

Antimicrobial Use in the Dairy Industry

What Measures Could We Take?

Dr. Tamaki Uyama, PhD Candidate, Dept. of Pop. Med., U of G

The options for antimicrobials became widely available in the 1970s in the cattle industry. Antimicrobials were given for treatment, prevention, or growth promotion purposes, but nowadays, drugs are no longer used to promote the growth of animals in Canada. Besides, some European countries are shifting towards limiting the routine and preventative use of antimicrobials. When sick cattle remain untreated, the disease could become more severe and may lead to death or loss of productivity.

The issue of resistant bacteria has gained attention in society. Studies estimated that nearly 5 million deaths in humans occur due to antimicrobial resistance, and this number could increase up to 10 million by 2050. In farm animals, their antimicrobial use is being scrutinized due to the possible transfer of resistant bacteria from animals to humans and the environment. However, whether this acts as one-way, vice versa or the relation to human antimicrobial use remains unclear and needs further investigation.

Even so, it would become more important to keep track of antimicrobial use and resistant bacteria in the dairy industry. Several countries have been conducting surveillance research on monitoring antimicrobial use and the prevalence of resistance in farm animals. It is crucial to have this data to understand the baseline of antimicrobial usage and resistance, so we could compare them over the years or between different regions. In Canada, the Canadian Dairy Network for Antimicrobial Stewardship and Resistance (CaDNetASR) has been conducting field surveillance research on dairy farms across five provinces since 2019.

A part of the CaDNetASR research focussed on calf management practices and antimicrobial use in pre-weaned dairy heifers on Canadian dairy farms. The researchers found that some management practices related to a lower use of antimicrobials in calves. For example, colostrum is known to have higher immunoglobulins, growth hormones, and oligosaccharides than normal milk which is known to benefit calf health. There is a possibility that transition milk, which was defined in this study as the 2nd to 6th milkings after calving, may also have potential benefits when fed to calves. Indeed, we found that farms that fed transition milk to calves had about half the number of antimicrobial treatments/calf-year compared to those that did not feed transition milk. More research is needed to investigate the optimal and practical usage of transition milk. However, this finding suggests the potential benefits of feeding colostrum/transition milk to calves would improve calf health and may reduce antimicrobial use.

Antimicrobials are effective tools to tackle various diseases and restore the health of animals, but we should strive to use them more cautiously. Optimal management practices such as having a written treatment protocol and good colostrum/transition milk management practices could prevent calves from getting sick which may eventually reduce the amount of antimicrobials used, lower the number of resistant bacteria, and improve their productivity in the future.

Antimicrobial treatment recording tips:

- Record at least the date of the treatment, cattle ID, drug name, and dose of the drug.
- Recording treatments on a piece of paper is good but having an electronic system might be even better for future use.
- Monitoring growth (e.g., body weight) and death may provide a better understanding of how well your herd is doing.
- If you don't have a written treatment protocol, consider developing one with your herd veterinarian.