



JULY 2020 DAIRY NEWSLETTER

HOT TOPIC: Antimicrobial Stewardship

The use of antibiotics in food animals is a hot topic these days. There is a growing shift of customer preference for animals that are raised without the use of antibiotics. This trend may be attributed to marketing by major fast food and processed food brands and advertising by animal activist groups. As an industry we know that all of our products are free from drug residues and nutritionally indistinguishable from those raised without the use of antibiotics. It can be argued that animals that are raised with the use of antibiotics also have better welfare as we are able to treat them when they have an infection. Livestock industry representatives, such as DFO, are doing their best to keep this message in the media; however the antibiotic free trend still continues to grow. Compounding on this social pressure is the potential for new legislation regarding drug use in livestock. As we have already seen happen in European countries, new legislation can dramatically reduce the use of antibiotics in food animals by limiting drug accessibility and the types of antibiotics that can be dispensed. This political trend is linked to the global issue of antimicrobial resistance in bacteria that cause disease in humans. In hospitals across the world, strains of multi-drug resistant bacteria are causing disease in children and adults that are difficult to treat and can result in increased hospital stay times and even death. Studies have shown that the majority of antimicrobial resistance can be traced back to over-prescription and non-compliance (not following label directions) in the human medical field. The use of antibiotics in livestock, especially mass medication at a sub-therapeutic level, likely accounts for a much smaller portion of antimicrobial resistance in the human population. Small outbreaks of antimicrobial resistant bacteria in humans have been traced back to raw dairy products and improperly cooked meats. Despite being an infrequent source of resistance, the WHO is recommending that countries take steps to reduce the use of antibiotics in food animals. We can argue the validity of many of the arguments against antimicrobial use, but it seems highly likely that the use in livestock in Canada will become more controlled over the next decade.

In addition to being a health risk in humans, antimicrobial resistance can also be a problem for animal health. Strains of multi-drug resistant bacteria are being found in all livestock groups and can cause devastating outbreaks in naïve farms. For example, most strains of Salmonella dublin are resistant to virtually all antibiotics and can cause extremely high death and disease rates within calves when first introduced to a farm. Salmonella dublin is widespread in areas of the US such as New York State, and is an emerging bacteria in Ontario that we have started to see over the past few years. At our practice, we have found bacteria associated with individual farm outbreaks that are resistant to several classes of antibiotics. These outbreaks are incredibly frustrating for producers, as treatment is ineffective and losses can be high.

While we cannot accurately predict what future antibiotic legislation will be passed in Canada, we know that use is likely to be continued to be restricted. With this upcoming shift in mind, what can we do to responsibly reduce the use of antibiotics in Ontario dairy farms? Knowing the impact of resistant bacteria on animal health, what can we do to reduce the emergence of multi-drug resistant bacteria in our livestock populations? Below are three main categories that we can focus our efforts to responsibly reduce the risk of antimicrobial resistance.

1) Disease Prevention

Preventing disease rather than treating it makes sense in terms of economics and reduction of antimicrobial use. For many diseases, we can significantly reduce treatment rates by vaccinating, improving comfort, reducing social stress, decreasing stocking density, improving ventilation etc. If you are not already vaccinating for coliform mastitis, pneumonia, abortions and calf scours, these are excellent opportunities to prevent disease with vaccines. In addition to reducing the cost and number of antibiotic treatments, you can also see increased milk yield, reduced culling rate and herd longevity in vaccinated herds. Your



herd veterinarian can help you find which vaccines are appropriate for your herd. We can also help investigate what other preventative management practices can be put in place to reduce disease incidence.

2) Following Label Directions

The development of antimicrobial resistance is a complex topic with many factors involved that we do not fully understand. We do know that resistance is more likely to occur when a sub-therapeutic dose (lower than the label directions) is used on a population, especially for an extended period of time. This is why it is important to always use a drug according to label directions for both the dose and the duration of treatment. This is especially critical for oral drugs (such as chlor 50), as these will be in contact with gut bacteria that are often implicated in antimicrobial resistant infections.

3) Selecting drugs based off Antimicrobial Classes

Antimicrobials used in food animals can be sorted into categories based off of their importance to the human health care sector. Drugs that are considered essential for human treatment are considered category 1, those of no importance are category 4, and the mid-importance drugs sorted into the categories between. These categories have been part of the antibiotic reduction plans in Europe, with the use of drugs in the in the first categories being very highly restricted and the 3rd and 4th categories being more freely available. The reasoning behind the policies is to try and reduce the risk of antimicrobial resistance in drugs important to human health. So whenever choosing between drugs, it is best to select the one in a less important category. In Canada, some of the category 1 drugs already have label directions indicating they are only for use when the first line treatment has failed. If our legislation follows the path of the European market, we can expect that their use will be further limited. The following are examples of drugs we use in the dairy industry and which category they fall into:

Category 1 – very high importance	3rd and 4th generation Cephalosporins – Excenel/ceftiocyl, excede, cefa dri, spectromast, today Fluoroquinolones – Baytril, A180
Category 2 – high importance	Lincosamides – Pirsue, Lincomycin Macrolides – Mictoil, draxxin, zuprevo Penicillins – Procillin, polyflex, polymast Trimethoprin/sulfamethoxazole – Trimidox/borgal
Category 3 – medium importance	Phenicols – Resflor/Nuflor Tetracyclines - Oxyvet
Category 4 – low importance	Ionophores – Monensin