

# Male dairy calf health before and after long-distance transportation

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In Canada, many male dairy calves are sold and transported to grower facilities at a young age when they are vulnerable to health and welfare problems. The study objectives were to determine if male dairy calf health deteriorated after long-distance transportation and investigate potential risk factors. From October 2017 to March 2018, 161 calves from 11 dairy farms in British Columbia were assessed by a veterinarian within 24 hours before being shipped. Measures included age, heart girth circumference, a quantification of calf attitude (based on depression/dullness, willingness to rise), respiratory and enteric health, and body temperature. Serum total protein was measured, and failure of transfer of passive immunity (FTPI) was defined as values < 5.2 g/dL. Calves were assessed again at a calf grower facility after 12-24 hours of transportation. Health change was evaluated using a McNemar test, and mixed logistic regression was used to assess risk factors associated with health deterioration.

Before being shipped, some calves displayed pneumonia (2%), diarrhea (18%), fever (4%), navel disease (9%), or a depressed attitude (16%), and were a mean ( $\pm$  SD) age of 4.6 ( $\pm$  2.6) days. On arrival, more calves (9%) displayed fever ( $P=0.04$ ), and fewer (7.5%) showed evidence of diarrhea ( $P=0.03$ ), likely because of dehydration. Twelve percent of calves had FTPI and these calves had higher odds of developing a depressed attitude (OR 5.1,  $P= 0.004$ ). In conclusion, some calves were shipped at a young age with suboptimal health which deteriorated during long-distance transportation. Improvements in calf health and management at the dairy farm could improve their welfare during and after transport.

Implications: Optimizing the health of male dairy calves undergoing long-distance transport needs more attention to protect calf welfare and public perception of the dairy industry. The code of practice for dairy cattle requires all calves to have received adequate colostrum before transport, but this standard may require further clarification. In addition, transportation guidelines should be developed specifically for young stock to help producers select animals for transport.