

# Comparison of online, hands-on, and a combined approach for teaching cauterly disbudding technique, including administration of a cornual nerve block, to dairy producers

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## Introduction

The use of pain control for disbudding and dehorning is important from both an animal- and industry-centered perspective. Best practices include the use of local anesthetic, commonly given as a cornual nerve block, and a non-steroidal anti-inflammatory drug (NSAID). Approximately 40% of Canadian dairy producers do not use local anesthesia, perhaps in part due to lack of knowledge regarding cornual nerve block technique. Although this skill is typically learned in person from a veterinarian, alternative or adjunct methods may be useful for hard to reach producers. The objective of this trial was to determine if there were differences in the efficacy of online training, hands-on training, and a combined approach for teaching producers to successfully administer a cornual nerve block and disbud a calf less than 12 weeks of age.

## Materials and Methods

Forty-three producers participated in five workshops held throughout the province of Ontario during 2016, with 6 to 10 participants per workshop. Twenty-three were assigned to online training, and were assessed both after completing the online training (the online group), and again once additional hands-on training was provided (the combined approach group). Twenty producers participated in the hands-on training portion alone (the hands-on group). The primary outcome for determining success was block efficacy, defined as a lack of established pain behaviours (head shake, head rub, ear flick, foot stamp, and tail swish) during disbudding iron application. Secondary outcomes were background knowledge (assessed by a written quiz), cornual nerve block and disbudding technique (evaluated by rubric scoring), time taken to perform each step, and self-confidence before and after evaluation. Associations between training group and

outcome were assessed with logistic regression, ordered logistic regression, and Cox-proportional hazard models, with a random effect for workshop.

## Results

Cornual nerve block efficacy was not different between groups, with 91 % successful in both combined and online groups, and 75 % in the hands-on trained group. Online learners had poorer cornual nerve block technical scores (out of 3; 2.3, SD = 0.8) than hands-on (2.6, SD = 0.6;  $P = 0.02$ ). The combined group (2.5, SD = 0.6) was not different from hands-on. Similarly, disbudding technique was poorer for online (out of 3; 2.6, SD = 0.7) compared to hands-on (2.9, SD = 0.3;  $P = 0.02$ ), and tended to be lower than the combined group (2.8, SD = 0.4;  $P = 0.08$ ). Time to cornual nerve block completion was longer for the online group compared to the combined group (HR 0.6; 95 % CI 0.3 – 1.1;  $P = 0.05$ ), and tended to be longer than the hands-on group (HR 0.6; 95 % CI 0.3 – 1.1;  $P = 0.09$ ). Time to disbudding completion was not different between groups. The combined group had the highest pre-evaluation confidence score (out of 5; 4.5, SD = 0.5) compared to both online (3.3, SD = 0.8) and hands-on (3.8, SD = 0.7) ( $P < 0.05$ ). After evaluation, the combined group remained higher than online (4.8, SD = 0.4 versus 4.5, SD = 0.5;  $P = 0.02$ ) and was not different than hands-on (4.5, SD = 0.7).

## Significance

While we saw some statistical differences between training groups, absolute differences were small and block efficacy was similar. This suggests online training can be a useful tool for motivated producers who may lack access to hands-on training, and can play a role in helping to improve overall compliance with use of disbudding pain control across the dairy industry.