

Can chute-side disease diagnostics reduce antibiotic use in beef cattle?

Project Code: POC.04.18
Completed: *In Progress. Results expected in March 2020.*

Project Title:

Exploring options for BRD diagnostics 2.0 – a point-of-care metagenomic nanopore sequencing pilot study

Researchers:

Dr. Cheryl Waldner DVM (WCVM)
Prairie Diagnostic Services (Anatoliy Trokhymchuk PhD), Nathan Erickson DVM, John Campbell DVM (WCVM), Craig Dorin (VAHS)

Objective

To determine whether existing technologies can be used chute side to determine and expedite optimal antibiotic treatment.

Background

Bovine respiratory disease (BRD) is one of the most common diseases in feedlot cattle and as a result is the most common need for antibiotic treatment. Currently there is no practical way to test for the presence of BRD; lab tests take days which postpone treatment decisions that alleviate suffering. Currently feedlot workers base treatment options on presence of clinical signs and previous experience. Since no test is available to tell for sure which specific pathogen to treat there is a chance that workers may not select the optimal treatment based on the specific type of BRD. An ideal BRD test would be rapid, easy to use, cost effective, and comprehensive enough to detect both common and less frequently seen pathogens that cause BRD.

What they will do

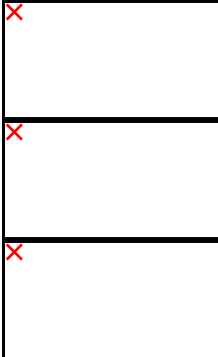
In preliminary work, researchers were able to analyze BRD samples in less than 6 hours. This pilot study aims to reduce that time further and test an existing technology that could automate the sample handling procedure so that the work can be carried out in a veterinary clinic or on farm.

Practicing veterinarians will provide samples from calves that are of high risk for contracting BRD as well as from animals that are clinically affected with BRD. These samples will be analyzed using both the new approach that is being developed and compared to traditional bacteriology analysis. The results will be compared to determine if the new method is accurate in diagnosing BRD.

Implications

This technology has the potential to have a major impact on the Canadian beef industry. The ability to use chute-side diagnosis in feedlots would reduce the number of animals who are misdiagnosed. As a result, it would enable more rapid treatment while decreasing antibiotic use. Such an improvement is critically needed to maintain consumer confidence in beef quality and safety, address the increasing antimicrobial stewardship requirements, and maintain global market access.

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