45
5	Conclusion	Handler concluded if steers preferred the left, right, or neither side respectively	1-h end point

Figure 2. Calf anatomical contact areas.

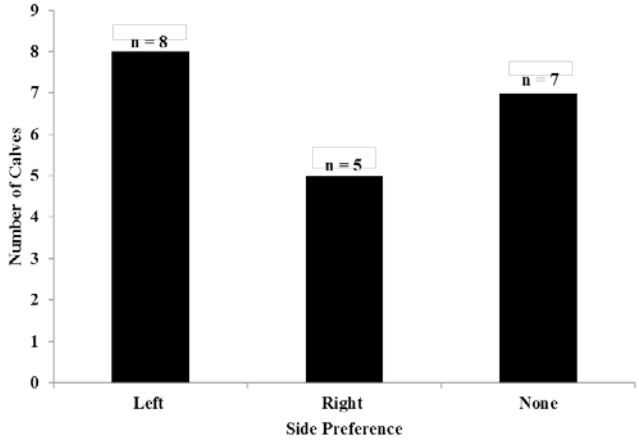


***Statistical Analysis**:* Data was analyzed using PROC GLIMMIX for the effects of vaccination side on subsequent halter breaking side preference. A PDIFF analysis was used to determine differences between treatments. A *P* value of ≤ 0.05 was used to determine significance.

Results and Discussion

There was no difference observed between halter breaking side preference in relation to vaccination side (*P* > 0.05; Figure 3).

Figure 3. Number of calves with side preference at halter breaking (*P* > 0.05).



In conclusion, with this data set there was no halter breaking preference side related to vaccines given, indicating that the calves did not negatively associate humans with restraint and injections. This is helpful in understanding animal/human interactions as well as ability to approach an animal after vaccinations. This also implies that strategies such as the "*Talk and Touch*" method are useful in keeping calves calm and comfortable during halter breaking.