

blinded evaluator who examined knowledge, handling, CNB technique, disbudding technique, time taken, and confidence scoring (both pre- and post-evaluation). Success of CNB was based on lack of pain-related behaviors from an established disbudding ethogram during the first 5 seconds of disbudding iron application.

### Results

The hands-on training group had no CNB failures. Online training was numerically less effective (25% CNB failures), but not statistically ( $P=0.13$ ). Univariate analysis of outcomes was done by linear regression for time taken, and ordered logistic regression for rubric scores. Online learners tended to be more knowledgeable ( $P=0.06$ ), but significantly less confident pre-evaluation ( $P<0.01$ ), had poorer handling ( $P=0.02$ ) and technical ( $P=0.05$ ) skills, and took more time

to perform all tasks ( $P=0.01$ ). Post-evaluation confidence scores did not differ between groups; online learners tended to have a higher increase in confidence score post-evaluation as compared to pre-evaluation ( $P=0.06$ ).

### Significance

This trial shows hands-on training is a highly effective method of teaching CNB and cautery disbudding technique, even when done with very limited practice opportunities for participants. Online learning may be suitable for use as an adjunct to hands-on training, or as a resource to refresh skills of those who may not perform this task routinely. While online training is not recommended as a sole method of instruction, it may be useful for hard-to-reach producers in the absence of hands-on training.

## Prevalence of lung lesions using thoracic ultrasonography in pre-weaned calves from dairy herds in Québec, Canada

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### Introduction

Thoracic ultrasonography and observation of lung ultrasonographic consolidation has been recently developed as a fast and non-invasive way to assess bronchopneumonia-associated lung lesions. The objective of this cross-sectional study was to assess the prevalence of lung consolidation in pre-weaned calves in dairy herds.

### Materials and Methods

Thirty-nine dairy herds were randomly selected in the client list of the ambulatory clinic of the Université de Montréal to participate to this cross-sectional study conducted during the summer 2015. A questionnaire focusing on calf feeding and raising practices was completed with the producer on the day of the visit. Each calf (min 6 calves, max 12) was assessed using a complete thoracic ultrasound examination (7.5 MHz linear probe, I-scan, Draminski, PL) focusing on the maximal depth of consolidation observed. Two different cut-offs for defining a calf with consolidation were selected. A high sensitive definition of consolidation was to have at least 1 site with a consolidation depth  $\geq 1$ cm (Cons1). A more specific definition was used defining a consolidated calf when at least 1 site with a consolidation depth  $\geq 3$ cm was found (Cons3). Descriptive statistics were calculated.

### Results

A total of 318 pre-weaned calves from 39 different herds were enrolled in this study. The median number of lactating cows in these herds was 80 (ranged from 55 to 280). The maximal quantity of milk replacer volume offered to calves during the pre-weaning period varied from 4 to 16L/day (median=8L). The herd-level prevalence of Cons1 varied from 0 to 80.0 % (median 16.7%; 25th percentile 10.4%; 75th percentile 41.2%; 90th percentile 60.0 %). The herd-level prevalence of Cons3 varied from 0 to 70% (median 8.3%; 25th percentile 0%; 75th percentile 20.8 %; 90th percentile 33.3%).

### Significance

Despite the fact that this study was performed in a period with a relatively low anticipated incidence of enzootic pneumonia (ie, summertime), ultrasonographic evidences of lung lesions were commonly found in dairy herds. Interestingly, the prevalence of these lesions was highly variable between herds.