

## **Antimicrobial resistance, treatment protocols, blanket dry cow therapy and prudent antimicrobial usage – What does it all mean?**

**Kimberley Morrill, PhD – Regional Dairy Specialist.**

Over the last few years we have continually heard the phrase “it’s a global market”. While that phrase is often used to describe the milk market, global issues, global concerns and global consumer trends continue to guide animal well-being, best management practices and antibiotic usage.

Antimicrobial resistance and prudent antimicrobial use are two global issues that are continuing to receive increased attention in both humans and animals. Antimicrobials are of great importance in modern human and veterinary medicine, however, overuse and/or inappropriate use has been linked to antimicrobial resistance. Resistance then leads to suboptimal treatment results of bacterial infections. Due to several incidents of methicillin resistant *Staphylococcus aureus* (MRSA) and extended spectrum betalactamase producing bacteria (ESBLs), antimicrobial resistance and antibiotic usage have gained increased attention. Some governing bodies have set stronger usage guidelines (humans and animals) and overall reduction goals. In the Netherlands, the government set antimicrobial use reduction goals based on usage in 2009. Their goals included: 20% reduction by 2011, 50% by 2013 and 70% by 2015, (Speksnijder et al., 2015).

It is debatable whether or not antimicrobial resistance observed in pathogens in animals will be transmitted to humans, but the transmission definitely is possible, either through direct contact or via the food chain. Although recent sequence-based population level studies indicate that relatively little transmission occurs among animal species and between animals and humans, responsible antimicrobial use in food animals is paramount for maintaining animal health and possibly human health.

Prudent use of antimicrobials is of great importance for dairy farms. Two areas that we can focus on are use of antibiotics to treat mastitis and use of antibiotics for calf health. For both of these areas the first step is focusing on prevention, then controlling new infections and reducing the risk of spreading the infection to herd mates. For both of these challenges, treatment protocols (and compliance) are important to optimize cure and minimize recurrent episodes. This article will focus primarily on mastitis, as there is the risk of both a milk and/or meat residue occurring.

A key component of judicious antimicrobial treatment is only treating cows with antimicrobials when antimicrobials are expected to have added value. In simple terms – if the cow does not have an infection that would respond to antibiotics, DON’T use them. Blanket treatment of mastitis can lead to an increase in antibiotic usage. Diagnostic test results can help dairy producers determine if an intramammary infection warrants antimicrobial treatment. This practice leads to a significant decrease in antimicrobial use (Lago et al., 2011). Reducing the usage of non-necessary antibiotic treatment helps reduce the risk of developing resistance, as well as reducing the producer’s cost as they are no longer paying for a treatment that does not have a benefit. If this is an area of interest to you, have a conversation with your veterinarian to see if they offer milk sampling, or contact your local Quality Milk Production Services laboratory. For the North County you would want to reach out to QMPS in Canton. They can work with you to set up a sampling protocol as well as work with you and your veterinarian to develop treatment protocols.

Research that studies optimizing antimicrobial use under restricted conditions (ie. proper dosage, length of time and correct antibiotic) continues to demonstrate that reducing antimicrobial use is possible with limited consequences for animal health and milk quality. In daily practice, using farm-specific treatment and prevention protocols adds value.

Key take aways:

- Prevention is always number 1
- Treatment protocols should be developed with your veterinarian
- Antibiotics should only be used, if there is a bacterial infection.
- Not all antibiotics are the same